ABSTRACT

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Prior research indicates that involvement in conventional social relationships, such as employment, are associated with decreases in criminal offending. However, far less is known about why only certain individuals seek out or are offered such opportunities for change. Social competence is defined as the set of cognitive and non-cognitive individual attributes, such as an individual's perceived dependability, maturity and sociability, which facilitate transitions throughout life and goal obtainment. Social competence is important for criminological theory and research because it can illuminate the mechanisms that underlie the empirical association between involvement in employment and criminal offending. Additionally, social competence may directly explain changes in criminal offending patterns over time. Using data taken from the Pittsburgh Youth Study (PYS), a prospective longitudinal study of the development of anti-social behavior among inner-city boys from childhood to early adulthood, the current study examined three main hypotheses. First, social competence established in adolescence predicts involvement in employment and the number of hours worked while employed. Second, social competence predicts both the overall level as well as changes in offending between and within-individuals. Finally, this study explored the

relationship between within-individual changes in cumulative competence and changes in offending patterns as well. Results indicate that social competence established in adolescence is significantly related to involvement in employment, thus emphasizing the importance of individual level traits for selection into conventional social institutions. Although there was less support for the effects of social competence established in adolescence on overall levels of offending between individuals, strong support emerged for the effects of competence on changes in offending patterns. Results from within-individual analyses found that increases in social competence coincide with decreases in self-reported general delinquency, theft and violence. Future research should continue to examine the mechanisms underlying the relationship between conventional social relationships and offending patterns, and provide more nuanced examinations of the role of social competence and other individual level traits for criminological theory and research.

SOCIAL COMPETENCE AND CRIMINAL OFFENDING OVER TIME

By

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Dissertation submitted to the Faculty of the Graduate School of the
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Dedication

To Big T and Special K

"We said we'd walk together baby come what may
That come the twilight should we lose our way
If as we're walkin a hand should slip free
I'll wait for you
And should I fall behind
Wait for me"
-Springsteen

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Chapter 1: Introduction

Prior research has indicated that external life events or involvement in pro-social relationships such as a good quality marriage or stable employment are associated with significant reductions in offending, and can facilitate desistance from crime among offenders with a history of delinquency and crime (Giordano, Cernkovich and Rudolph, 2002; Sampson and Laub, 1993; Horney, Osgood and Marshall, 1995; Laub, Sampson and Nagin, 1998; Uggen, 2000; Laub and Sampson, 2003). However, as Laub and Sampson note (2003:40) far less is known about the underlying causal mechanisms through which external life events are related to reductions in offending. We know much less about why only certain offenders are able to seek out, or are exposed or offered conventional opportunities for change. Nor do we know why only certain individuals are able to take advantage of such opportunities and use them as a vehicle of change. It is likely that exposure to and involvement in and success with pro-social relationships is not entirely random. There are several individual attributes that may explain why some people seek out and take advantage of "turning points" or "hooks for change" and others do not.

Although this line of inquiry has not been extensively studied thus far several researchers have noted this possibility (Giordano, et al., 2002; Sampson and Laub, 1993; Bandura, 1982; Bandura, 1997; Paternoster, Brame and Farrington, 1998). For example, Sampson and Laub have stated (1993:318) "structural role changes only provide the possibility for change to occur—its realization is mediated by individual contingencies." Giordano and colleagues (2002:1001) similarly state that mere exposure to conventional social relationships is not sufficient for initiating change among serious offenders, rather

"…it is not simply the hook (in this case, a job and additional training/supervision), but some combination of *availability and readiness* that is most likely to produce a change in criminal involvement."(emphasis added). If "availability" and "readiness" is taken to mean some degree of "openness" or "preparedness" for taking advantage of conventional opportunities for change, then one such individual level trait that might be reasonably related to involvement in conventional social institutions and successful functioning and transitions throughout the life course is social competence.

Social competence is defined as the set of individual attributes that facilitate transitions and adjustment throughout life (Harter, 1982; Farkas, 2003) and typically include both cognitive and non-cognitive skills such as an individual's perceived dependability, intellectual involvement, and interpersonal social skills (likeability) (Farkas, 2003; Clausen, 1993; Harter, 1982). Social competence has also been conceptualized as a reflection of planful choice making and human agency (Clausen, 1993; Shanahan, et al., 1997). While some research has characterized adolescent social competence as a reflection of planful choice making and human agency, the bulk of the empirical literature has focused on social competence as an observable set of skills and resources that facilitates adaptive functioning, later life adjustment and goal directed behavior within the context of social relationships and institutions (Cavell, 1990; Rydell et al, 1997; Farkas, 2003).

Social competence is relevant for explaining reductions in criminal offending over time in two ways. First, social competence has the potential to elaborate upon the mechanisms which underlie the empirical association between conventional external life events and reductions in offending over time. Social competence may indirectly impact

changes in criminal offending through its influence on involvement in conventional social relationships, such as employment. Alternatively, social competence may directly explain both involvement in employment and changes in criminal offending over time and represent a broader transition to adulthood. For example, both cognitive and non-cognitive skills are important when making the transition to formal employment during adolescence as employers use such behavioral cues when assessing productivity and providing labor market rewards (Farkas et al., 1988; Farkas, 2003). Several studies have indicated that social competence is positively related to labor market outcomes such as employment status, occupational wages and attainment (Jencks, 1979; Fakras, 1996). There is no doubt that structural role contingencies can sustain long term behavioral change, however, individuals must at a certain level be open to and receptive to such structural vehicles for change.

Giordano and colleagues (2002) highlight the individual's role in the change process by focusing on the cognitive transformations that lead one to act with agency that is fundamental for initiating and securing long lasting behavioral changes. They emphasize that individuals are active participants in the desistance process, resonating with and moving towards social relationships and situations that are conducive to change. As Bandura (1997:39) states, "Performances do not just happen to us; we do a lot to bring them about. People contribute to, rather than just predict, their actions. There is a world of difference between doing and undergoing." Social competence is an observable skill set that may facilitate "agentic" and purposeful behavior by providing the cognitive and non-cognitive skill set which allows individuals to successfully act within social relationships and institutions. Possession of such a skill set increases one's own

perceptions of their ability to impact and direct the course of their lives and it also impacts the manner in which other people perceive the individual and hence may influence whether relevant others are willing to offer and expose the individual to conventional roles and opportunities. Those individuals with greater stocks of social competence should be better able to create, be selected for and succeed in conventional social relationships and institutions.

Second, social competence may directly explain reductions in criminal offending patterns over time. Several researchers have observed that the traits associated with social competence increases with age, suggesting a developmental process in which competence accrues from prior experiences or as a function of maturity (Clausen, 1993). Thus, social competence is dynamic to a certain extent, and likely more so during the adolescent years. Initially high levels of social competence in adolescence can act as a protective factor that inhibits the initial development and onset of antisocial behavior (Stouthamer-Loeber, Loeber, Wei, Farrington and Wikstrom, 2002). Similarly, increases in social competence may be related to gradual decreases in delinquency over time as adolescents acquire the skill set necessary for entering adulthood. For example, if social competence is considered a dynamic concept that develops over time, reductions in problem behavior and delinquency may be the outcome of such development. There are relatively few studies examining the relationship between social competence and criminal offending. The few existing studies have provided sparse controls for both observed and unobserved sources of heterogeneity that may bias any observed finding between competence and crime. Nonetheless, existing findings suggest that social competence is

negatively related to the overall level of criminal offending and problem behavior (Epstein et al., 2004; Paternoster, Brame and Farrington, 1998; French and Waas, 1985).

In line with the idea that social competence follows a developmental process in which increases in social competence are associated with the successful transition to adulthood is the concept of cumulative competence. Cumulative competence refers to the cumulative gains and products of socially competent behavior accrued from past experiences. One such indicator of cumulative competence is academic achievement (Farkas, 2003). Numerous studies within the developmental social psychological literature have indicated that the early acquisition of competence is related to academic achievement (Jencks, 1979; Farkas, 2003). Importantly, the very same individual traits that are appealing to future employers within the labor market are also appealing to teachers within the school context (Farkas, 2003; Bowles and Gintis, 1976). Success within the academic realm is predictive of future employment success as well other life outcomes (McLeod and Kaiser, 2004; Huebner, 2005). Finally, there is substantial evidence indicating that academic achievement or school performance is negatively related to criminal offending (Felson and Staff; 2005; Maguin and Loeber, 1996; 1979; Hirschi and Hindelang, 1977).

The Proposed Dissertation and Dissertation Overview

The current dissertation seeks to add to the growing literature on changes in criminal offending patterns over time by examining the causal effects of social competence on involvement in employment and reductions in criminal offending over time. I use data taken from the Pittsburgh Youth Study (PYS), a prospective longitudinal

study of the development of anti-social behavior among inner-city boys from childhood to early adulthood. The PYS contains data pertaining to 1,009 boys who were enrolled in several public schools in Pittsburgh during the years 1987 to 1988.

I address the following questions. First, I examine whether social competence predicts involvement in conventional social institutions, measured as employment, independent of observable and unobservable correlates. Prior research has indicated that adolescents that are competent, as compared to their less competence peers, are more likely to be employed. The current study examines whether competence established in adolescence predicts subsequent involvement in employment as well as job stability. Second, I examine the effects of between and within-individual social competence on both the level and change in offending over time, independent of other relevant observed and unobserved sources of heterogeneity. I examine the direct and indirect effects of between-individual competence (through employment) on delinquency and offending over time. In particular, I examine the effects of social competence established in adolescence and the growth rate of competence over early adolescence on overall levels of criminal offending over time. Adolescent social competence may provide juveniles with the developmental skills or resilience necessary to offset or prevent disruptive and delinquent behavior, thereby placing them at advantage as compared to children with lower average levels of social competence. I also examine within-individual changes in social competence on changes in within-individual offending patterns over time, particularly during adolescence. Doing so provides a stronger test of the causal effects of social competence on offending over time by greatly reducing threats to internal validity.

Finally, I explore the relationship between within-individual changes in cumulative competence and changes in offending patterns over time as well. Cumulative competence is measured as academic achievement as assessed by teacher reports and educational attainment. Conceptually, cumulative competence should increase the individual's own perceptions of their competency and ability to function effectively within the social context, and it should also increase the probability that socially relevant others will offer them conventional opportunities, such as employment. Gauvain and Huard (1998) have speculated that increases in social competence can stem from direct experiences in which individuals are able to exercise competent or planning behavior. Bandura (1997) has suggested that perceived self-efficacy, the belief in one's own ability to master the environment, is partly a result of direct experiences individuals have in their interactions. It is possible that the more competence an individual obtains over time either through prior experiences or as a function of maturity (Clausen, 1993), the more likely they will be able to use their accumulated resources as a vehicle for change. Additionally, there is substantial research in the criminological literature to indicate that academic achievement is negatively related to delinquency and criminal offending (Felson and Staff, 2005; Maguin and Loeber, 1996).

This chapter briefly introduces the conceptual background for the main lines of inquiry that will be undertaken in the current study. Chapter 2 reviews the literature pertaining to continuity and change in within-individual criminal offending patterns over time, with a focus on those external life events (employment) that are empirically related to significant reductions in offending frequency. I then discuss the concept and utility of social competence for explaining involvement in conventional social institutions and

reductions in criminal offending over time. Social competence facilitates the successful transition from adolescence to adulthood as well goal obtainment within the social environment, and thus may potentially explain involvement in conventional social relationships and reductions in criminal offending over time. I also introduce the concept of cumulative competence and discuss its relevance for the proposed study. Drawing largely from the developmental psychology literature, I review the conceptual and measurement issues associated with social competence. Chapter 2 also includes a review of findings from empirical studies which have examined the relationship between social competence on involvement in employment, as well as studies which have examined the between and within-individual effects of social competence on criminal offending. Chapter 3 presents the hypotheses, data and analytical framework for the current study. Chapter 4 presents the results from the analysis focusing on the effects of between-individual levels of competence and subsequent employment. Chapter 5 discusses results from the between and within-individual analyses of competence on overall levels of and changes in offending. Finally, in Chapter 6, I discuss the conclusions and the relevance of social competence for both criminological theory and policy and conclude with limitations of the current study and directions for future research.

Chapter 2: Literature Review

There have been numerous well-known longitudinal studies examining the development of antisocial and criminal behavior over the life course (Sampson and Laub, 1993; Wolfgang, Figilio and Sellin, 1972; Elliot, 1994; Loeber, 1982; Moffitt et al., 2001; Farrington and West, 1990; Laub and Sampson, 2003; Loeber et al., 1991; Cernkovich and Giordano, 2001; Robins, 1966; Robins, 1978). Despite the many differences in design, sample, historical time period and the type of offending data analyzed, one common finding that has emerged is the evidence of marked continuity between early childhood conduct disorders, delinquency and criminal offending in adulthood. For example, Loeber and LeBlanc (1990:385) state "Across studies, about three to seven out of each ten juvenile offenders continued to offend, and were caught at least once during adulthood. Thus, studies from a variety of countries, using different arrest standards, different attrition rates for follow-up, and different age groups studied, all demonstrated a degree of continuity between juvenile and adult offending." Sampson and Laub (1993:11) echo those conclusions in their own review of studies examining continuity in antisocial behavior, "These replications across time and space yield an impressive generalization that is rare in the social sciences."[1]

In spite of the evidence indicating that antisocial behavior established early in life is a strong predictor of later criminal offending, many studies have also shown strong

[1] Several studies have also shown that the development of delinquent and criminal behavior is strongly related to the early development of disruptive problem behaviors such as persistent lying, aggression, and disobedience (Loeber and LeBlanc, 1990; Farrington, 1991; Loeber and Farrington, 2001; Loeber et al., 1991). Serious delinquency is preceded by noticeable conduct disorders and problem behaviors (Loeber, et al., 1999; Loeber et al., 1993). Similarly, there is substantial evidence indicating versatility in offending behaviors and antisocial behaviors such that those that engage in the former also tend to engage in several analogous yet non-criminal behaviors, such as heavy drinking, reckless driving, sexual promiscuity, and bullying (Loeber and Farrington, 2001; Massoglia, 2005; Paternoster and Brame, 1998;2000).

evidence of variability in offending patterns (Laub and Sampson, 2003; Robins, 1978; Loeber and LeBlanc, 1990). Several psychological, sociological and biological factors are associated with reductions in previously established patterns of offending behavior (see Laub and Sampson, 2001 for a review) one of the most prominent factors includes involvement in conventional social relationships and institutions such as employment (Uggen, 2003; Sampson and Laub, 1993).[2]

Employment and Offending Behavior

As Staff and Uggen (2003) note, there is convincing evidence that employment has an effect on offending behaviors. Findings from adult samples are fairly uniform as compared to research pertaining to the effects of adolescent employment on delinquency. Overall there is strong evidence suggesting that employment is associated with reduced crime among adults that have pre-established patterns of offending (Staff and Uggen, 2003; Uggen, 2003; Laub and Sampson, 2001; Sampson and Laub, 1993). In several well known studies Sampson and Laub presented evidence which indicated that persistent offenders were able to reduce their offending by virtue of their involvement in conventional social relationships such as a good quality marriage and steady employment. Using the data from the original Unraveling Juvenile Delinquency (Glueck and Glueck, 1950) study as well as subsequent follow-up interviews, they found that social bonds in adulthood are significantly related to reductions in offending among individuals that were characterized as serious delinquents in adolescence. Although not

[2] There are several other factors associated with decreases in criminal activity including but not limited to cognitive shifts in the importance of the costs and benefits of crime, cognitive transformation of offender identity to non-identity, involvement in marriage and the aging process. The discussion in this section of the paper is limited to involvement in conventional social relationships such as employment, which I examine in the current study.

diminishing the importance of early childhood traits for future behavior, their results indicated that later life events have considerable import for re-directing pre-established behavioral patterns.

Specifically, they found that independent of prior criminal activity and early predispositions to antisocial behavior, job stability at time two (ages 17 to 25) significantly reduced the frequency of criminal activity at time three (ages of 25 and 32) for both delinquents and non-delinquents. Although the impact of job stability at time three was weaker (non-significant) as compared to the marriage effect, the effects of job stability at time two significantly predicted reduced offending frequency (arrests) at time three (ages 32-45). It is important to note that their measure of job stability captured the quality and strength of the involvement.[3]

Especially relevant for the current study is a prior study which examined reductions in offending among boys from the Pittsburgh Youth Study (PYS). Using data taken from the oldest sample (N = 506), Stouthamer-Loeber and colleagues (2004) examined desistance from persistent serious offending during the transition from adolescence (e.g., ages 13 to 19) to adulthood (e.g., ages 20 to 25). They used self-report data to classify the sample into the following three broad groups that characterized their offending in adolescence and adulthood: "non/lesser delinquents", "persistent serious offenders" and "desisters".[4] Of the total sample, 38% (N = 190) of respondents met the

[3] The job stability measure was a composite scale consisting of employment status, stability of most recent employment, and work habits.

[4] Self-report data was collected from the respondent, caretaker and teacher. Persistent serious offending in adolescence was defined as having ever engaged in the following behaviors at least 2 out of the 7 assessments prior to age 19: auto theft, breaking and entering, strong armed robbery, attacking to seriously hurt or kill, and rape or forced sex. Respondents were classified as "persistent serious offenders" if they committed one or more serious acts in adulthood, and they were classified as "desisters" if they did not commit such acts in adulthood. Non/lesser delinquents were defined as those adolescents that did not

criteria established at the outset for serious, persistent adolescent offending. Of those respondents, approximately 60% (N = 101) and 40% (N = 66) were classified as persisting and desisting, respectively, during the transition to adulthood. Most respondents ceased offending during the ages of 19 to 20. They also found that desisters, as compared to persisters, were more likely to have higher professional occupations (47% vs. 21%), have been employed at least 95% of the time during the ages of 20 and 25 (20% vs. 8%), and were more likely to report being employed or in school at the last assessment (44% vs.21%). Although a substantial portion of the total sample was involved in a romantic relationship (partner or spouse), they did not find any statistically significant differences between the persisters and desisters regarding this factor.

Further support for the crime reducing effects of employment are found in Uggen's study using data taken from the National Supported Work Demonstration Project. Uggen (2000) found evidence indicating that involvement in a job was a turning point for older offenders as compared to young offenders. Offenders over age 27 were less likely to report arrests when employed as compared to their younger counterparts. This test is particularly strong as Uggen utilized an experimental design to examine the effects of an interaction between employment and age on offending among convicted offenders. Convicted offenders were randomly assigned to treatment and control groups. Results from a survival analysis controlling for prior arrests, education, prior work experience, and demographics, indicated that the interaction of age and employment is significantly related to lower offending.

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report any delinquency, only reported minor/moderate delinquency in adolescence or only reported one instance of serious delinquency in adolescence.

The effects of adolescent employment on delinquency however are more conflicting (Staff and Uggen, 2003; Paternoster et al., 2003). Several earlier studies have found that intensive work among adolescents is associated with increased delinquency and problem behavior, such as drug use and school misconduct even after controlling for prior levels of offending or observed sources of persistent heterogeneity (Bachman and Schulenberg, 1993; Steinberg et al., 1993; Wright et al., 1997; McMorris and Uggen, 2000). Overall, many of these studies have found that adolescents that work more than 20 hours a week during the school year tend to exhibit more delinquency and related problem behaviors as compared to those that work less hours or do not work at all (see Paternoster et al., 2003 and Mortimer, 2003 for a review).

In spite of these findings and the controls for observed covariates these studies employ, many researchers have noted that selection effects due to *unobserved* persistent heterogeneity render the causal import of such findings suspect (McMorris and Uggen, 2000; Paternoster et al., 2003; Entwistle, et al., 2000). More recent research which includes more stringent statistical controls for unobserved differences between individuals suggests that previous findings indicating that work involvement increases delinquency may in fact be a result of selection effects (Paternoster et al., 2003; Apel et al., 2007). For example, using data taken from the National Longitudinal Survey of Youth (NLSY), Paternoster and colleagues (2003) conducted a series of analyses in which they first replicate prior research and then include increasing controls for unobserved sources of heterogeneity. They included many of the observed correlates of work and offending that were used in prior studies as well as statistical controls for unobserved pre-existing differences between individuals. Including controls for observed

covariates and lagged delinquency, they found results that were identical to prior studies—intensive work employment is positively related to delinquency. However, using random and fixed effects panel models to eliminate unobserved differences between individuals resulted in a null relationship between intensive employment and delinquency, substance abuse and problem behavior. It is important to note that the authors conclude their findings do not indicate that intensive work encourages delinquency among adolescents. Rather they conclude that there are individual level attributes that contribute to both the probability of working intensively during the school year as well delinquency. Perhaps more importantly, recent findings building upon this study suggests that wok for high risk adolescents may actually encourage reductions in offending (Apel et al., 2007).

According to Staff and Uggen (2003), mixed findings in the adolescent employment and delinquency literature may also be a result of a failure to take into account the nature or quality of adolescent work experiences. Importantly, the effects of work seem to depend on the nature and quality of work (Mortimer and Staff, 2004; Staff and Uggen, 2003). Staff and Uggen (2003) found that work which encouraged academic related tasks and provided opportunities for learning reduced delinquency. However, those aspects of employment that typically benefit adults such as increased wages, social status and autonomy were associated with increased delinquency among adolescents.

Despite the mixed findings from the adolescent employment and delinquency literature, there is still strong reason to believe that involvement in employment can reduce delinquency and criminal offending. However, the manner in which conventional social relationships influence individual behavior is still unclear and controversial.

Events are distinct from turning points, and not all pro-social opportunities lead to involvement or subsequent reductions in offending. We know much less about why certain individuals seek out and take advantage of such pro-social opportunities for change. It is likely that involvement in social institutions is not entirely random. For example, Bandura (1989) states that "Social support is not a self-forming entity waiting around to buffer harried people against stressors. Rather, people have to go out and find or create supportive relationships for themselves." Individual level traits may explain why some people seek out and take advantage of "turning points" and others do not.[5]

For example, Gottfredson and Hirschi (1990/1995) have unequivocally argued that reductions in offending due to involvement in a good marriage or stable employment are non-causal and solely a result of self-selection—certain individuals, those with higher levels of self-control, are more likely to have and subsequently take advantage of opportunities that lead to reductions in offending. According to Hirschi and Gottfredson (1995:137), "The decision to change was made prior to involvement with the change-producing institutions." Individuals with higher levels of self control are more likely to enter into, take advantage of and reap the rewards associated with pro-social relationships (Hirschi and Gottfredson, 1995). Although Gottfredson and Hirschi (1990) point only to self-control as a determinant of involvement in conventional social relationships, there

[5] An individual's location in the social structure can shape the extent to which they are exposed to conventional relationships and the subsequent opportunities for positive change and adaptation (Sampson and Laub, 1993). Bandura states (1982:749) that "personal bents and social structures and affiliations make some types of encounters more probable than others", which suggests that exposure is not equally and randomly distributed and implying that mere exposure to conventional social relationships may be difficult for the antisocial offender deeply embedded in criminal activity. Giordano and colleagues (2002:1004) also note that one's position in the social structure, particularly positions characterized by disadvantage, hinders exposure to many social relationships by stating that "actors make moves, but they do so within bounded territory, and a specific nexus of opportunities and constraints."

are other individual attributes, namely social competence, which may be just as influential.

Social Competence

Broadly defined, social competence is a set of individual-level cognitive and non-cognitive attributes that lead to an individual's adaptive functioning, positive adjustment and goal attainment within their social environment (Ladd, 1999; Rydell et al., 1997; Ewart et al., 2002; Baumrind, 1978; Clausen, 1991; Ford, 1982; Harter, 1982). Conceptual definitions of social competence tend to be functional in nature and there is an infinite amount of variation regarding the exact definition (Dodge, 1986; Rubin and Rose-Krasner, 1992). Nonetheless, there are clearly fundamental components that are emphasized consistently and there appears to be considerable agreement regarding the broad over-arching meaning of competence as well as the various components that reflect competence. Definitions emphasize the individual's ability to successfully adapt to various social situations across the lifespan by setting goals and subsequently obtaining them through positive social interaction. Drawing upon the many existing definitions of social competence, Rubin and Rose-Krasner (1992:4) have defined it as "the ability to achieve personal goals in social interaction while simultaneously maintaining positive relationships with others over time and across situations." Others have defined competence in a similar manner such as "the attainment of relevant social goals in specified social contexts, using appropriate means, and resulting in positive developmental outcomes" (Ford, 1982:323), "adaptive functioning in their social

environment" (Rydell et al., 1997:824), and "effective functioning within social contexts" (Cavell, 1990:111).

Thus, at the heart of most definitions of competence is a focus on the set of cognitive and non-cognitive skills or attributes that allow individuals to interact successfully within the larger social context toward the achievement of personal goals. Individual attributes indicative of adolescent competence include the following: social responsibility and pro-social orientation (Baumrind, 1978; Rydell et al., 1997; Tremblay et al., 1992; LaFreniere and Dumas, 1996), autonomy and maturity (Baumrind, 1978; Kuperminc et al., 1996; Clausen, 1993) achievement and mastery orientation (Shriner, 2000; Farkas, 2003), intellectual investment (Laub and Sampson, 1998; Clausen, 1993), interpersonal social skills, sociability and likeability (Dodge, 1986; Ladd and Gotler, 1988; Rydell et al., 1997; Frankel and Myatt, 1994; Harter, 1982), internal control (Ewart et al., 2002), and self-confidence and self-efficacy (Baumrind, 1978; Allen et al., 1989; Dodge et al., 1986; Clausen, 1991; Rice et al., 1997).

Measurement of Social Competence

Given the extensive number of conceptual components used to reflect social competence and the variation in corresponding conceptualizations it is not surprising that there is considerable variability in the actual measurement of social competence. Social competence measures vary across studies as a result of the different methodologies and instruments employed in assessing competence (Cavell, 1990; Dodge et al., 1997; Rydell

et al., 1997).[6] There are several methods of measuring competence such as behavioral observations (Lamb et al., 1988), socio-metrics (Coie, Dodge, and Coppotelli, 1982; Green et al., 1980), and self-report, caretaker and teacher report surveys (Harter, 1982). For the current study, the measurement of competence through self-report questionnaires administered to teachers, caretakers and the child is most relevant. However, there are several ways of constructing social competence scales within this literature as well.

Whereas some researchers disaggregate competence into components that reflect sub-types of competence such as cognitive or social competence, others have summarized the many aspects of competence into one construct reflecting a set of attributes from different behavioral or cognitive domains (Clausen, 1991; Laub and Sampson, 1998; Harter, 1982). For example, Clausen (1991; 1993) describes his notion of adolescent planful competence as one overall construct which consists of three main social and cognitive aspects: dependability, intellectual involvement and self-confidence (see also Laub and Sampson for a similar approach).[7] Others have conceptualized adolescent competence as consisting of sub-types of competence and have created sub-scales to reflect the lower order constructs, such as cognitive, social and physical competence (Harter, 1982). Clausen's summary of adolescent planful competence into three main components broadly captures many of the aspects emphasized by other researchers. For purposes of parsimony and clarity, I adopt an approach that is similar to Clausen's summary measure of adolescent planful competence, and combine several traits to reflect

[6] The lack of a standardized set of variables reflecting competence is partly a reflection of the age appropriate measures of competence, as what is considered "competent" behavior may vary across age (Harter, 1982)

[7] Clausen (1991) generally conducts separate analyses using both the overall adolescent planful competence scale and the sub-scales which reflect the overall construct. His discussion of the concept of adolescent planful social competence, however, does not emphasize the distinction between the sub-scales, and focuses on the effects of the set of skills that reflect planful competence.

the overall skill set reflective of social and cognitive competence.[8] A broad summary of competence is also more conceptually appealing for the following reason.

Central to the concept of social competence is the emphasis on individuals acting to obtain goals within the context of social relationships. The relationship between competence and individual outcomes is based on the notion that a constellation of traits facilitate effective functioning in the social environment across situations and over time. For example, although intellectual investment and cognitive ability may indeed be related to successful goal attainment, it is also likely that the ability to interact positively with relevant others is also related to an individual's ability to successfully apply such cognitive ability to their advantage. The importance of competence to the attainment of individual level goals is that it allows individuals to interact effectively within the social environment, through positive social interactions. For this reason, it is more appropriate to use a summary measure of competence that encompasses not only variables from the cognitive domain such as intellectual investment, but variables that are representative of the social domain as well such as the ability to get along with others and one's likeability.

Although there is variation across questionnaires there are operational measures that are common across surveys and several well-established scales and standardized items that are frequently used to measure social competence (Harter, 1982, Frankel and Myatt, 1994; Hagan, 1992; Achenbach and Edlebrock, 1983). Among one of the most well known scales specifically designed to measure social competence is Harter's Perceived Competence Scale for Children (1982). Harter (1982) disaggregates competence into the following three domains: cognitive (e.g., finishes school work

[8] I use the term "social competence" or "competence" interchangeably to refer to the main explanatory variable of interest.

quickly, intelligent), physical (e.g., does well at sports, learns games quickly) and social (easy to like, easy to make friends) competence.[9] The construct "general self-worth" is also included as a component of adolescent competence.[10] She argues that the perception of self-worth is a superordinate construct, with competence judgments representing a lower order evaluative dimension (Harter, 1982). Although her 28 item scale is designed to assess children's self-reported competence, she compared assessments from her scale to a comparable 28 item survey of teacher perceptions of children's competence.

Harter (1982) has examined the validity of her adolescent competence scales across eight different samples which consisted of over 2,000 male and female adolescents. Grade levels ranged from third to ninth grade, and most of the samples were drawn from largely white, middle and upper class areas. Results from a replication study which focused on seven of those samples found similar substantive results across study sites. Harter found that an oblique rotation best suited the data, and results supported the existence of four distinct yet interrelated elements of social competence. Across all sites, the average loadings of items on the appropriate factor were generally above .50. The four factor solution was also stable across grade levels. The pattern found for children's perceived competence was also found in teacher's perceptions of child's competence, with correlations between teacher and children's factor loadings ranging from .90 to .97 among elementary school students, and .72 and .88 for those adolescents in junior high.

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[9] The full set of items for the scales are as follows: a.) cognitive: good at school work, like school, doing well, just as smart as others, can figure out answers quickly remember things easily, understand what read; b.) social: have a lot of friends, popular with kids, easy to like, do things with kids, easy to make friends, important to classmates, most kids like me; and c.) physical: do well at sports, better at sports, do well at new activity, good enough at sports, first chosen for games, play rather than watch and good at new games.

[10] The separate items include: sure of myself, happy the way I am, feel good with way I act, sure I am doing the right thing, am a good person, want to stay the same, and do things fine.

All of the sub-scales were correlated with each other in both the adolescent and teacher samples.[11]

In line with the view that competence facilitates purposeful, "agentic" behavior (Clausen 1993; Shanahan et al., 1997), Harter (1982) hypothesized that there would be an association between competence and one's intrinsic motivational orientation (see also Harter, 1978). Cognitive competence was significantly related to preference for challenge ($r = .57$) and independent mastery ($r = .54$).[12]

Several other well-established competence surveys also exist (Sigafoos et al., 1988; Hagan, 1992), and many larger psychological questionnaires contain sub-scales of adolescent competence such as the Child Behavior Checklist (CBCL)(Achenbach, 1991). The commonly used sub-scales from the CBCL include the cognitive (school) competence sub-scale, which assesses school grades, and the social sub-scale, which assesses extent of activity in social organizations, number of friends, and how well the child gets along with others (Anderson et al.,1994; Epstein et al., 2004; Frankel and Myatt, 1994). Note that many of the above mentioned domains may represent several related yet distinct constructs aside from social competence. For example, involvement in social organizations arguably reflects informal social control measures as well as competence. Nonetheless, evidence from studies comparing the CBCL's social

[11] However, whereas children perceive social and physical competence as more highly related, teachers view social and cognitive competence as more related to each other. Teachers, as compared to the children, also view self-worth as less related to physical competence, and more so with the other two competence components. The degree of agreement between teacher and student perceptions of competence became incrementally stronger with grade level until seventh grade, at which a point a drop in congruence is observed, but then rises again during the eighth and ninth grades.

[12] A behavioral study also yielded similar substantive findings. Children with high perceived competence were more likely to choose more difficult anagrams to solve as compared to those children with lower competence perceptions.

competence scales to other independent competence scales indicates a substantial amount of congruence between the various types of questionnaires.

For example, Frankel and Myatt (1994) assessed the concurrent validity of the social competence sub-scales contained in the CBCL to each other as well as with two other pre-existing scales of competence, the Social Skills Rating System (SSRS; Gresham and Elliot, 1990) and the Pupil Evaluation Inventory (PEI; Pekarik et al., 1976).[13] The sample consisted of 93 seven to eleven year old boys who were involved in a social skills program. The CBCL caretaker form was administered to the mothers of the children and contains approximately 20 social competence items that form the following three sub-scales: activities, social, and school sub-scales. The Activities scale measures the parent's perceptions regarding the child's participation in (a) sports, (b) solitary activity and (c) chores. The Social scale taps (a) participation in organized group activities, (b) number of friends and frequency of contact, (c) behavior with others, (d) ability to work and play independently. The School scale consists of reports of the child's (a) performance in academic subjects, history of academic performance (e.g., grade retention), and (b) school problems.

Results from an orthogonal factor analysis of all the sub-scales revealed three factors (externalizing, internalizing, and social competence) which accounted for 44% of the common variance. Only one of the three CBCL social competence sub-scales loaded on any of the factors. The CBCL social sub-scale as well as the other sub-scales which inquired about interactions with others such as peers and classmates loaded on the social

[13] The SSRI consists of two sub-scales, the social skills scale, which measures mother's perceptions of child's chores, activities (friendships), politeness, and coping skills and the problem behavior sub-scale, which measures behavioral problems and adjustment. The PEI consists of teacher reports of child's withdrawal, aggression, and likeability.

competence construct. The full set of scales reflecting social competence consisted of the social skills (SSRI), social withdrawal (CBCL), withdrawal (PEI), likeability (PEI), and social (CBCL) scales. Although the CBCL school sub-scale did not load on any of the constructs in this study, another study found that caretaker and youth reports from the CBCL school sub-scale and Harter's cognitive component from the Perceived Competence Scale for children were correlated with Cronbach's alphas of .85 and .84, respectively (Anderson et al., 1994).

Epstein and colleagues (2004) recently examined the validity of cross-informant ratings of CBCL competence scales. Their sample consisted of 272 adolescent-mother-father triads, 142 of which had male children. The age of the adolescents ranged from 11 to 18. Although youth reports of competence were positively and significantly associated with both caretaker reports, both appear to be distinct as well ($r = .43$ and $r = .39$ $p < .01$). Paternal and maternal reports were also associated with each other ($r = .58$, $p < .01$). All of the competence measures were also negatively and significantly associated with externalizing behaviors (e.g., aggressive and destructive behavior). Cross-informant ratings were most congruent with regard to externalizing and competence, and less so with internalizing problems (e.g., depression, anxiety, withdrawn). Epstein and colleagues also made use of a correlated uniqueness model and found that the competence items loaded on the appropriate construct; however, the loadings for the caretaker reports were higher as compared to the adolescent reports.

Results from the above mentioned survey studies provide the guidance and the justification for constructing competence measures in the current study. In particular, the proposed study will use utilize measures taken from the CBCL that not only reflect

previously used measures of competence from the CBCL itself, but from other well known surveys measuring competence such as the Harter scale.

Despite the numerous existing scales and approaches for measuring competence, there are some potential problems associated with its measurement. In the following section I discuss two potential problems associated with competence measures that are relevant for the proposed study.

Measurement Problems

Two major problems associated with the measurement of social competence include the confounding of competence with other distinct criminological concepts and with the outcomes of social competence itself. Many of the conceptual issues mentioned in the preceding sections do not lend themselves to the clear cut measurement of competence, and although agreement exists regarding the general meaning of competence it has not yet translated into a set of measurements that are not only standardized, but also unambiguously distinct from other conceptually similar terms. As Cavell (1990: 111) has stated, "Despite their conceptual differences, most researchers agree that social competence entails effective functioning within social contexts. Discordance quickly arises, however, when this construct is removed from the lofty shelf of abstraction and applied to the business of empirical analysis." Of particular importance to the criminological literature and the debate regarding involvement in conventional social relationships is the conceptual overlap between social competence and self-control.[14]

[14] Prior studies have also operationalized social competence such that it includes other conceptually distinct individual attributes, such as temperament or self-esteem. For the purpose of this discussion, I focus on self-control in particular because of the forceful, unambiguous position of Gottfredson and Hirschi

Social Competence and Self-Control

Many would agree that effective functioning within social relationships and institutions requires some degree of self-restraint and exercising such internal control within social interactions (Ewart et al., 2002; Clausen, 1993). Gottfredson and Hirschi (1990) have forcefully argued that any relationship between later life events and desistance is spurious, and merely a function of initial levels of self-control between individuals. Although the conceptualization put forth by Gottfredson and Hirschi in their original articulation was a rather broad definition of self-control that included several time stable individual level traits, they have since offered a more restrictive conceptualization of low self-control—"the tendency to pursue immediate gratification without concern for long-term personal or legal consequences" (Hirschi and Gottfredson, 1995:31).[15] As such, self-control primarily focuses on an individual's time preference for the short-term, such as the extent to which one is impulsive without regard to future consequences or concerns.

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regarding the role of self-control in involvement in life events and criminal offending. Within the criminological literature, self-control is the major competitor to social competence in terms of explaining involvement in life events and is the leading candidate among those individual traits linked to criminal offending. Moreover, many studies that using self-control measures use items that arguably reflect other related yet distinct individual traits (Felson and Staff, 2006; Hay et al., 2006). I make every attempt to articulate the differences and similarities, and to empirically distinguish each construct. The implications of both self-control and social competence for criminological theory are more thoroughly discussed in Chapter 5.

[15] The original characteristics that Gottfredson and Hirschi (1990) posited as indicative of low self control included: preference for and inability to defer short term, immediate gratification, preference for sensation seeking behaviors, preference for physical activity, poor temperament, self-centeredness, low tolerance for frustration, low intellect and lack of interest in cognitive activities or investments, and reluctance to engage in activities that require commitment or are challenging. As in the case of social competence, the main problem with the original self-control conceptualization is that it overlaps substantially with several other distinct although related concepts such as poor temperament or emotional regulation, impulsivity and negative emotionality. Paternoster and colleagues (1998) have argued that such an all inclusive definition of self-control results in a concept that means everything, yet nothing distinctive thus such a conceptualization provides little theoretical utility.

This more limited definition of self-control reduces the amount of conceptual overlap it shares with social competence, as well as other individual level attributes Nonetheless, it becomes imperative to distinguish these two concepts given Gottfredson and Hirschi's (1990) arguments that self-control strongly influences both selection into social relationships and criminal behavior. Although prior research has indicated that effective social functioning entails some degree of internal control, there are distinctions that can be and should be made between the two concepts.

Whereas the issue of internal control and a time dimension is central to the concept of self-control (i.e., inability to defer short term gratification in favor of long term consequences), social competence, although undoubtedly impacted by internal control, refers to a much broader set of skills that result in effective social functioning and adjustment, such as likeability, dependability or intellectual investment. Competence more heavily emphasizes the role of individual attributes in direct relation to one's ability to get along with others. Another distinction between the two constructs lies in the hypothesized window of development of self-control and social competence. Although researchers have argued that both traits are established relatively early within the life course, social competence is portrayed as having a longer window of opportunity to develop. Self-control is established early in life primarily and remains stable after age 7, while social competence is portrayed as being malleable and dynamic until late adolescence (Clausen, 1993; Gottfredson and Hirschi, 1990).

It is certainly possible that self-control is one component of social competence as the latter is conceptually broader and it is also plausible that self-control influences social competence, as restraint may be necessary for the development of cognitive and social

skills. Some researchers have incorporated items that do reflect some degree of internal control or restraint within a larger set of items that tap other cognitive and non-cognitive skills, while others have constructed separate measures to reflect separate constructs. Several researchers have found that the two concepts, when roughly measured in the latter manner, are empirically distinguishable from each other (Laub and Sampson, 1998; Paternoster et al., 1998; Doherty, 2005).

Social Competence and Outcomes of Social Competence

A related complication associated with the measurement of social competence is the tendency to define competence by the outcomes that competence is intended to explain (McCord, 1991; Laub and Sampson, 1998; Laufer, Johnson and Hogan, 1981; Cavell, 1990). For example, some researchers have used academic achievement, educational attainment and even criminal or aggressive behavior as a measure of social competence (Isley et al., 1999). Similarly, the CBCL social competence sub-scales also confound competence with competence related outcomes. The Activities sub-scale includes measures of the child's participation in sports, the Social sub-scale includes measures regarding the child's participation in organizations and the School sub-scale includes a measure of grade retention (academic failure). Clausen and others have argued that social competence is important for explaining variation in involvement in social relationships and attainment of pro-social outcomes. It is thus imperative that when attempting to explain this variation the explanatory variable is distinct from the expected outcome. It is important to distinguish that although academic grades or participation in formal organizations are certainly reflective of competence, it is more appropriate to

consider these as outcomes of competent behavior.[16] According to Cavell (1990), measures such as these capture the products of social functioning, rather than the requisite skills of social functioning or social functioning per se.[17] The following section discusses how the early attainment of social competence can accumulate over experience and time. Specifically, I discuss the conceptual background and relevance for the concept and measurement of cumulative competence.

Cumulative Competence and Academic Achievement

Among the earliest and perhaps most well known discussions of cumulative advantage was offered by Robert Merton (1968) to explain the increasing inequality among researchers in productivity and recognition within the field of science. The concept of cumulative advantage or disadvantage is reflected with such sayings as "success breeds success" and "the rich get richer, the poor get poorer", and essentially seeks to explain the age-related increase and *amplification* of differences between individuals (Dannefer, 2003; Dannefer, 1987; Dannefer and Sell, 1988; O'Rand, 1996). Explicitly linking time with the cumulative advantage hypothesis, Dannefer (2003:S327) has referred to the cumulative advantage/disadvantage hypothesis as the "systematic

[16] An additional problem associated with defining competence by the outcomes it is intended to explain, is that many of these outcomes are inherently value-laden, such as high academic achievement and occupational status. Aside from the recognition that what is considered "socially competent behavior", such as high academic achievement, is a value-laden concept, its absence may not necessarily reflect the absence of competence as a skill set.

[17] Cavell (1990) summarizes the various existing operational definitions of competence as attempts to measure the following (a) the products of social functioning, (b) requisite skills of social functioning or (c) social functioning per se. Requisite skills of social functioning refer to those behaviors that are considered essential to effective social functioning, such as encoding, decision and enactment skills. Social functioning per se refers to behavioral measures of social functioning such as the rate of positive interaction with peers or specific behaviors such as cooperation, or helping behaviors.

tendency for interindividual divergence in a given characteristic with the passage of time." Similarly, Merton (1988:606) has described the process of cumulative advantage as "the ways in which initial comparative advantage of trained capacity, structural location, and available resources make for successive increments of advantage such that gaps between the haves and the have-nots…widen."

Two approaches for explaining such increasing divergence between individual trajectories include the sociogenic model and the individual accentuation perspective (Dannefer, 2003). In their pure form, the sociogenic model attributes increasing divergence between individuals to social structural processes that shape the life course and differentially allocate opportunities and resources among individuals based on initial advantages or disadvantages (Dannefer, 2003). On the contrary, the individual accentuation perspective views later divergence in life outcomes to be systematically related to early experiences and enduring individual differences that are perpetuated and enhanced over time (Dannefer, 2003; Elder, 1969). As Dannefer (2003:S332) states, the difference between the two perspectives lies in whether observed cumulative advantage/disadvantage is largely accounted for by "the outworking of interindividual differences in stable characteristics that are simply amplified with age, or by differentiating and stratifying effects of social forces."[18]

An example of the sociogenic explanation of cumulative disadvantage is found in Sampson and Laub (1997)'s theory of age-graded informal social control. They invoke the notions of cumulative disadvantage and state dependence to explain, in part, stability

[18] It is important to note that the two perspectives are not mutually exclusive, and that both often interact with each other. For example, accentuation occurs within the context of the social structure and one's location in the social structure, and social reproduction is not immune to the influence of individual level traits.

in criminal offending patterns between and within individuals over time. Differences in offending behaviors over time between individuals may not only be a result of differing initial propensities to offend that are exacerbated over time, but also a result of the cumulative effects of prior offending on the probability of future offending and conventional behavior. This latter notion represents a state dependent explanation of stability in offending (see also Nagin and Paternoster, 2000; Nagin and Paternoster, 1991). Specifically, prior offending has altered the offender's life circumstances such that future criminal offending is more probable. For example, they state (1997:144-145):

> "we emphasize a developmental model where delinquent behavior has a systematic attenuating effect on social and institutional bonds linking adults to society (e.g., labor force attachment, marital cohesion). For example, delinquency may spark failure in school, incarceration, and weak bonds to the labor market, in turn increasing later adult crime. Serious sanctions in particular lead to the "knifing off" of future opportunities such that labeled offenders have fewer options for conventional life."

Although individual attributes and actions are likely responsible for the initial foray into and continued involvement in criminal offending, there are socially structured processes that may, in part, contribute to the stability of criminal offending within individuals by limiting opportunities for conventional behavior (Sampson and Laub, 1997; Laub and Sampson, 2003; Moffit, Caspi, Harrington and Milne, 2002) or even across individuals through intergenerational continuity (Hagan and Palloni, 1990). Finally, controlling for prior offending and unobserved heterogeneity, several studies have found that an arrest can lead to job instability—providing support for the notion that contact with the criminal justice system has an independent impact on the probability of future employment (Sampson and Laub, 1993; Nagin and Waldfogel, 1995; Bushway, 1998).

Also consistent with a state dependent explanation, individuals who establish a high level of competence early in life may be at an advantage as compared to their less competent counterparts. Early experiences can lead to future pro-social and conventional experiences, exposure to valuable conventional social networks, and increased self-perceived competence and efficacy. The concept of cumulative competence refers to the accumulation of competencies and competency related outcomes over time. In this case, the process of state dependence may also explain reductions in criminal offending patterns over time as well.[19] According to the rationale of state dependence, prior experiences have a causal impact on future behavior. Nagin and Paternoster (2001:119) state this notion quite simply "…just as criminal behavior can make things worse, conventional behavior can make one's life circumstances better." Just as repeated negative experiences with the criminal justice system lead to disadvantages that accumulate over time, repeated pro-social interactions can result in investments, resources and other advantages that accumulate over time.

For example, high academic achievement is an indicator of cumulative competence because it requires a non-trivial time commitment and investment as well as intellectual or cognitive skill. High academic achievement also represents an outcome of socially competent behavior, thus demonstrating that one is, to some degree, socially competent. Involvement in extracurricular conventional organizations or activities such as organized athletics or civic organizations may also reflect cumulative competence as

[19] Laub and Sampson (2003: 25) state that although state dependence can theoretically account for changes in criminal behavior over time, it is not frequently appealed to within the literature and most uses of the term focus on the resulting effects of stability. They conclude that an explanation of continuity and change that relies exclusively on both population heterogeneity and state dependence does not "provide insight into the process of change."

involvement is likely a function of the individual's ability to get along well with others, resolve conflict, and commitment and investment as well.

The presence of cumulative competence as measured by such variables (e.g., high academic achievement) can facilitate reductions in criminal offending patterns in two related yet distinct ways: (1) through its impact on the perceptions of competence socially relevant *others* attribute to the individual, and (2) by impacting the individual's *personal* perceptions of competence.

In reference to social and personal resources, Giordano and colleagues (2002:1021) state that "Individuals with such resources should be less likely than others to veer off the traditional path of conformity to begin with, but if they do, it should also be much easier for them, compared to their less-advantaged counterparts, to make a course correction." Conventional opportunities are more likely to be offered to those adolescents that possess such credentials as high academic record, despite past entanglements with the law, because those accomplishments reflect a certain degree of competence (Zigler et al., 1992). Indicators such as high academic record and prior involvement in conventional organizations are important because they convey to others a demonstrated ability to act competently. Thus, cumulative competence may help individuals to recover from involvement in delinquency, encounters with the juvenile/criminal justice system and other negative consequences related to offending. In this example, the impact of cumulative competence on offending is most compatible with a sociogenic explanation of cumulative advantages/disadvantages and reflects a state dependent process of stability and change, as early advantages influence the perceptions of relevant others in such a way that is useful for obtaining exposure to conventional

opportunities and resources. Early advantages may foster the availability of later advantages.

Cumulative competence can also impact individual level offending patterns by influencing the extent to which individuals believe they can act to direct their own life course and by providing the skill set or resources to act successfully. Bandura (1997) and Baumrind (1978) have both indicated that accumulated competence over time due to social interactions in which one is successful (or not) influences an individual's perceived self-efficacy and personal agency, implying that accumulated stocks of competence are important mechanisms for shaping one's perceptions of self-efficacy and the abilities for the emergence of successful human agency. With each situation in which the individual demonstrates an ability to act competently, there is an accumulation of skills (competencies) and beliefs about one's own competence that influence the extent to which the individual may seek out and successfully take advantage of opportunities. Situations in which one effectively executes competent behavior successfully can lead to increases in perceived self-efficacy and competence (Roberts, Caspi and Moffitt, 2003; Mortimer and Lorence, 1979). Perceptions of self-efficacy, more specifically, the belief that one can turn their life around and change criminal offending trajectories established early in life, can increase the probability of cognitive transformations which involve moving from criminal identities and behavior to their conventional analogues (Giordano et al., 2002; Maruna, 2001). In this example, cumulative competence has its largest impact on the individual's perception of the extent to which they believe they can materially impact their own life course trajectories and the extent to which they have the tangible skills to do so. Both of the aforementioned examples illustrate how cumulative

competence may influence changes in criminal offending, as the former acts as a social resource that the individual may call upon, and the latter a personal resource.

The following sections discuss the manner in which social competence and cumulative competence could be related to changes in criminal offending patterns over time. Social competence and cumulative competence may indirectly impact changes in criminal offending through its influence on involvement in employment. In addition, social competence and cumulative competence may directly explain reductions in criminal offending patterns over time and facilitate the successful transition from adolescence to adulthood.[20]

Social Competence and Involvement in Employment

Prior literature has frequently linked social competence to the successful exercise of human agency, as agency requires some degree of "planfulness" and competence as a skill set may facilitate such individual action within social relationships and institutions. (Ewart et al., 2002; Clausen, 1993; Clausen, 1991; Bandura, 1982; Bandura, 1997; Rubin and Rose-Krasnor, 1992; Rutter, 1987; Paternoster et al., 1998, Apel, 2000).[21] Stated a

[20] Social competence may also directly explain both involvement in employment and changes in criminal offending over time, and both changes in states may reflect a larger transition to adulthood. Thus, the relationship between employment and crime is spurious and solely a result of increasing levels of social competence (Massoglia and Uggen,).

[21] Human agency refers to the purposeful role individuals play in the creation, selection and direction of their life within the social world (Elder, 1995; Elder, 1994; Bandura, 1989). Shanahan and colleagues (1994) define human agency as "one's planning and choice making". Bandura highlights the role of agency in human behavior by stating (1997:39) "People make things happen rather than simply passively observing themselves and undergoing behavioral happenings." However, such purposeful decisions and actions are not made in a social vacuum. People make conscious and planful decisions to direct their life course, and they do so within the scope and constraints of their past histories of experience in the social structure, their current position within the social structure, and the resulting options available to them (Emirbayer and Mische, 1998; Elder, 1995; Bandura, 1989).

bit differently, social competence conceptualized as an observable skill set of personal and social resources may explain why certain individuals, once exposed, are better able to take advantage of opportunities for employment and use them as a vehicle for changing pre-existing trajectories of criminal behavior. Whereas self-efficacy is portrayed as the belief necessary for individuals to exercise intentional and purposeful action, social competence can be viewed as the "sub-skills" that are necessary for them to act successfully.[22] Social competence is an individual level attribute that conditions the extent to which individuals become involved in conventional social institutions, such as employment.

Clausen (1993) has argued that socially competent individuals not only tend to select into conventional relationships and institutions, but they also tend *to be selected* for involvement in such relationships because these individuals possess traits that are attractive to conventional others. Again, it is important to note that competence highlights the role of individual cognitive skills in conjunction with their non-cognitive social skills as well. Those individuals with higher levels of competence should theoretically have more extensive and diverse social networks given their ability to interact positively with others, and thus more opportunities for capitalizing on what has been referred to as "the strength of weak ties" (Granovetter, 1973). Highly competent individuals may have certain advantages over their less competent peers, as individuals that are perceived as socially competent tend to be generally viewed as likeable, mature and dependable (Rydell et al., 1997; Clausen, 1991; Clausen, 1993) Individuals with

[22] Self-efficacy refers to individuals' perceptions and beliefs about their ability to exercise control over their environment or events that impact their lives (Bandura, 1989). Whereas human agency refers to the process in which individuals purposefully act to direct and impact the nature of their life course, self-efficacy refers to the *belief* that they can materially impact their surrounding environments and the nature of their life course.

attributes that reflect competence may be in a better position to seek out, be exposed to and chosen for conventional roles and opportunities that facilitate the realization of personal goals. For example, Clausen states (1991:6) that "The highly competent will tend to select—and to be selected for—the choicest positions. They will be seen as comers, as choice marital partners, as potential leaders." He further states (1993) that adolescents who are least competent and fail to become more competent over time are more prone to job and martial disruptions, which are the two most prominent conventional relationships that have been linked to reductions and desistance from crime. Clausen has also highlighted the role of "timing" by emphasizing the importance of the early attainment of social competence for later adult roles and transitions.

Giordano and colleagues (2003) also note that there must be some set of skills that an individual may draw upon to facilitate behavioral change. For example, consider their description of the following respondent, "Nicole expresses a general readiness to change…but she has almost no individual, family, social, or institutional resources to draw on as she envisions a different way of life" (2002:1026). The desire to change one's life and the belief in one's ability to impact their social setting and to make "things happen" are indeed important. However as Bandura states (1997:61) "..beliefs alone can raise and sustain motivation, but they will not produce newfangled performances if the sub-skills necessary for the exercise of personal agency are completely lacking."

Although there is an abundance of studies that examine the development of competence, most of these studies focus on childhood and adolescence, with very few longitudinal studies examining adolescent competence and subsequent outcomes into adulthood. Notable exceptions include the study conducted by Clausen (1993) which

examined participants from birth or childhood to their late 60s and Laub and Sampson's (1998) study which examined individuals from adolescence to middle adulthood.

For the purpose of clarity in presentation, I review those studies that have examined social competence and outcomes in adolescence such as academic achievement as well as those that have examined the relationship between childhood social competence and later life outcomes, such employment outcomes. There are also numerous factors that are empirically related to involvement in employment, however, I only focus on those studies that examine the impact of competence and cumulative competence.[23]

Educational Outcomes

Green and colleagues (1980) examined the relationship between behavioral, sociometric, teacher and self-reported measures of children's social competence and academic achievement. Their sample included 116 third grade children ranging from 8 to 12 years of age. Their results indicated that lower ratings of competence were significantly related to lower academic achievement. Most relevant to the current study is the relationship between teacher ratings and academic achievement. The teachers completed the Conners Teacher Questionnaire from which the five following scales reflecting social competence were created: conduct problems, inattentive-passive, tension-anxiety, hyperactivity and sociability. The researchers combined the first four

[23] For example, a substantial amount of research has indicated that individuals often seek out others and environments that are compatible with pre-existing dispositions or tendencies (Caspi et al., 1992; Caspi and Herbner, 1990; Emmons, Diener and Larsen, 1986; Newcomb, 1961). Caspi and Herbner (1990) state that such decisions to seek out others and situations that reinforce dispositions are most evident for vocational decisions, marriage selection and friendship formation. Thus, one salient factor which contributes to social selection is the compatibility of pre-existing dispositions of the individual and the context of the social situation.

elements into a single scale and retained the sociability rating as a separate measure. As noted earlier, measures of social competence that include conduct disorder are potentially confounding, as conduct disorders or problem behaviors may be an outcome of social competence. Additionally, Green and colleagues also use measures of social competence that are potentially tainted with other distinct concepts, such as temperament, hyperactivity and anxiety related disorders. Nonetheless, their teacher-based measure of sociability indicated that low levels of perceived sociability is significantly related to sociometric ratings of peer popularity, rejection, and likeability as well as behavioral observations of positive interactions with teachers. It is also important to note that this study is cross-sectional, and does not sort out the causal ordering issue of the effects of social competence on outcomes such as academic achievement.

Using longitudinal data from a sample of children from China, Chen, Rubin and Li (1997) found evidence for "reciprocal effects" between academic achievement and social competence and peer acceptance. At time one, 245 and 237 students from fourth and sixth grade, respectively, were interviewed and 306 of these same students were re-interviewed two years later. Results from their regression analysis indicate that sociability ($B = .27$, $p<.001$), positive sociometric nomination ($B = .11$, $p<.05$), and leadership ($B = .16$, $p<.001$) were positively and significantly related to academic achievement net of the effects of gender and prior academic achievement. They also found that academic achievement significantly and positively predicted sociability ($B = .16$, $p<.01$), sociometric nominations ($B = .14$, $p<.05$), and leadership ($B = .32$, $p<.001$) at time two, net of gender and after controlling for time one measures. Even after the stability of competence and achievement measures over time were parceled out, the

authors found support for reciprocal effects between social competence and academic achievement indicating that indeed both variables may act in mutually reinforcing manner. This lends some support to the notion of cumulative competence and the effect it may have on perceptions of competence and self-efficacy. However, the authors rightfully note that there may be other unmeasured variables that account for the finding.

Perhaps one of the most notable and ambitious studies of competence on later life outcomes was conducted by John Clausen (1993). Clausen examined the effects of adolescent social competence on subsequent adult outcomes spanning approximately 60 years for a representative sample of residents from the Berkley and Oakland, California areas recruited during the 1920s and 1930s.[24] The pooled sample contained both men and women, the majority of which were native born Caucasians with a working or middle class background. Respondents were recruited either as infants (Berkley) or children (Oakland) and were re-interviewed periodically up until their 60s and 70s. The participants in the two Berkley studies are younger than those in the Oakland study, as they were recruited in 1928-1929, whereas the Oakland study recruited elementary children in 1931-1932. The Berkley Guidance Study collected multiple self-reports and observations of physical and personality development of the children from teachers, parents, siblings, classmates and study staff. The Berkley Growth Study also conducted several repeated observations of mental development and physical growth from birth to adolescence. The Oakland study began with a sample of 215 children that were administered a wide array of medical and intelligence tests, and were then subsequently

[24] Participants were recruited from three longitudinal studies: Berkley Guidance Study, the Berkley Growth Study and the Adolescent (Oakland) Growth Study. Although each study had a separate purpose each sought to examine adolescent growth in the following domains over time: physical, personality, emotional and social.

observed and interviewed throughout adolescence into high school. During the original collection for all studies the respondents were interviewed repeatedly (see Clausen, 1993 for a thorough description), there were five subsequent follow ups during 1958-1959, 1965, 1969-170, 1982, and 1990.[25]

Clausen (1993:19) used the Q-sort method to create his personality measure of adolescent planful social competence which was intended to reflect the knowledge, abilities and controls that allow individuals to "assess accurately the aims and actions of others in order to interact responsibly with them in pursuit of one's objectives." Clausen's measure consisted of three conceptual components, dependability, intellectual investment and self-confidence. Dependability reflected the individual's ability to effectively act, and tapped elements such as productivity, responsibility, high self-control, and maturity. Cognitive or intellectual investment reflected individual aspiration, organization, high intellectual capacity, a value for intellectual matters and preference for challenge. Self-confidence refers to an individual's satisfaction with one's self, likeability as perceived by others, ability to interact positively with others, and ability to control one's impulses under stressful circumstances.

Utilizing both zero-order correlations and multiple regression, he found that adolescent planful social competence measured during the highschool years was the strongest predictor of educational attainment, controlling for parental socio-economic status (SES) and IQ, among the boys in his sample. Although the composite measure of adolescent competence had the highest correlation with educational attainment, it was not

[25] Participants from the Berkley Guidance Study were followed up on in 1965 (ages 37-38), 1982 (ages 53-54) and 1990 (ages 61-62); participants from the Berkley Growth Study and the Oakland Growth Study were followed up in 1958-1959 (ages 30-31 and 37-38), 1969-1970 (ages 41-42 and 48-50), 1982 (ages 53-54 and 61-62) and 1990 (ages 61-62 and 68-70).

statistically related to educational attainment. However, two separate components, cognitive investment and dependability, were significantly related to higher educational attainment.[26]

Laub and Sampson (1998) found similar results as well. Using the data from a matched sample of 500 delinquent and 500 non-delinquent boys, they found that competence measured in adolescence predicted educational attainment at age 25. Their measure of adolescent competence was consistent with the conceptual definition offered by Clausen and consisted of the following six variables: academic or vocational ambitions, tendency to save money for the future, favorable attitudes toward school, intellectual orientation, conscientiousness, and school grades.[27] As expected, they found that adolescent competence was positively correlated with IQ (r = .42), indicating that their measure of competence was operating in a manner consistent with prior research. They also found that competence was negatively correlated with self-reported delinquency in both delinquent and non-delinquent samples (r = -.24 and -.31). Although they used a matched design, in all of their analyses they controlled for potential confounding individual differences by including variables that reflect prior antisocial behavior. These variables included: average annual frequency of official arrests up to age 17 (controlling for exposure time); a composite scale capturing self, teacher and caretaker

[26] As stated previously, Clausen examined adolescent planful competence for both males and females. Since the current study only examines males, I only provide detailed discussion of the results as they pertain to the male sample. However, briefly, Clausen found that the relationship between planful competence and educational attainment found for the boys was not replicated for the girls. Rather, the best predictor of educational attainment was family SES, followed by the competence component dependability, and measured IQ.

[27] All of the variables with the exception of school grades were obtained through a psychiatric interview that was administered to the boys in their early teenage years. Intellectual orientation refers to the classification of the boy as "impulse to face things as they are, to investigate and plan", and conscientiousness referred to an inclination to "follow a code of conduct which has been accepted after due consideration" (Laub and Sampson, 1998:94).

reports of unofficial delinquency and misconduct; and a dichotomous variable indicating whether the child was prone to violent and habitual tempter tantrums as a child. Educational attainment was measured on a seven point scale and ranged from less than sixth grade to post high school education.

Results from their analysis indicated that adolescent competence had a significant and positive effect on educational attainment, net of measured IQ, parent's SES, parent's education, father's occupation and prior antisocial behavior. They conducted their analysis on both samples of boys separately, and found substantively similar results. Among the sample of delinquents, IQ (B = .42), adolescent competence (B = .24) and unofficial delinquency (B = -.12) were significantly related to educational attainment later in life. The only difference among the sample of non-delinquent boys pertained to parent's SES, which was positively related to educational attainment.

Employment Outcomes

In addition to educational attainment, Clausen also found that adolescent planful social competence was positively related to occupational direction and attainment, income, and job stability.[28] The composite measure of competence was, statistically related to higher occupational attainment over the whole career controlling for parental SES and IQ. Adolescent planful social competence accounted for approximately half of the variance in occupational attainment. Educational attainment also significantly predicted later occupational status, a finding that is supportive of the notion that cumulative competence is also related to positive later life outcome.

[28] Among women, adolescent planful competence did not significantly contribute to occupational attainment, however, educational attainment did have a significant effect.

Laub and Sampson (1998) also found evidence supporting an effect for cumulative competence, measured as educational attainment at age 25, on socio-economic attainment at age 32 for the delinquent boys, and ages 32 and 47 for the non-delinquent boys. The effect of adolescent competence remained significant even after including educational attainment for the sample of delinquent men only.

In another longitudinal study, Paternoster, Brame and Farrington (1998) used data taken from the Cambridge Study on Delinquency to examine the impact of adolescent competence on adulthood employment. The sample consisted of 411 boys born in London in the early 1950s. Their results indicated that adolescents who were considered punctual, popular and not lazy were more likely to be employed and report satisfactory employment at age 32, net of self-control.[29]

Clausen also found that high levels of adolescent planful social competence was related to more orderly careers, which he defined as one in which a person expands upon prior skills and training and advances in responsibility and prestige over time. Although adolescence is often marked by experimentation, Clausen argues that those adolescents that realized that period of time was also one of preparation for the future had a better idea of the type of career they wanted, and were better able to put themselves in a position to achieve those goals. Additionally, many of the men who were highly competent in adolescence also derived a sense of identity from their chosen occupations, and were more likely to report satisfaction with their job as compared to those men low in adolescent competence.

Using data taken from the Dunedin Birth Cohort Study, Roberts, Caspi and Moffitt (2003) examined the relationship between changing work experiences and pre-

[29] Respondents were considered employed if they were employed 10 months prior to the interview.

established personality traits. They (2003:590) found that those who scored high on sociability, positive affect (or "niceness") scales at age 18 were more likely to report work success and satisfaction at age 26. High scores on the achievement and social potency scales (e.g., agency) were related to increased work involvement. Perhaps more interesting is their finding that employment experiences, in turn, had an independent effect on perceptions of sociability, achievement and social potency. The authors state that the very traits that select people into particular work relationships and experiences are accentuated by those experiences, leading them (2003:592) to conclude, "Work experiences may alter personality; they make us more of who we already are."

Summary

Several studies have found that social competence is related to many behaviors and life outcomes, some of which include but are not limited to: educational attainment, employment and employment quality and stability (Shriner, 2000; Paternoster et al., 1998; Clausen, 1993; Laub and Sampson, 1998) substance abuse and depression (Nezu et al., 1989; Caplan et al., 1992), and teenage pregnancy (Furstenberg et al., 1989). Moreover, measures that capture cumulative competence using academic and educational achievement are also related to positive life outcomes such as occupational attainment (Farkas, 2001).

Social Competence and Criminal Offending

Several studies have indicated that competence accrues developmentally such that competence increases with age and experience (Clausen, 1993; Farkas, 2003; Harter, 1989). Thus competence accrues over time in a process similar to that of maturation and facilitates the transition to adulthood. For example, Clausen states (1993:23):

> "Maturity tends to bring increased skills at assessing what one must do to achieve success and smooth relationships with others. As we get older, we are more inclined to think of consequences before acting. Therefore, the attributes that distinguish highly competent adolescents from their peers are less likely to differentiate them in the later years. However, those who have the attributes in adolescence will better prepare themselves for adult roles and will select, and be selected for, opportunities that give them a head start. They get the scholarships in college and the best starting jobs; they choose and are chosen by promising (competent) spouses. Thus, we are dealing not only with the importance of personality attributes but with the strategic importance of an early attainment of competence in processes of social selection."

Clausen's quote points to a couple of important issues regarding adolescent competence. First, he notes the significance of the timing of competence development by emphasizing the advantages of the early attainment of competency skills for social selection, thereby implying a cumulative process in which benefits accrue. Adolescents who develop and exhibit competence at an earlier age are more likely to reap the benefits of such skills at each subsequent age as compared to less competent adolescents of the same age. Second, he also highlights the dynamic nature of competence development throughout the life course by alluding to increasing levels of competence over time within individuals, even those individuals that initially had lower levels as compared to their peers. Both points suggest that competence accumulates over the course of age and

experience. Note that Clausen's point emphasizes that competence is not immutable and can increase over time.[30]

There are very few studies that have examined how changes in social competence are related to changes in delinquency and criminal offending over time. Most prior studies examine the effects of social competence established in early childhood or adolescence on subsequent development or outcomes. The few that exist are less than ideal in terms of methodological rigor and as a result provide little evidence as to the causal import of competence for future criminal offending. Nonetheless, they provide the starting point for the current dissertation and they have indicated that competence and antisocial outcomes are indeed empirically associated with each other. In addition, several studies within the psychology literature have also found that there is a negative correlation between social competence and aggression or other externalizing behaviors in childhood (Epstein et al., 2004; French and Waas, 1985).

Although the current study focuses exclusively on the relationship between competence and reductions in offending, it is important to note that the presence of the cognitive and non-cognitive skills which combine to form competence does not inevitably lead to pro-social, conventional outcomes. Social competence merely refers to the skill set which *facilitates* successful individual action within social interactions, the qualitative, subjective nature of the individual choice making and action is not constrained to those that are pro-social in nature only. Narratives from Steffensmeier and Ulmer (2005) and Laub and Sampson (2003) indicate that indeed competence may be related to persistence and increases in criminal offending over time. Many of the men in

[30] Although not highlighted by Clausen, if competence is considered a dynamic attribute that is malleable over time, it is plausible and logical that competence may also "get worse" as well.

their sample who persisted in criminal offending late in life did so intentionally and purposefully (Laub and Sampson, 2003) and some criminals who persist in criminal offending were able to do so, undetected, because of the cognitive and social skills they possessed (Steffensmeier and Ulmer, 2005). I review only those studies that have examined the effect of social competence on later levels and reductions in criminal offending.

Palmer and Hollin (1999) examined the effects of social competence on self-reported delinquency among a sample of convicted young offenders between the ages of 13 and 17 years of age (n =42). Their measure of social competence was taken from the Adolescent Problems Inventory scale (API; Freedman et al., 1978), a survey designed to assess situation specific social skills among adolescents, and delinquency was measured through the use of Elliott and Ageton's (1980) self-reported delinquency (SRD) scale. The SRD scale asks respondents to report whether they had engaged in a number of different offenses in the past year, and then to provide an estimate of how often they committed those offenses. Results from bivariate correlations indicate that social competence was negatively related to the count ($r = -.49$, $p<.001$) of self-reported delinquency. Although the authors also found evidence that adolescent social competence significantly contributed to the variation in self-reported delinquency, there were a couple of problems associated with their analysis. First, it is likely that the model suffers from omitted variable bias, as the only variables included in their stepwise regression was the total API score and two other variables that represented transformations of the responses from the API. Second, although the regression findings indicate an empirical association between competence and self-reported delinquency, it

does not shed any light on the issue of causal effects of competence on subsequent self-reported delinquency. The relationship may be spurious as temporal ordering was not taken into consideration and there were no controls for prior offending, nor observed or unobserved propensity to offend.

Kuperminc, Allen and Arthur (1996) also used the API to examine the relationships between social problem-solving competence, self-reported autonomy and relatedness and delinquency among a sample of high risk youth (N=80). Prior research has indicated that adolescent autonomy and relatedness, defined as the ability to relate with others, is linked to the development of social competence (Greenberger, 1984; Gavazzi et al., 1993). Although academic competence was not statistically related to delinquency, youths who reported greater social problem-solving skills self-reported fewer delinquent acts ($b = -.33$, $p<.01$).

Apel (2001) included far more control variables in his cross-sectional study examining the effects of competence, measured as autonomy and social responsibility, on the probability of engaging in delinquency, delinquency variety, and frequency of delinquency. Controlling for pre-existing individual differences, family background, neighborhood context, and demographics, results indicated that social responsibility, was not significantly related to any of the outcomes, however, a higher degree of autonomy was positively related to all delinquency outcomes.[31] An interaction term of the two components provided mixed results across the delinquency outcomes, but strongly suggested that adolescents ranking high on autonomy and low on social responsibility

[31] Full set of controls included age, gender, race, tendency to lie/cheat, school trouble, rebelliousness, antisocial peer influence, pro-social peer influence, broken home, household size, urban residence and neighborhood employment.

were more likely to offend as compared to adolescents with low autonomy and low social responsibility.[32] Perhaps these findings are not surprising in light of Staff and Uggen's (2003) study which indicated that employment which encouraged autonomy among adolescents resulted in increased delinquency.

Paternoster and colleagues (1998) also examined the effect of adolescent social competence measured at age 14/15 on the number of convictions at ages 15 to 18, 19 to 24, 25 to 32 and 33 to 40. They found that after controlling for initial levels of self-control, competence was significantly related to convictions at all time points. It is important to note that they did not include any other control variables including unobserved propensity towards antisocial behavior.

Using the data set originally compiled by Sampson and Laub (1993; Laub and Sampson, 2003), Doherty (2005) expanded upon their study by examining the effects of an interaction between adolescent competence and binding life events on short (ages 25 to 32) and long term (ages 25 to 70) offending patterns. The concept of binding life events is intended to more fully capture the social bonds that may arise from involvement in conventional, high quality social relationships. For example, Doherty's measure of binding life events includes stable marriage, honorable military service, and stable employment. Results from the analysis indicated that the effect of social integration on short and long term criminal offending was not conditional on adolescent competence.

[32] The measures representing autonomy included: freelance work in prior year, earned income and went on an unsupervised date. Social responsibility consisted of: do homework, extracurricular activities, and read a book. Some of these measures arguably represent outcomes such as earned income, engagement in extracurricular activities.

Summary

There are few existing studies within criminology regarding the relationship between social competence and involvement in conventional social relationships or changes in criminal offending patterns over the life course. Those that do exist provide few controls for both persistent observed and unobserved heterogeneity. The study of social competence in relation to changes in offending patterns over time may provide more information regarding the underlying causal mechanisms through which external life events are related to reductions in offending. Social competence may shed some light on why only certain offenders are able to seek out, or are exposed or offered conventional opportunities for change.

The Current Study

The current dissertation seeks to add to the growing literature on changes in criminal offending patterns over time by examining the effects of social competence on involvement in employment and reductions in criminal offending. The literature reviewed in the previous chapter suggests that the concept of social competence may be useful for explaining later involvement in employment and changes in criminal offending over time. Although prior studies of social competence and criminal offending have been informative and serve as the starting point for the current study, the design and methods incorporated in the current study addresses some of the limitations of prior studies in several ways.

Whereas most prior studies have relied on cross-sectional designs and tended to focus on between-individual relationships between social competence and the level of

offending, the current study benefits from a longitudinal design and also examines within-individual effects of competence on delinquency over time. Additionally, social competence has been treated as a static concept only, measured at one only point in time, whereas the current study explores both a static and dynamic measure of competence. Although both measures are consistent with previously articulated developmental explanations of social competence, a dynamic measure is more suitable for examining the causal effects of competence. Perhaps most troubling, however, is the fact that prior estimates of competence effects on offending are potentially biased as few studies vigorously control for persistent unobserved heterogeneity. Failure to control for unobserved time stable individual differences between people can result in biased estimates of time-varying predictor variables. This latter point is especially salient for studying changes in offending over time since variables that reflect transitions from one state to another (i.e., changes in employment status) are usually a central point of interest. The current study includes substantially more control variables for observed differences between individuals and statistical controls for unobserved differences when the data allow. This approach results in a much more rigorous and thorough examination of the effects of adolescent competence on criminal offending over time.

Hypotheses

Based on a review of the existing theoretical and empirical literature, I test the several hypotheses. Several studies have indicated that competence or competence related characteristics established early in life are related to positive later life outcomes, especially regarding educational and occupational attainment (Farkas, 2001; Clausen,

1993). Children that are perceived as highly competent in early adolescence reap early advantages that accrue over time. Competence perceived by teachers, as well as other educational or school related outcomes, is a precursor for outcomes related in the job market (Farkas, 2001). Based on this literature, I hypothesize that higher levels of social competence established in adolescence is significantly associated with a greater probability of involvement in employment and hours worked while employed. In particular:

> *Hypothesis 1a:* Higher levels of perceived social competence during adolescence are significantly associated with an increased probability of being employed later in life.
>
> *Hypothesis 1b:* Higher levels of perceived social competence during adolescence are significantly associated with subsequent job stability.

Research indicates that particular traits considered to reflect competence such as dependability, responsibility, and ability to get along with others are also associated with lower levels of criminal offending (Hay and Forrest, 2006; Felson and Staff, 2006). The vast majority of existing research on competence and life outcomes examines the effects of early competence on differences in conventional life outcomes between individuals later in life (for a review see Farkas, 2001). I hypothesize that higher levels of perceived social competence in adolescence are significantly associated with lower levels of offending over time. I test two hypotheses pertaining to the between individual effects of competence on criminal offending:

Hypothesis 2a: The average level of social competence established in adolescence is significantly associated with a lower level of offending over time.

Hypothesis 2b: The growth rate of social competence in adolescence is significantly associated with a lower level of offending over time.

I also examine the within-individual effects of competence on criminal offending over time, expecting that increases in within-individual perceived social competence are associated with within-individual changes in criminal offending.

Hypothesis 3a: Within-individual increases in perceived social competence are associated with within-individual decreases in criminal offending, controlling for both unobserved and observed heterogeneity in offending.

Earlier I define cumulative competence as the process in which competence accrues over time in the form of tangible competence related outcomes. Outcomes such as educational achievement and educational attainment reflect a certain degree of competence and these outcomes are also related to later success in the job market (Farkas, 2001). Moreover, a significant body of work has indicated (Felson and Staff, 2006; Maguin and Loeber, 1996) that academic performance is related to lower levels of delinquency. This dissertation places these findings within the context of "cumulative competence", and views these outcomes as resources that reflect the individual's ability to take advantage of those opportunities that lead to reductions in offending. Thus:

Hypothesis 4: Increases in within-individual perceived cumulative competence, measured as teacher reported perceived academic performance, will lead to decreases in criminal offending over time.

Chapter 3: Methodology

Data and Current Sample

I use data from the Pittsburgh Youth Study (PYS), a prospective longitudinal study of the development of anti-social and delinquent behavior among inner city boys from childhood to adulthood. Specifically, I examine a sub-set of the original data which contains information on 1,009 individuals from the youngest (n = 503) and oldest (n = 506) samples of the PYS. The youngest sample has approximately 18 total waves of data, resulting in approximately 13 years of data. The oldest sample has 16 total assessment periods and results in approximately 12.5 years worth of data.

Data collection for the PYS study began in 1987 with a random community-based sample of boys enrolled in first, fourth and seventh grades of public schools in Pittsburgh, PA (referred to as the youngest, middle and oldest sample, respectively; see Loeber et al, 2002 for a complete review). Approximately 85% of the families randomly selected chose to participate at the initial screening assessment. Using information gathered from caretaker, teacher and youth reports, the top 30% of the most anti-social boys were selected to participate along with 30% of boys randomly selected from the initial sample. The PYS has spanned approximately 14 years and had a retention rate of at least 80% at each assessment.

There are several advantages to using the PYS data for the questions posed in the proposed study. First, although the PYS uses a representative sample of boys from the Pittsburgh area, it also over-sampled boys that were at high risk for antisocial behavior. Thus, while the sample is based on the general population, the over-sampling of boys

with increased delinquency risk factors should allow for more variation in antisocial and offending behavior. Second, several studies have been published using the PYS data, much of which indicates stability in offending behaviors over time that are largely due to early childhood predispositions and family factors. This facilitates the examination of whether social competence influences later offending patterns independent of several well known correlates of offending. Third, the PYS used several psychological assessment instruments, such as the Child Behavior Checklist, Teacher Report Form, and Caretaker version of the Child Behavior Checklist—all of which have been validated extensively within the psychological literature and provide well-known indicators of social competence. The PYS also has multiple self-reports (i.e., teacher, caretaker, individual) of competence, antisocial/offending and involvement in social relationships. Especially important is the availability of self-report data on offending as compared to official record data. Finally, recent studies of the PYS have found that there is also variability in offending patterns over the observational period covered (approximately 12 to 13 years) such that the examination and explanation of changes in offending is feasible (Stouthamer-Loeber et al., 2004). The PYS also focuses on the portion of the life span which makes it useful for examining structural role transitions that occur between adolescence and young adulthood. For all these reasons, the PYS is suitable for examining the relationships between social competence, involvement in employment and criminal offending over time.

Timing of Data Collection

Table 1 presents the assessment wave, the approximate age of youth at each period, years since screening and year of interview assessment in the PYS.[33] Table 2 presents the timing of data collection for relevant instruments. During the first several waves of the study, the respondents were interviewed every six months, however, during later waves respondents were interviewed annually. Of importance to the current study is the timing of data collection for particular variables, such as competence, employment and offending. To conduct a thorough study of within-individual changes in competence over time on corresponding changes in employment and offending requires overlapping assessment points on all variables at each time point. However the design of the data collection for the PYS is staggered, such that competence measures are taken early in time (approximately waves 1 through 14 for the youngest, and waves 1 through 7 for the oldest), employment measures are taken later in time (approximately wave 13 through 18 for the youngest, and waves 7 through 16 for the oldest) and criminal offending data is taken at all points in time.[34] The structure of data collection is therefore problematic for a complete study within-individual of changes in competence, employment and offending over time.

For example, information regarding employment was collected starting at waves 13 and 7 for the youngest and oldest samples, respectively. Competence measures were collected during the early portion of the observational period, and there is little overlap in

[33] There is variation in the age ranges at each assessment period as a result of sample selection based on grade level at the time of enrollment.

[34] It is important to note that although the data collection design is not ideal for a complete study of within-individual changes over time on variables of interest, that the structure of data collection timing is nonetheless useful and, perhaps more importantly, theoretically justifiable. In particular, many of the variables measured early in the observation period (and not later) reflect early childhood predispositions or traits (e.g., self-control, competence). There is substantial literature to indicate that these childhood predisposition or traits are most dynamic during early adolescence and become and remain relatively stable over time.

data collection timing between the two measures. As a result, including measures of employment in an analysis of which focuses solely on within individual changes (i.e., a fixed effects panel approach) is not practically useful. Of the total number of person-observations (Nt = 13,217), approximately 800 person-observations have valid contemporaneous data on all time-varying predictor variables. The extreme loss of cases, resulting inefficiency and the lack of variation (by design) calls into question the utility of modeling within-individual changes between competence and employment in this data. An examination of between individual effects of competence and employment however is theoretically reasonable and practically feasible.

Variables

Descriptive statistics for all measures for the pooled sample of youth as well as the disaggregated samples are presented in Tables 3 through 5. A list of the variable definitions and corresponding survey items are provided in Table 1A in the Appendix. Table 3 presents the demographics for the full sample of respondents. Approximately 55% of the total sample (n = 1009) is African American, followed by 43% white, .8% Asian, .3% Hispanic and 1.1% identifying as "other". The race distribution in disaggregated samples is fairly similar (see Table 4 and Table 5). Age ranges vary from an average age of approximately 11 at the first available assessment used in the current study, with a minimum of 6 years of age to a maximum of 17 years of age. At the final assessment for the oldest sample (see Table 4), the average is approximately 26 years of age, and the minimum and maximum is approximately 24 and 29 years of age. The average age of the youngest sample at the final assessment is approximately 20 years of

age (see Table 5), with a minimum and maximum of approximately 18 and 23 years of age.

Social Competence

I use data from teacher self-reports to create composite scales reflecting social competence. In Chapter 2, I argue that social competence, as perceived by others and as perceived by the individual is important for explaining involvement in employment and offending patterns. Competence, as perceived by others, reflects the extent to which other people perceive the individual as appealing or worth investing in by providing resources or opportunities.[35] The primary multivariate analyses in the current paper utilize teacher reports of social competence to create the various measures of competence. However, in the section that follows I discuss competence items taken from both teacher and caretaker self-reports to establish the validity and reliability of the competence items conceptually and empirically, and to bolster the justification for using the particular competence items.[36]

Teachers and caretakers were asked to rate the following eight statements as "not true", "sometimes true", or "very true": child fails to complete assignments, has difficulty following directions, poor school work, acts too young for their age, behaves irresponsibly, doesn't get along with others, not liked by others and quarrels with other children easily. Items were recoded and re-labeled such that higher scores reflect higher

[35] Youth self-reported competence may serve as a proxy for one's own perception of their ability to impact their social environment and obtain conventional opportunities. Unfortunately, youth were not asked identical questions, only a subset of the questions used for teacher and caretaker competence are asked of the youth. As a result, the role of youth reported competence is not examined in the current study.

[36] Future research should validate the findings presented in the current dissertation with caretaker reports of social competence, as well, as youth self-reported competence.

levels of competence. Timing of data collection varies with the measurements taken at wave 1 through wave 14 and wave 1 through wave 8 for the youngest and oldest samples, respectively (see Table 2).

Tables 6 and 7 show the average level of each social competence item pooled across waves at both the person level (within) and the person-observation level (overall) for teacher and caretaker reports. More importantly, the final columns in Table 6 and Table 7 indicate the proportion of respondents that exhibited some degree of change on each social competence item during the observational period. Generally speaking, teachers and caretakers reported more changes in perceived abilities in the completion and quality of assigned tasks and in maturity over time. For example, approximately 93% of respondents were perceived as varying in their ability to complete tasks over time (Table 6). The extent to which one is viewed as likeable remained fairly consistent for the majority of respondents, with caretakers reporting approximately 39% of respondents having changed in perceived likeability over time (Table 7). Respondents exhibited more change on items reflecting productivity and cognitive investment over time as compared to items reflecting sociability or likeability. This general pattern is consistent across teacher and caretaker reports.

Validity and Reliability of Competence Measures

One method of determining the validity of competence measures is through construct validation (Carmines and Zeller, 1979). An indicator is considered valid to the extent that is captures what it is intended or purported to capture. Theoretically, competence should be related to both self-control and negative emotionality. This is

because the development and exercise of competence requires a modicum of foresight and impulse control. Higher levels of social competence should be associated with lower levels of low self-control and negative emotionality, as well problem behavior and delinquency. Additionally, the literature has indicated that higher levels of competence are associated with higher levels of family resources (Farkas, 2003; Amato, 1986) and should increase with age (Clausen, 1993). Table 8 indicates that indeed competence and its known correlates are operating in the theoretically expected direction, providing evidence that the current measure is valid. For example, competence is negatively correlated with delinquency and positively correlated with employment status. Finally, many of the items which comprise the competence scale have been used in several previously established and validated competency scales (see Chapter 2; Epstein, et al., 2001).

Results from reliability diagnostics also indicate that the items used to construct the competence scales provide consistent measurements across observational periods and teacher and caretaker reports. One approach for assessing reliability is examining the internal consistency of the items, in particular through the use of reliability estimates such as Cronbach's alpha (Carmines and Zeller, 1979; Cronbach, 1951). Table 9 presents the Cronbach's alpha for each scale across caretaker and teacher reports for each wave. In all cases, reliability coefficients are above .70 and in most cases above .80. Virtually all of the social competence items from the teacher and caretaker reports are significantly correlated with each other at each time point. It is worth noting that Cronbach's alpha assumes that items within a scale are parallel measurements, which refers to the extent to which each item of the scale captures the latent construct equally and the extent to which

each item reflects only one latent construct (Carmines and Zeller, 1979; Armor, 1974). However, even if the items are not parallel, the true reliability of a scale will never be lower than alpha (Novick and Lewis, 1967). Thus, Cronbach's alpha is considered a conservative estimate and represents the lower bound of reliability estimates (Carmines and Zeller, 1979; Novick and Lewis, 1967). An alternative approach that is designed to examine the reliability of a scale items that are not parallel is factor analysis.

Factor analysis specifically takes into account the fact that items may reflect a particular latent construct or factor unequally and also allows for the possibility that the items reflect multiple factors. In addition, factor analysis is also useful for examining the validity of items as well, provided that there is clear theoretical guidance at the outset (Carmines and Zeller, 1979; Nunnally, 1978). Table 10 and Table 11 display results from a factor analysis of the caretaker and teacher competence items at each wave of the study. The theoretical specification of competence used in the current study is best understood as a one factor model for both theoretical and empirical reasons. Theoretically, social competence is believed to reflect a set of traits or skills that facilitate goal-directed behavior within the social context. A one- factor model is consistent with this conceptual approach. There is empirical support for a one factor model as well, as each item loads highly on one factor. The factor loadings are all above the standard cut-off point of .5 (Nunnally, 1978).

However, when the factor model was allowed to extract more than one factor, two factors emerged with Eigen values over 1. Table 12 presents the factor loadings from the two-factor model. In most cases, the first three competence items (complete tasks, follows directions, good school work) loaded highly on one factor, the third and fourth

competence items (does not act too young for age, behaves responsibly) cross-loaded highly on both factors, and the last three items loaded highly on the second factor (gets along with others, liked, does not quarrel easily). The two factors may represent dependability/productivity and sociability components of competence. For most time periods, the two factor model explained approximately 63 to 71% of the variance in the latent constructs. Items from the teacher reports explain a larger portion of the variance in the latent construct, as compared to the portion of variance explained by items in the caretaker reports. Supplemental analyses are also conducted using scores from the two-factor model to determine if a particular factor is more influential for explaining employment and offending patterns.

I create several operational measures of perceived social competence, those measures included in the majority of primary analyses presented are: the social competence scale and the average level of social competence, the growth rate of social competence, the 1-factor model score and the 2-factor model scores, referred to as dependability and sociability.

The first measure of social competence reflects an average summary measure of social competence at each observation period for all individuals that have valid data for at least 75% of the social competence items.[37] This measure of social competence is used in all analyses that examine within-individual effects of competence on outcomes. The average level of social competence is a variation of the time-varying social competence

[37] An average-based composite of social competence retains more person-observations as compared to a simple summed scale or factor score. Thus, the main appeal of an average-based composite scale is the ability to accommodate a certain degree of missing data items for each individual. The approach of taking a certain percent is common within the psychometrics literature and those criminological studies that rely heavily on such principles for scale construction (Arthur et al., 2002; Loeber, et al forthcoming). The cut-off point used in the current study is actually much more stringent compared to other approaches which demand that approximately 30% of the items are available.

scale and is a summary measure which captures the average level of social competence during adolescence. The average level of social competence is used as the *primary* explanatory variable in the analyses which examine between-individual effects of competence on employment and offending over time.

The second measure reflects the growth rate of social competence from the initial teacher reported assessment to the last assessment. I used an unconditional hierarchical linear growth model to generate social competence growth rate scores for each individual (Raudenbush and Bryk, 2002). In this case, the use of hierarchical linear modeling facilitates the creation of a growth score of competence by modeling the growth of competence from the first assessment to the last assessment.[38] The growth rate score is used as an explanatory variable in the analyses which examine between-individual effects of competence on employment and offending over time.[39]

The third and fourth competence measures reflect the scores from the 1-factor and 2-factor models explained in the aforementioned section. Both factor scores are used as an explanatory variable in the analyses which examine between-individual effects of competence on employment and offending over time.[40]

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[38] Practically speaking, this is modeled by using an unconditional growth curve model predicting competence at each time point for each person at the level 1 equation. A "time" variable is included in the model as well and is defined as the number of assessment periods that had elapsed from the first assessment period (see Raudenbush and Bryk, 2002:164 for an example). Thus, the intercept term at the level 1 equation represents the individual's competence score at the first assessment period (initial status), and the slope (time variable) represents the growth of competence from the first to last assessment period.

[39] The growth rate score is not used in the within-individual analyses because, as will become evident in Chapter 4, there appears to be little empirical reason to do so.

[40] The factor scores are not used in the within-individual analyses presented in the current study for practical reasons. Specifically, the factor scores were created in a manner that demanded a subject and all time points have valid data on all relevant questionnaire items, thus cases and time points were lost using this approach. The within-individual analysis uses the summary measure of competence to retain cases and person-observations. Future analyses will create a summary scale that represents the factor components

Cumulative Competence

There are several forms of cumulative competence. This study focuses on what is referred to as performance-based measures such as teacher rated academic achievement.[41] Conceptually, cumulative competence reflects outcomes of competent behavior. In that regard accomplishments related to achieving certain socially acceptable achievements can reflect an outcome of socially competent behavior. For each time point, I combine items that capture all prior teacher assessments of the youth's reading, math and verbal performance in the past 6 months and a measure of grade retention into a standardized summed scale. For each topical area, teachers were asked if the student was performing: far below grade level, somewhat below grade level, at grade level, somewhat above grade level and far above grade level. The measure of grade retention is dichotomous. All items were converted to standardized scores to facilitate scale construction. Table 13 shows the average level of teacher reported cumulative competence for each item pooled across all waves of observation. With the exception of grade retention, teacher reports indicate that the majority of respondents exhibited change on all cumulative competence items over time.

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from the factor analysis (i.e., dependability and sociability) and examine the effects of changes in competence dimensions on changes in within-individual level offending.

[41] There are also other variables in the PYS that are arguably reflective of cumulative competence, such as involvement in extracurricular activities, social or civic clubs. For the purposes of the dissertation, I only tap into one manifestation of cumulative competence. Additionally, the PYS contains measures of educational attainment that were taken from respondents when they reached age 18 approximately. There are approximately two waves of subsequent data for the youngest sample, and six waves for the oldest. Given the relatively limited number of follow-ups after the inclusion of the educational attainment measure and the current study's focus on the effects of competence over time, the primary analysis relies on the earlier measures of academic achievement. However, this issue is one that will be included in future research stemming from this dissertation.

Table 14 displays Cronbach's alphas for the five items at each observational period. All estimates of item reliability are above .75 and increase over time, thus indicating that the items are suitable for combining into a single scale. For the analysis, cumulative competence scores at each time point reflect previous and current scores.[42]

Employment

Table 4 and Table 5 present descriptive statistics for the youngest and oldest samples. This study is also focused on assessing involvement in employment. The primary measure of job involvement is self-reported annual job status and current job status. Additionally, I also explore the effects of competence on job stability by examining the number of hours worked while employed. Of 918 respondents, the vast majority (861) reported being employed at last once during the study. Approximately 4% and 1% of the youngest and oldest samples did not report having a job at any of the assessments. Respondents reported being employed an average of five times during the observational period, with a minimum of once and maximum of 10. The youngest sample (n = 476) reported being employed an average of three times, and the oldest (n = 442) approximately eight times throughout the period. If the respondent reported employment they were asked how many hours they worked while employed.

[42] Since the cumulative competence measure reflects an accumulation of teacher perceived academic achievement over time and the separate wave specific measures are in standardized form, a constant was added to the standardized score at each observational period to convert negative values to positive values such that summing scores over time results in an interpretable value. The relative ranking of the standardized cumulative competence score is retained since a constant, equal to the lowest absolute value at each wave, is added to each respondents score. For example, if at wave 2 the standardized cumulative competence scores range from -2.33 to 3.33, then 2.33 is added to each score to obtain a value that is suitable for summing subsequent cumulative competence scores.

Antisocial behavior, Delinquency and Crime

The PYS uses the Self-Reported Antisocial (SRA) Behavior Scale for the youngest sample for the first seven waves, and the Self-Reported Delinquency (SRD) Scale thereafter. The oldest sample is administered the SRD for each of wave of observation. The SRA and SRD were designed to reflect the developmental nature of antisocial behavior over time; items differ as a result of creating age appropriate measures of antisocial and criminal behavior. The SRA and SRD consist of approximately 32 and 36 items, respectively, which capture both prevalence and frequency of offending. The questionnaires include items which asked respondents if they had ever broken or destroyed property, taken something from a store without paying for it, taken something from a building without paying for it, taken something from a car that did not belong to them, snatched someone's purse or wallet, hit someone with the intention of hurting them, avoided paying for things such as food or movies, sold drugs, and stolen items worth a certain price. Broadly, questionnaire items tap property, violence and substance abuse offenses. (See Appendix for complete list of items in SRA/SRD).

Table 15 presents the descriptive statistics for all delinquency outcomes used in the current study at both the person-level and person-observation levels.[43] I use three delinquency outcome measures in the current study: a general delinquency variety scale which captures the prevalence of problem behavior and delinquency, a theft variety scale

[43] Respondents were also asked if they had ever been arrested in the reference period. Table 3 shows the number of respondents arrested at selected waves. At the second observational period (wave 2), approximately 7.2% of the oldest sample reported ever being arrested, with an average of 1 arrest. At the 16th wave (n = 861), approximately 29% of the youngest and oldest sample had been arrested. Overall, this sample has had considerable involvement with criminal activity as approximately 57% of respondents from the pooled sample (n = 1009) reported being arrested in at least one of the interview periods.

(e.g., stealing, breaking and entering, joyriding), and a violence variety scale score (e.g., hitting teachers, parents, friends, throwing rocks/bottles). Table 1A presents a full list of all the delinquency items included in the variety scales.

It is important to note that general variety scale scores usually tend to capture relatively minor criminal offending. In the current case however, the correlations between the general delinquency variety scale and an existing scale which measures the severity of offending ranges from .5 to .8 across all waves. Although the two scales are significantly and strongly associated with each other, the association is less than perfect indicating that the bulk of self-reported delinquency in the delinquency variety scale reflects less serious criminal activity.[44]

Nonetheless, evidence indicates that variety scale scores of the prevalence of delinquency are sufficiently valid for capturing relative involvement in criminal offending and provide more reliable and valid estimates of offending as compared to other measures of offending (Hindelang, Hirschi and Weis, 1981). The main disadvantage of such scales is that they do not capture or ignore variation in the frequency of engaging in certain delinquent acts and thus potentially ignores meaningful distinctions between response patterns (Osgood, McMorris and Potenza, 2002). However, Osgood and colleagues (2002) provide evidence from a comparison of traditional variety score methods to more sophisticated approaches (i.e., item response theory) which indicate that the number of different offenses committed is more

[44] The current research is concerned with first establishing that social competence is influential for explaining both involvement in employment and criminal offending over time. If indeed an effect is found, it is reasonable and imperative to examine the effects of social competence on more nuanced measures of criminal offending, such as crime severity (see Loeber, et al., forthcoming). Although the current study conducts uses crime specific outcomes as well (i.e., property and violence variety scales), I do not examine the effects of competence on the seriousness of offending in the current study and will do so in future research.

informative about delinquency as compared to the number of times an offense is committed. Similarly, using delinquency data from the National Longitudinal Survey of Youth (NLSY), Sweeten (2006) found that a delinquency scale based on the IRT method was highly correlated (.93) with a corresponding delinquency variety score scale.

Control Variables

Self-control. Self-control is measured using data from the caretaker and teacher reports. Teachers and caretakers were asked to assess the child's self control by considering whether the following two statements applied to the child: you act without thinking and demands must be met immediately. Both items adequately and solely capture a short term time orientation that is emphasized by recent articulations of Gottfredson and Hirschi's conceptualization of self-control. Items are coded such that higher scores reflect lower levels of self-control. Items from the teacher reports are averaged to create composite scales representing self–control.

A note regarding the potential for extreme multi-collinearity must be mentioned given both the theoretical and empirical association expected between self-control and social competence. Significant associations between social competence and self-control are indeed expected as the constructs are hypothesized to be related yet distinct concepts. Multi-collinearity diagnostics indicate that although collinearity exists, there does not appear to be extreme collinearity such that the significance of the corresponding estimates would be adversely affected or more importantly, the statistical model is unable

to converge.[45] Nonetheless, special attention is paid to the possibility of high multi-collinearity when interpreting results from multivariate models.

Parental supervision. Evidence suggests that parental supervision is related to both the development of social competence and criminal offending in children (Baumarind, 1978). Parental supervision is measured using a pre-existing summary scale created by combining parental supervision items taken from caretaker and youth reports (Loeber and Farrington, 2001). The items used to create the parental supervision scale include: Leaves note when going out, companions are known to caretaker, knows how to reach caretaker, says time he will return. Items are coded such that higher scores reflect lower levels of parental supervision.

Peer delinquency. There is also a clearly established empirical association between peer delinquency and self-reported offending (Akers, 1998; Warr, 2002) as well as evidence which suggests that certain aspects of perceived competence, such as likeability, is related to peer delinquency (Pardini et al., 2006). I use a contemporaneous measure of peer delinquency scale that is that captures the number of friends the youth has that have engaged in the following delinquent activities: skipped school, lied/disobeyed/talked back, damaged property, stole <$5, stole $5-100, stole >$100,

[45] Correlations between each the social competence scale and self-control scales at each time point range from -.4 to -7. These correlations indicate that indeed the constructs are related however, there is still a considerable and non-trivial amount of variation (approximately 50%) that is not shared between the constructs. Additionally, the rule of thumb for detecting problematic collinearity is to determine whether the correlation exceeds .80 (Barry and Feldman, 1985). However, this approach is not adequate in some cases, typically depending upon sample size for example. An alternative test is to regress each independent variable on all independent variables included in the model and assess the R squared (R^2) for the regressions. If the R^2 is close to 1.00 then high multi-collinearity exists. Results from this approach indicated that the R^2 is approximately .65 at each time point in which all independent variables are available. Although the latter approach is preferable, both approaches suffer from problems associated with having an essentially arbitrary cut-off point (Barry and Feldman, 1985). For this reason, results from multivariate regressions including the potentially problematic constructs are also inspected to determine if specific variable estimates "bounce" significantly when including related correlates. Finally, it is important to note that multi-collinearity will not result in biased estimates; rather the standard errors and subsequent confidence tests are impacted.

broke into building, joyriding, hit to hurt someone, attacked with weapon, sold hard drugs, and used alcohol or drugs (Loeber and Farrington, 2001). Items are coded such that higher scores reflect a greater number of delinquent peers.

Additional control variables. I also include wave dummies to control for time trends, the age of the respondent, an age squared variable, a lagged delinquency variable when appropriate, SES as measured by the Hollingshead Scale and self-reported race of the respondent.[46] Race is recoded into two categories, African American and non-African American, and higher values of SES reflect higher levels of socio-economic status.[47]

Analytic Strategy

The primary focus of the current study is to examine the between-individual effects of competence on involvement in employment and the level of offending over time, as well as the within-individual effects of changes in competence on changes in offending patterns over time. The analyses in the current study uses all waves of data with the exception of the first wave, the screening assessment, which results in 16,141 person-observations. Of the total number of person-observations available, 14,338 person-observations for 1008 respondents have valid data on delinquency and criminal offending. Although this study is concerned with between individual effects of competence on employment and offending, another primary issue of focus is on the

[46] An exposure time variable was not included in the analysis because the questionnaire asked respondents to report activities that occur in the prior six months or year rather than the last interview. Nonetheless, there is likely still some variation in time between interviews that exists given the difficulty of tracking respondents down in a timely fashion.

[47] SES was collected from caretaker reports at waves 2 through 8. I create an average of the scores to reflect overall SES during adolescence.

within-individual effects of competence on changes in offending over time. This latter issue requires that individuals exhibit variation on the outcome variable. Of the 1008 respondents with valid data on criminal offending at each time point, 918 have variation in the delinquency and criminal offending over time, which results in a total of 13,217 person-observations. Of the 918 respondents with variation in the delinquency outcomes, 789 respondents with 6,517 person-observations had valid data to be included in the analysis. This resulted in approximately 405 respondents from the youngest sample with 6,517 person-observations and 384 respondents from the oldest sample with 5,418 data points.

There are several methods that are suitable for examining panel data, in particular levels of and changes in individual behavior over time. Frequently used panel analyses include the random and fixed effects models (Woolridge, 2002; Bushway et al., 1999; Gordon et al., 2005; Paternoster et al., 2006 Allison, 2005), as well as combined or mixed model approaches using techniques such as hierarchical linear models (Raudenbush and Bryk, 2002; Horney et al., 1995; Slocum, 2005; Bushway et al., 1999). Each approach provides advantages and disadvantages to the study of panel data. The various statistical approaches for examining panel data vary according to their assumptions, estimation techniques as well as limitations. Several researchers have suggested that multiple statistical approaches to modeling behavior over time be taken to determine if results are sensitive to model assumptions (Bushway et al., 1999; Raudenbush and Byrk, 2004; Allison, 2005). Accordingly, I use several approaches to examine the questions posed in the current study and provide a brief description of these techniques in the following section.

Generalized Estimating Equations (GEE). The form of modeling referred to as generalized estimating equations approximates a random effects model and is frequently used to examine both between and within-individual changes over time (Allison, 2005; Raudenbush and Byrk, 2004). Although similar to a random effects model, the GEE model is slightly different regarding assumptions (Zegler and Liang, 1986; Allison, 2005).[48] The random effects model uses both between and within individual variation, assumes that the error term is distributed normally in the population and that time-varying independent variables are not correlated with any unobserved heterogeneity (Allison, 2005; Greene, 2000). The GEE approach also uses both between and within-individual variation, however, makes no assumption about the person-specific error term or the process which generates dependence among observations (Allison, 1999). Both models are highly efficient since both use between and within-individual level variation. Finally, both models produce what is referred to as "population average estimates", which refers to an estimate which explains the effects on a general population if everyone's predictor variable increased by one unit (Allison, 2005). This is in contrast to what is referred to as "subject-specific estimates" which refers to estimates that explain what happens to a particular individual if that individual's predictor variable increased by one unit.

The major drawback to both approaches however, is that although the models are suitable for examining changes over time and adjusting for the dependence in observations, neither model controls for time stable unmeasured individual traits between

[48] GEE is a form of iterated least squares estimation (Allison, 2005; Zegler and Liang, 1986). Several researchers have suggested using the GEE approach to replicate results obtained with other panel models, especially if the purpose is to estimate the effects of time stable variables over time (Raudenbush and Bryk, 2004).

individuals because the between-person variation is contaminated with unmeasured heterogeneity (Allison, 2005). As a result, estimates of time-varying variables may in fact be biased estimates of change within individuals over time. The current study uses the GEE approach, as opposed to a purely random effects approach, as it makes fewer assumptions about the person-specific error term. Many researchers have also suggested using the GEE approach in addition to other analytical approaches that are focused on estimating both time stable and time-varying effects on behavior over time (Allison, 2005; Allison 1999; Raudenbush and Bryk, 2004). For non-linear models, population average estimates can be confounded with unobserved heterogeneity which leads to what is referred to as "heterogeneity shrinkage"—a tendency for coefficients to be biased towards zero (Allison, 2005; Raudenbush and Byrk, 2002). Thus, in the case of non-linear models it is important to generate subject-specific estimates as an added check on the robustness of empirical results.

Fixed effects (FE). According to Allison (2005), one of the strongest methods for isolating causal effects in the absence of an experimental design is to isolate and examine *within-individual* changes. The FE approach only uses within individual changes in the estimation and discards any between-individual variation. Thus each individual serves as their own control since all comparisons are made within individuals over repeated measurements. The fixed effects model controls for unobserved heterogeneity by creating a time constant intercept for each person in the sample which absorbs all individual specific factors which are constant over each wave (Woolridge, 2002; Allison, 2005). Persons are included in the analysis only if they exhibit change on the outcome variable and those person-observations which exhibit change in time-varying variables

contribute to the likelihood. All time constant variables are "swept" out of the model. Given the focus on within-individual changes over time only, the fixed effects model is considered an incredibly powerful and useful tool for isolating causal effects in observational studies (Allison, 2005). The major limitation of the fixed effects model is a by product of its most important advantage. Since the fixed effects model does not estimate coefficients for variables that do not have any within-in individual variation and essentially ignores all between person variations, there is considerable increase in sampling variability (Allison, 2005). The end result is that the fixed effects model tends to be highly inefficient and time stable covariates cannot be estimated using this approach.

An alternative approach that combines the best of both random and fixed effects approaches is often referred to as a hybrid approach (Allison, 2005) or a random effects approach which decomposes time-varying predictors into between and within individual components (Paternoster, 2003; Raudenbush and Bryk, 2002; Slocum et al., 2005).

Combined random and fixed effect approaches. Several researchers have used an adapted version of the pure random effects model or "hybrid approach" to control for time stable unobserved heterogeneity by decomposing all time-varying predictors into two parts which represent the between-person and within-person variation (Allison, 2005:101; see Paternoster, et al. 2003 and Gordon et al., 2005).[49] The first component represents the mean for the individual across all waves of observation and is time

[49] Allison (2005:33) notes that this hybrid approach combines the advantages of both fixed and random effects models. He states that such approaches should produce coefficient estimates that are similar to those produced by fixed effects models, however the test statistics and standard errors are different depending upon the type of estimation used. Again, random effects models that do not decompose time-varying into between and within-individual components do not control for stable individual differences due to unobserved heterogeneity (Allison, 2005).

constant, while the second component is the difference from the person specific means subtracted from each time-varying variable in each time period. The difference from the person specific mean should be a consistent estimate of the relationship between social competence and crime because it is no longer correlated with the time constant person specific part of the error term. The time constant person specific error component controls for time stable differences between individuals. This approach not only allows for an analysis of within individual change, but also between-individual differences as well.

This approach can also be taken using hierarchical linear modeling (Horney et al., 1995; Slocum et al., 2005; Hoffman and Cerbone, 2005). Following the approach taken by Horney et al (1995) and Slocum et al (2005), the HLM approach can obtain similar results by group-mean centering all time varying predictors at the level one equation and by allowing random variation in the average level of offending at the level two equation. Additionally, the HLM approach provides both population average and subject specific results.[50] The former is more salient for the study of within-individual changes over time, however the latter estimates are also quite useful for generalizing findings to the broader population. Finally the HLM approach also more fully utilizes the panel data available when examining the effects of between-individual variables on within-individual level variables by using both between and within-individual level variation.[51] For the purposes of the current study, the combined mixed model approaches are useful for examining

[50] Nonetheless, Raudenbush and Byrk (2004) have also suggested the use of alternative models to examine model assumptions and robustness, in particular, the GEE approach when the focus is on the effects of level 2 variables as the HLM approach makes more assumptions regarding the data.

[51] As opposed to merely discarding between-level or aggregate level information which occurs in the case of a poisson panel model incorporating robust standard errors.

both the between- person effects of social competence on the probability of employment over time, as well as within-individual effects of competence on changes in offending over time.

All of the above statistical approaches accommodate non-linear outcomes, such as binary and count data, thus they are applicable to the current study.[52] The overall general analytic goal is to examine the effects of the average level social competence on the level of and changes in offending, while controlling for levels of and changes in employment status. Practically, I do so by using a series of between and within-individual change models, increasing the degree of control for individual differences and observed and unobserved heterogeneity. All analyses are conducted separately within the oldest and youngest samples as a result of the uniquely constructed delinquency outcomes for each sample.[53]

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[52] Since the current study uses binary and count data, non-linear models are used to accommodate the fact that the outcome in the analyses are not continuous. In regards to binary data, if Y_i is restricted to only two values, the violation of interval, continuous measurement of the outcome variable is severe enough that standard linear regression techniques will not produce the best linear unbiased estimate. Specifically, ordinary least squares estimates based on linear models with dichotomous outcome variables, linear probability models, violate the assumption of homoscedasticity. The assumption that the disturbance term, u_i, has a constant variance, Φ^2_u, across observations no longer holds, instead, the variance of u_i will vary systematically with the values of X_i, resulting in heteroscedasticity. As a result, estimates generated by OLS techniques will not have the smallest possible sampling variance, and hypothesis tests or confidence intervals are invalid, even in regards to asymptotic samples (Aldrich and Nelson, 1984). Similar issues arise with other types of discrete outcomes, such as count data, which also require a non-linear transformation. Using linear regression models with count outcome data can also result in inefficient, inconsistent and biased estimates (Long, 1997; Allison, 1999) and also require a non-linear modeling approach. Both the logistic and poisson/negative binomial regression models are appropriate for binary and count outcomes. Both statistical approaches (logistic and poisson and the negative binomial generalization) log the dependent variable when using a non-linear transformation. This makes the interpretation of the magnitude of the coefficients less straightforward as compared to linear regression coefficients, however, interpretation of the significance and direction of the relationship are the same. For ease of presentation, the discussion of results in the current study is largely confined to significance and direction of significance of the results, and only in a few cases makes statements about the magnitudes of the effects. However, poisson/negative binomial coefficients can be interpreted in the same manner as logistic regression coefficients in a variety ways, one of which includes by calculating the percent change in the expected count by (100*exp(b)-1) (Long, 1997; Allison, 1999).

[53] Recall that the delinquency outcomes for the youngest and oldest sample consist of different items as well as the number of items. The purpose of the current study is not to compare findings across sub-groups, and in the case of the delinquency analysis any statistical comparison of coefficients across groups

In Chapter 4, I examine the effects of the level of social competence on the level of employment involvement over time. I use the GEE model for binary outcomes and the hierarchical linear generalized modeling (HGLM) approach. Raudenbush and Bryk (2004) have suggested that comparison of the two approaches is useful for determining sensitivity of obtained results due to model assumptions. In this chapter only, I will review GEE briefly as a demonstration before moving to the HGLM results, in which special attention is paid to subject-specific results.

In Chapter 5 I examine the between and within-individual effects of competence on the level of and changes in offending over time. To examine the level of offending over time I again provide results from the GEE analysis and HGLM analysis, and discuss the HGLM results. To examine changes in offending over time, I use the GEE model for count data, the unconditional fixed effects negative binomial model and a HGLM model for count data (correcting for over-dispersion) (Woolridge, 2002; Allison, 2005; Allison and Waterman, 2002).[54] I present results from all models in the tables, however I limit the discussion to results from the final, more rigorous models (Fixed effects and HGLM). Given the multiple questions posed in the current dissertation and the various modeling

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is prevented due to the slightly different outcomes. Statistical comparisons of coefficients could be made in the employment analysis (Allison, 1999), however, the current study is less concerned with making statements pertaining to the different causal effects of variables in each sample and only describes results across samples descriptively and "loosely". Future research should incorporate any formal statistical test of coefficients across groups if the goal is to discuss the differential causal impacts of explanatory variables.

[54] Although it is reasonable to assume that the negative binomial model will be more appropriate for dealing with over-dispersion of the data, the possibility remains that unconditional fixed effects poisson model with corrections for standard errors will be sufficient. Allison (2005) notes the frequent observation that poisson models often encounter problems of over-dispersion, however he further states that over-dispersion using a fixed effects poisson approach is surprising nonetheless because fixed effects models allow for unobserved heterogeneity across individuals through the ά parameters, which represents all time-invariant traits of the individual. Allison states that *time-varying* sources of unobserved heterogeneity can lead to observed over-dispersion. Suggested approaches of dealing with such over-dispersion include the deviance scaled correction for standard errors within the poisson model and the negative binomial model which builds over-dispersion directly into the model, as well as combining the negative binomial with the deviance scaled correction.

strategies and specifications for each question, I briefly outline the specification of the HGLM models in each results section before providing a discussion.[55]

[55] The specification of the GEE and FE models are relatively straightforward and remain the same unless otherwise noted.

Chapter 4: Social Competence and Employment

In the following sections, I first present bivariate correlations between all variables in the employment analyses for the pooled, youngest and oldest samples. I then present results of a series of multivariate analyses that examine the between individual effects of social competence established in adolescence on later involvement in formal annual and current employment (job involvement), followed by the number of hours worked when employed (job intensity). To examine these relationships I use a series of GEE and HGLM random effects logistic and negative binomial regression models examining the effects of competence established in adolescence on employment and the numbers of hours worked during the transition to adulthood. The results are replicated using the pooled, youngest and oldest samples.

Bivariate Analyses

Table 16 presents correlations between all the variables included in the employment analyses for the pooled sample. Among the pooled sample the correlations between the employment variables and competence are all significant, indicating that higher levels of competence are related to an increased probability of annual and current employment as well as working longer hours. The growth rate of competence is negatively correlated with the number of hours worked, indicating that the adolescents who increased in teacher reported competence over time are less likely to work long hours. However, this correlation is relatively weak in comparison to the correlation between average levels of competence and the employment variables.

Average levels of self-control are also associated with employment, adolescents with lower levels of self-control are less likely to report annual and current self-reported employment. The social structural variables are also significantly related in the expected direction. Higher levels of socio-economic status and being white are associated with a greater probability of being employed over time. As would be expected given the age range of the current sample, age is positively and significantly associated with the likelihood of employment and increased hours worked on the job.

Table 17 and Table 18 present the correlation coefficients for the youngest and oldest samples, respectively. Correlations among the variables across both samples show similar results for the probability of annual and current employment for both samples. However competence is only significantly related to an intensity of employment among the oldest sample. For the oldest sample, higher levels of social competence are significantly related to more hours worked on the job. Additionally, the magnitudes of the correlation coefficients for competence and the employment variables are much larger in the oldest sample. None of the correlations between the growth rate of competence and the employment variables are significant in either the youngest or oldest sample. Many of the variables significantly associated with job intensity for the oldest sample are not significant in the youngest sample, such as average levels of social competence and self-control in adolescence and socio-economic status.

Multivariate Analyses

Adolescent Competence and Probability of Annual Formal Employment

Table 19 presents the results examining the effects of average levels of competence established in adolescence on the probability of annual employment during the transition to adulthood. I first present results from the logistic GEE random effects model and then increasing the degree of control for unobserved heterogeneity by using the HGLM model which provides subject specific estimates in addition to population average estimates. Results from the GEE logistic regression analysis are presented in column one of the tables (labeled Model 1) and HGLM results in column two (labeled Model 2), and sample specific results for competence are presented in the rows of the table. The variables included in the model include the average level of social competence, the average level of self-control, average level of socio-economic status, race and age in the model. I review the results from the GEE analysis for each sample first, then present results from the HGLM analysis for each sample.

For the pooled sample (n = 786), results from Model 1 indicate that average levels of competence of established in adolescence are significantly related to an increased probability of employment among the pooled sample of respondents ($b = .68$, $p<.001$), controlling for early levels of self-control as well as structural variables. As expected, respondents that are older are also more likely to be employed as compared to their younger counterparts ($b = .25$, $p<.001$). Race and socio-economic status are negatively indicated to the probability of employment, suggesting that structural variables may condition the extent to which one is exposed to conventional opportunities. Importantly, self-control does not have a significant effect on the probability of employment.

When the sample is disaggregated, competence established during adolescence predicts later job involvement for both samples controlling for self-control, race, socio-

economic status and age. Although age exerts significant effects in both samples, the effect appears considerably larger in the youngest as compared to oldest sample (b = .56 versus b = .15). Intuitively this makes sense, as we would expect that among the youngest sample, older adolescents are more likely to report formal employment as opposed to their younger peers. The effect of age on the probability of employment should be relatively more uniform among the oldest, as compared to youngest, sample as most all are over the age of legal employment eligibility at the start of the observational period. The average age among respondents in the oldest and youngest sample is approximately 19 and 13 years of age, respectively.

Although the GEE results are adjusted to correct the dependence of the error terms and resulting standard errors, the results are potentially biased from what is referred to as "heterogeneity shrinkage". The GEE method produces subject-specific results except in the case of non-linear outcomes, in which population average results are generated. An alternative approach that does correct for such bias as well and is suitable for examining changes over time between individuals is the random effects model. Using the HGLM model which uses a random effects approach to examine the between-person effects of competence on the probability of employment allows us to obtain subject specific estimates, which are typically larger in magnitude as compared to the population average results.

All person specific factors, which are assumed stable across time under the random effects model, such as the average level of competence and self-control established in adolescence, race and socio-economic status are included at level 2 of the

equation.[56] A benefit of using the mixed modeling approach is that it produces unit specific estimates, which examines how differences in the average level of competence explains variability in employment across individuals. We are able to examine how the effect of competence on employment varies across individuals, while also controlling for the effects of increasing age on employment.

Column 2 of Table 19 presents the results from a hierarchical generalized linear modeling for binary outcomes, and is sub-divided with separate columns displaying population average and unit specific results. All of the analyses were conducted using both penalized maximum likelihood estimation (PQL) and EM LaPlace estimation, population average estimates that are presented were generated using the PQL estimation and subject specific using EM LaPlace. Much like the GEE estimation for binary data, PQL estimation for binary data tends to produces less accurate estimation of coefficients. Whereas, the EM LaPlace estimation corrects for "heterogeneity shrinkage", the GEE and PQL estimates for binary data do not (Raudenbush, Yang and Yosef, 2000; Vonesh, 2005).[57]

For the pooled sample (N = 782), the level of competence established in adolescence is positively associated with increases in the probability of employment later in life controlling for early levels of self-control, increases in age and structural

[56] Socio-economic status is considered static in the current model because it is measured only during adolescence (caretaker reports) and theoretically reflects initial structural access or preparation to the employment market.

[57] All three types of estimation approaches produce similar substantive findings regarding the effect of average level's of competence on the probability of employment and employment intensity. An additional benefit of the LaPlace estimation for binary data is that deviance statistics are computed for the model, unlike GEE and PQL estimation (Allison, 2005; Slocum et al., 2005).

variables.[58] Both population average and subject findings are supportive of adolescent competence, however of interest is the subject specific results. The size of the competence coefficient for the subject specific results (b = 1.17) are larger than those of the GEE estimation (b = .68) and PQL population average (b = .93) estimates indicating that the EM LaPlace estimation is correcting heterogeneity shrinkage. Although competence retains its significance, self-control is also significantly related to increased probability of reporting employment (b = .46, p<.10). Adolescents with lower levels of self-control are more likely report an increased probability of employment in the past year. Recall that the empirical literature pertaining to work effects among adolescents is quite mixed. Whereas some literature indicates that early involvement with intensive work may reflect "precocious development" and lead to negative outcomes such as increased school failure and delinquency (Mortimer and Staff, 2004; Wright, et al., 1997) and another set of literature indicates that any observed effects between early work experiences and delinquency is due to unobserved differences between individuals (Paternoster et al., 2003; Apel et al., 2007). Although the current outcome in this analysis merely refers to employment over the past year, the finding that self control is significantly related to the probability of employment is supportive of the notion that unobserved or unmeasured differences between individuals may result in both early entrance to the labor market and offending. As recent research findings within intensive work and delinquency literature have suggested (Paternoster et al., 2003; Schoenhals et al., 1998) perhaps those adolescents with lower levels of self-control are more likely to view the rewards of early involvement in employment as more appealing than deferring

[58] All of the discussed results were conducted such that the effect of age was fixed across individuals over time. Results allowing the effect of age to vary are substantively the same.

those rewards (e.g., monetary rewards) in favor of the long term benefits of focusing on school and academic related pursuits. This suggestion is examined more fully in the analysis which examines the effects of adolescent competence as well as self-control on job intensity measured as the number of hours worked.

In the sample specific analyses, competence is related to an increased probability of formal employment in the past year for only the oldest sample ($b = 1.66$, $p<.001$). Once more stringent statistical controls for dependence and heterogeneity are included the effect of adolescent competence on the probability of employment in the past year for the youngest sample diminishes, however retains its significance ($p<.10$) in the predicted direction when using a one tailed test. Given the age range of the youngest sample, it may be that many youth are reporting involvement in non-formal employment and perceived competence may be less relevant for securing informal employment (i.e, baby sitting, lawn mowing) as opposed to formal employment.

In the next section I examine the effects of adolescent competence on the probability of reporting current employment. Whereas reporting formal employment is useful for examining the relation between competence and employment, it may be that examining current employment as an outcome allows for more precise competence estimates. Additionally, recall that there are marginally significant effects for self-control on the probability of annual employment among the pooled sample of adolescents. If this finding is interpreted within the context of prior literature which has suggested that the relation between work intensity and delinquency is spurious, it may be that adolescents with lower levels of self-control may indeed find early entrance into the labor market appealing and thus more likely to report some degree of employment involvement in the

past year. However, whether this desire translates to an increased ability to maintain employment is not clear as the trait that drives entrance (self-control) may not be useful for maintaining employment and thus those adolescents may be less likely to report involvement in current employment.

Adolescent Competence and Probability of Current Formal Employment

Table 20 presents the results examining the effects of average levels of competence established in adolescence on the probability of current employment over time. Results from Model 1 for the pooled sample indicate that adolescents with higher levels of competence are more likely to report current employment at the time of the interview ($b = .88$, $p<.001$). These results are consistent across both youngest ($b = .92$, $p<.01$) and oldest ($b = .88$, $p<.001$) samples as well. Across all samples, African Americans are less likely to report current employment as compared to others, and socio-economic status appears less salient for reporting current employment as opposed to previous annual employment. Finally, adolescents that are older in age are more likely to report involvement in current employment ($b = .26$, $p<.001$), and age is also significant within the youngest ($b = .42$, $p<.001$) and oldest ($b = .23$, $p<.001$) samples.

When we move from the GEE findings to the HGLM findings, although the magnitude of the coefficients and the standard errors change, substantively similar results emerge. For all samples, again we find that race is negatively associated with the probability of reporting current employment, and the influence socio-economic status is diminished. The subject specific results also indicate that individual increases in age are positively and significantly associated with current employment status across all samples.

Most importantly, both population average and subject specific estimates indicate that adolescent competence is significantly related to a greater probability of job involvement for the pooled sample (b = 1.00, p<.001). However unlike the HGLM results for the effect of competence on annual employment outcome for the youngest sample (b = .63, p = .20), the effect of competence on the probability of *current* employment is positive and significant for both the youngest (b = .98, p<.05), and oldest (b = 1.09, p<.001). The consistency of the effect of adolescent competence on current employment across all samples indicates that adolescent competence is associated with a greater likelihood of youth reporting current employment at the time of the interview rather than employment in the past year. Although this is mere speculation, current employment may reflect a greater tendency toward stable employment experiences rather than annual employment. For example, only examining the effects of competence on involvement in employment in the past year is not useful if that employment experience was short-lived, perhaps due to subsequent incompetence or voluntary termination. Alternatively, the consistent effect of competence on current employment may also reflect the fact the respondents in the youngest sample are more likely to report current employment rather than annual employment given their increasing age and corresponding increase in employment eligibility over time.

Another interesting and different finding to emerge from using current employment as an outcome is the effect for self-control. Whereas self-control was significantly related to an increased probability of reporting employment in the past year (b = .46, p=.07), it is not related to reporting current employment (b = .19, p = .43). Thus, although self-control may be significantly related to the early entrance into the

labor market, it may not necessarily be related to successful early involvement or sustained involvement. However, this interpretation depends largely on the extent to which it is believable that the differences between annual and current employment reflect differences in the ability to maintain employment.[59] Another caveat to the aforementioned findings regards the effects of adolescent competence on the probability of employment. Whereas it is clear that adolescent competence is significantly related to the increased probability of formal annual and current employment, meaning, respondents with higher levels of adolescent competence are more likely to report employment in subsequent time periods, causal inferences regarding the effects of competence on employment are not without problems. In particular, the strongest causal statements about the effects of competence on employment can only be made through the use of a within-individual change model that treats each individual as their own control. Unfortunately, the design of the data used in the current study is not suitable for such an approach, thus only an analysis of the between individual level effects of competence on later life outcomes is feasible. Nonetheless, this latter statistical approach is useful, informative and justified as the bulk of research on the effects of social competence highlight the importance of competence established during adolescence. Overall, these findings suggest that youth that are able to obtain higher levels of competence in adolescence are indeed more likely than their less competence peers to secure employment later in life.

[59] Note that within the PYS data there are potential means in which to create a measure of job stability that more accurately captures the extent to which a respondent is able to maintain consistent employment with one employer. This issue is not addressed in the current study, and will be a target of future studies stemming from this research.

In the following section I present results from a series of sensitivity analyses that attempt to test the robustness of the abovementioned findings.

Sensitivity Analyses: Competence and the Probability of Employment

I conduct a series of sensitivity analyses to test the robustness of the competence findings for the probability of reporting both annual and current employment. Rather than relying solely on the average based scale of competence, which treats each competence items as parallel, I also use a growth measure of competence and one and two factor model scores generated from a factor analysis of the items. All sensitivity analyses are conducted using the final statistical model, the random effects HGLM.

Competence Growth Rate

Table 21 and Table 22 present the results from the HGLM models which examine the effects of the growth rate of competence on annual and current employment. Recall from Chapter 3 that one reason for using the growth rate of competence is to capture the notion that competence is dynamic to a certain extent during adolescence and to use this measure to predict employment over time. The measure captures the rate and direction of growth in TRF competence scores from the first assessment to the last assessment. The average growth coefficient for the pooled and disaggregated samples is -.02, suggesting that there is relatively little variation in growth of competence over the assessment periods and in fact what growth is shown appears to be negative. This also suggests that there may not be much utility in using a measure of the growth rate of competence. Importantly, if the overall change in competence over time is trivial, the use of just the

growth measure of competence may not be useful for the original purposes of capturing the dynamic nature of competence and suggests that a static measure of competence may be more useful for ascertaining the effects of competence established in adolescence on later life outcomes.

For both employment outcomes, the growth rate of competence does not have a significant effect on the probability of employment across any of the samples. This lack of statistical significance may indicate that the overall level of competence during adolescence is more salient for later life outcomes than the rate at which competence develops during that time span. It is important to note that although Clausen states that the early development of competence is important for securing later employment and marriage roles, that he makes no mention of the rate of growth of such development and emphasizes, rather, the overall level obtained early in life. Finally, it is also noteworthy that once the growth rate of competence is used as the primary measure of adolescent competence, the effects of self-control become more prominent as compared to models including the overall level of competence. This is not entirely surprising as bivariate correlations between self-control and competence indicate that the two variables significantly vary with each other. Generally speaking, results from these models indicate that adolescents with lower levels of self-control are less likely to secure annual ($b = -.39$, $p<.01$, $n = 785$) and current ($b = -.58$, $p<.01$, $n = 785$) employment.

One Factor Score Model

Table 23 presents results using one factor model scores to predict involvement in employment in the past year. The results are essentially substantively similar to what is

obtained using the average based scale of competence. For the pooled sample of respondents, competence established in adolescence (b = .74, p<.001) is positively related to the likelihood of reporting annual employment later in time. Note however, that the effect of self-control established in adolescence is also significant (b = .71, p<.71) indicating that perhaps the use of a weighted scale for competence allows for the emergence of a larger self-control effect. As found in the prior models, competence is also more salient for the oldest (b = .95, p<.001) than the youngest sample (b = .44, p<.10).

Table 24 presents the results using one factor model scores to predict involvement in current employment. As in the case of the analyses which used the average based competence scores to predict involvement in annual and current employment, the results for adolescent competence based on the factor score scale indicates that adolescent competence increases the probability of reporting current employment for both the youngest (b = .51, p<.01) and oldest (b = .62, p<.001) samples. The magnitude of this finding is substantial for both samples. A unit increase in the social competence score is associated with approximately a 66% and 86% increase in the predicted odds of reporting current employment for the youngest and oldest samples, respectively.[60] Additionally, there is no effect for self-control on the probability of current employment in any of the model as well.

Although the similarity between the results using the average based competence scores and the one factor model scores indicates that little is lost by assuming the items are parallel, I also conduct the analysis using factor scores that were generated by

[60] Equivalent increases in the predicted odds of reporting current employment are found for both samples when using the summary based measure of social competence as well.

allowing the factor analysis to extract factors with Eigen values over 1. In the section that follows I briefly review findings from the final HGLM models that incorporate a measure of adolescent competence based on two factor scores.

Two Factor Scores Model

Recall from Chapter 3's discussion of the factor analytic techniques that two factors were extracted from the factor analysis at each time point. The loadings of the items across time were consistent with one factor arguably representing dependability/productivity (completes tasks, good school work, follows directions), the second factor representing sociability (gets along with others, liked by others, does not quarrel with others) and two items consistently cross loading (behaves responsibly, does not act too young for their age). Results from the analyses using the 2 factor scores as measures of competence are presented in Table 25 and Table 26, and the respective factors are labeled "dependability" and "sociability".

Although these results are fairly similar to those obtained in prior analyses, it is clear that of the two factors representing differing dimensions of competence, sociability is more important for obtaining annual and current employment. Although adolescent competence, captured as dependability and sociability, is significantly related to the probability of reporting annual ($b = .23$, $p<.10$ and $b = .58$, $p<.001$) and current ($b = .23$, $p<.10$ and $b = .45$, $p<.001$) employment for the pooled sample it is clear that sociability is the more salient factor. Whereas a one unit increases in the sociability score is associated with an approximate 57% increase in the predicted odds of reporting current employment, a one unit increase in the dependability score results in a 25% increase in

the predicted odds of being currently employed. Also similar to the previous models the oldest sample appears to be driving the results for the pooled sample. For the oldest sample as compared to the youngest sample, the sociability aspect of competence is more important for predicting involvement in annual and current employment. Also note that, as with the case of the previous analyses, self-control is significantly related to the probability of reporting employment in the past year ($b = .70$, $p<.01$), but not for reporting current involvement in employment ($b = .13$, $p<.71$). Perhaps sociability is more influential for obtaining jobs that many of these youth may acquire during the course of adolescence or the transition to adulthood. It is likely that many of the jobs these youth self-report do not require a great deal of skill or require that they demonstrate a great deal of productivity. More important for the types of jobs obtained during adolescence may be the presence of social skills that allow the individual to interact positively with employers as well as potential customers of the employer. For example, restaurant or retail work places a heavy emphasis on customer service skills rather than on any skill set that may demonstrate productivity. Although this explanation is mere speculation given the data tested in the current study, it is worthy of future research.

Summary: Competence and Probability of Annual and Current Employment

In the above section I examined the effects of competence established in adolescence on the subsequent probability of annual and current employment over time. Interestingly, the results for competence differ slightly when examining annual employment versus current employment. Nonetheless, the overwhelming conclusion is that early levels of competence are indeed positively associated with being currently

employed at each assessment period. Adolescents that had higher levels of competence were more likely to report being currently employed at later time points. The different findings for self-reported annual and current employment may indicate that current employment is more reflective of stable employment experiences as compared to ever being employed in the past year, and competence is more salient for not only securing employment but maintaining it as well. Competence is consistently significant across employment outcomes among the oldest sample, and significant for current employment among the youngest sample. This may also reflect the tendency for the adolescents in the oldest sample to be employed earlier given their age ranges.

Multiple measures of competence were also incorporated to examine the sensitivity of the effects based on the primary measure of competence. The analysis which uses the measure of the growth rate of competence during adolescence was not significantly related to the employment outcomes, and in fact self-control effects were more prominent once this variable was included in the model. Recall that the growth rate of competence was constructed in an attempt to measure competence in a more dynamic way—to examine how changes in competence may impact changes in employment. Although this measure captures some degree of change during adolescence, it is static from that point forward. This is likely a result of the limited growth in competence or, perhaps, evidence for non-linear growth patterns in competence. This latter point is a possibility especially given development during adolescence, which is also characterized by psychosocial changes, stress and rebellion—what has been referred to as the "storm and stress" of adolescence (Hall, 1904:xiii; Baumrind, 1987; Apel, 2001).

When the factor scores representing dependability and sociability are used as measures of competence, we find that sociability is most salient for predicting later employment. This finding makes intuitive sense as many of the jobs these youth would likely obtain, such as restaurant or retail work, require the ability to get along with others and employers may be more interested in that trait as it facilitates customer service oriented jobs.

Perhaps most importantly though, is the overall finding that indeed individual level attributes—in this case competence—influence involvement in employment experiences over time. However, also note that self-control also had positive effects on work outcomes, for some analyses, in particular lower levels of self-control are related to increased probability of involvement in annual employment. Although the primary limitation is the possibility that another individual trait may be related to both competence and employment and indeed this omitted variable is driving the effect, the fact still remains that employment appears to be influenced by individual attributes. This implies that involvement in employment is not entirely random, and is influenced by early childhood predispositions or individual attributes which lead certain individuals into such social institutions and structural roles. Alternatively, it also implies that certain traits of the individual may make them more appealing in the eyes of socially relevant others, and thus the opportunity for such involvement likely to be extended. Theoretically, the finding that employment may be influenced by individual attributes is important in two ways. In particular, it is relevant for the literature pertaining to the positive effects of adolescent work on higher levels of delinquency and the contrary body

of work that pertains to the negative effects of adult employment on reductions in offending over time.

The next section is an exploratory examination of the effects of social competence on the number of hours worked while employed and is an attempt to examine whether competence influences job stability. Although this is admittedly a weak measure of job stability, it provides an initial examination of the possible effects of competence on more nuanced measured of job experiences and serves as a starting point for more refined analyses.

Social Competence and Employment Hours

Table 27 present the GEE and HGLM poisson results which examine the effects of average levels of competence established in adolescence on the number of hours worked while employed.[61] As in the prior models predicting involvement in employment, race is negatively associated with the employment outcome, indicating that African Americans ($b = -.25$, $p<.001$) work less hours as compared to non-blacks. For the pooled sample ($N = 786$), average levels of adolescent competence are positively and significantly related to a greater number of hours worked on the job ($b = .19$, $p<.001$).

The sample specific results are also similar to results obtained in previous analyses, with estimates indicating that the oldest sample is primarily driving the pooled competence effect. Among the oldest sample, competence is significantly associated with increased number of hours worked ($b = .27$, $p<.001$). Race and age are both

[61] It is important to note that are more suitable approaches for modeling the number of jobs hours worked that would take into account selection into employment as well the number of hours worked, however, since this study treats this analysis as exploratory and supplemental, that is a task designated for future research.

significantly related to the outcome across the youngest (b = -.16, p<.01; .33, p<.001) and oldest (b = -.31, p<.001; b = .09, p<.001) samples.

Column 2 of Table 27 presents the subject specific results generated using the HGLM poisson model correcting for over-dispersion of competence on the number of hours worked. The results remain substantively similar across estimation techniques and samples. As expected the subject specific coefficients for competence are larger than the population average coefficients. Although competence is significantly associated with increases in the number of hours worked for respondents within the pooled sample (b = .29; p<.05) it appears that again the effects are largely driven by members of the oldest sample (b = .34; p<.01). For both the youngest (b = .30; p<.001) and oldest (b = .08; p<.001), within individual increases in age are positively associated with within individual increases in the number of hours of worked.

In the following section I briefly present the sensitivity analyses that test the robustness of the effects of competence on the number of hours worked by examining the effects of alternative measures of competence.

Sensitivity Analyses: Social Competence and the Number of Hours Worked

Competence Growth Rate

Table 28 presents the results using the growth rate of competence to predict the number of hours worked while employed. As in the case of the earlier sensitivity analyses of the probability of annual and current employment, the growth rate of competence is not significantly related to number of hours worked among the pooled sample of respondents (b = -.10, p>.05). The growth rate is also not significantly

associated with the outcome in the disaggregated samples as well. Individual increases in age is significantly associated with increases in the number of hours of worked across both the youngest (b = .90, p =.001) and oldest (b = .08, p =.001) samples. In the pooled sample, the average level of self-control is negatively related to the number of hours worked, indicating that adolescents with lower overall levels of self-control are less likely to work long hours, however it is important to note that since the overall level of competence is not controlled for in the current models self-control may reflect the influence of competence as well. Thus, this analysis alone is not sufficient for determining whether adolescents that have lower levels of self-control are more like to defer the long term benefits of education and academics for the short term benefits of employment. In other words, the possibility that adolescents with low self-control may prematurely enter the labor market is still very much feasible.

One Factor Score Model

Table 29 presents the results from the analysis regressing employment on a factor score which captures social competence and other covariates. Many of the findings from the models which examined the effects of an average based measure of social competence on the number of hours worked are replicated in the current analysis. This provides further support that the average based measure of social competence, despite weighting items equally, is indeed capturing the overall effect of the weighted factor score. For the pooled sample (n = 788), competence is significantly related to working more hours while employed (b = .20, p<.001). Once adolescent competence is controlled for, the effect of low self-control is marginally significant and in a positive direction (b =

.18, p<.10), indicating that those adolescents with lower levels of average self-control are more likely to work longer hours on the job. If we examine the results for the disaggregated samples we see that the results are being largely driven by the oldest sample as in the previous analyses, with average levels of adolescent competence (b = .23, p<.001) and self-control (b = .23, p<.001) positively related to the number of hours worked. Among the oldest sample of youth, the increase in the expected number of hours worked while employed for each one unit increase in the social competence score is approximately 26%. Interestingly, higher levels of low-self control are also positively related to increases in the number of hours of worked. For example, there is a 26% increase in the expected number of hours worked for each one unit increase in low self-control scores among the oldest sample as well. Across all samples, as individuals increase in age so does the number of hours worked, and race is negatively related to the outcome.

Two Factor Scores Model

Table 30 presents the results from the analysis of competence on the number of hours worked using the two factor scores generated from the factor analysis. Sociability is positively and significantly related to a greater number of hours worked in both the pooled (b = .15, p<.01) and oldest (b = .18, p<.01) samples. Similar to previous analyses, sociability appears to have statistically significant effects in the oldest sample as compared to the youngest sample. However, unlike the prior analyses which examined the effects of two factors on the probability of annual (b = .23, p<.10) and current employment (b = .22, p<.10), dependability does not have a statistically significant effect

on the number of hours worked (b = .06, p>.10) in the pooled sample of respondents. Only among the oldest sample does self-control come close to reaching traditional statistical significance, indicating that those respondents within the oldest sample that have lower average levels of self-control are more likely to work longer hours while employed.

Summary: Competence and the Number of Hours Worked

The aforementioned results reflect an exploratory examination of the potential effects of competence on job stability. Again, the measure of job stability is not ideal. However, it does provide some insight into the effects of competence on more nuanced measures of employment. More importantly, it strongly encourages a more thorough examination of how competence relates to the quality and depth of employment experiences, the implications of which are quite relevant for extrapolating to the literature pertaining to employment effects on delinquency and offending outcomes. Overall, the findings for the pooled sample appear to be driven by the oldest sample. Within the oldest sample, higher levels of adolescent competence are related to an increased probability of working more hours while employed. This finding holds among the oldest sample when using factor scores as measures of competence as well. However, as expected given prior results in this chapter, the growth score of competence is not related to the number of hours worked while employed, however, it must be noted again that this may reflect the possibility of lack of growth or non-linear growth in competence over time.

When using factor scores to reflect competence, we find that sociability is significantly related to an increased probability of working more hours on the job among the oldest sample. This indicates that those adolescents with higher levels of sociability are more likely to work longer hours as compared to their less sociable peers. These findings are in line with prior results from the annual and current employment analysis and suggest that sociability is not only relevant for involvement but maintaining involvement as well. Also in line with previous results, is the null relationship between dependability and number of hours worked, as the type of jobs these adolescents are likely acquiring rely more heavily on one's ability to get along with others than a skill set that demonstrates one's ability to get tasks done timely or produce good school work. Interestingly, in the analyses which use 1 and 2-factor scores and growth rate scores of competence, we find that among the oldest sample, low self-control is positively related to an increased number of hours worked on the job. However the effect diminishes in the analysis which includes sociability. Nonetheless, this suggests that indeed there may be individual level traits, social competence and self-control, that influence the degree of hours worked while employed. These findings also have theoretical import for existing criminological literature pertaining to the development and desistance of delinquent and criminal offending. In particular, it again confirms earlier findings that indicate involvement in employment is not entirely random and may be driven by individual attributes. The implication of which casts some degree of doubt over the notion that structural roles or social institutions (such as employment) in and of themselves are solely responsible for changes in criminal offending over time, and in a similar yet opposite vein, that intensive work leads to increases in delinquent offending. At the very

least, these findings suggest that more attention should be paid to individual level traits that impact later life development, transitions and adjustment as these traits may be influential for changing patterns of offending over time.

Finally, although not the focus of this study, in virtually all of the employment analyses a significant effect is found for structural variables such as race, on both the probability of involvement and the number of hours worked while employed. Specifically, blacks as compared to non-blacks, are less likely to self-report annual and current employment and work less hours while employed. These findings are certainly not surprising. However, it does call attention to the necessity of examining how social structural positions may also limit the exposure to or opportunities for involvement in conventional social roles and institutions, as such limitations may influence the extent to which the individual can ultimately become involved in such conventional opportunities for change (Giordano et al., 2002).

Chapter 5: Social Competence and Criminal Offending

In this chapter I examine the between and within-individual effects of social competence on criminal offending over time for the youngest and oldest samples. The chapter begins with a brief discussion of the bivariate relationships between social competence and offending for both samples, and is then divided into two sections which focus on the between and within-individual effects of competence on offending. The first section addresses the results from the analysis which examines the between-individual effects of competence on general offending, theft and violence over time. In this set of analyses, competence is treated as a static construct and is measured primarily through the use of an average summary measure. I examine the direct effects of the level of competence on the level of offending over time. I then examine the indirect effects of adolescent competence, through the overall level of employment, on the level of offending over time. To do so, I first examine the effects of adolescent competence on offending (referred to as the reduced model) provided by the direct effects model, I then include the level of employment (referred to as full model) and examine whether the effects of early levels of competence on overall offending diminish. I then conduct a series of sensitivity analyses using the growth rate of competence during childhood, as well as factor scores generated from previous analyses presented in Chapter 3.[62]

[62] In an attempt to utilize the full set of panel data available, this analysis examines the average levels of social competence on concurrent and subsequent levels offending over time. Doing so retains much more of the person-observation points, however, this approach also weakens causal statements regarding the effects of the between-individual effects of competence on delinquency because there is no control for temporal ordering. However it is my position that a between-individual analysis accounting for temporal ordering does not gain much in terms of strengthening causal statements as they pertain to such individual level traits as competence or self-control, meaning causal statements are already compromised by virtue of examining between-individual level effects. Nonetheless, I also examined the between-individual level effects of competence on offending levels by incorporating a lag for competence, as well as all other

Additionally, I also present results from an analysis which examines whether the level of competence established in adolescence significantly and independently influences the level of offending over time, net of within-individual changes in employment status. Stated differently, this part of the analysis examines how average levels of competence influence levels of offending after taking structural role transitions, such as changes in employment status into account. In all analyses, special attention is paid to the consistency of competence effects across the various model specifications and the subject-specific estimates.

In the second section, I present the results from the set of within-individual analyses of the effect of competence on changes in offending patterns over time.[63] Competence is treated as a dynamic concept that is allowed to vary over time, and I pay special attention to the within-individual effects of competence on offending, while controlling for other sources of observed and unobserved heterogeneity in offending. While the former between-individual analysis uses much more of the available panel data (e.g., time points and cases) and focuses on whether the level of adolescent competence varies with the level of offending over time, the latter is restricted to only those time points in which there is available contemporaneous data for all the variables of interest and focuses on whether changes in competence vary with changes in offending over time.

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between-individual variables. Specifically, for the oldest sample, competence, self-control, parental supervision, race and SES data are taken from time points 2 – 7 and collapsed (averaged), and used to predict offending from time points 8 through 14. For the youngest sample, competence measures as well as other between-individual level variables are taken from time points 2 – 13 and collapsed (averaged) and used to explain offending at subsequent time points 15 -18. The results remain the same as those presented with the analysis that retains more of the data and examines the overall concurrent and subsequent level of offending. Note the employment analysis presented in Chapter 4 does take into account temporal ordering.

[63] Recall from Chapter 3 that unfortunately the structuring of the data prevents a thorough examination of within-individual changes in competence, employment status and offending over time. Thus, these analyses do not include measures reflecting changes in employment status.

The within-individual model of competence and offending allows for firmer ground to stand upon when making causal statements regarding the effects of adolescent competence on delinquency and offending.

Bivariate Analyses

Table 31 and Table 32 present correlation matrices for all the variables relevant to the offending analyses in the youngest (Table 31) and oldest (Table 32) samples.[64] For both samples, competence is significantly and negatively associated with general delinquency, violence and theft. Within the youngest sample, the correlation coefficients for competence and delinquency and theft are identical (r = -.13) and significant, and smallest for violent offending (r = -.04). All associations indicate that among the youngest sample higher levels of social competence are related to lower levels of offending, irrespective of the type of offending. Among the oldest sample, the correlation for competence and violence is significant and negative, indicating that higher levels of competence are associated with lower levels of self-reported violent behavior (r = -.18, $p<.01$). Higher levels of competence are also associated with lower levels of self-reported theft (r = -.13; $p<.01$) as well as general delinquency (r = -.16; $p<.01$) for the oldest sample as well. Although these are just bivariate correlations, the results suggest that the relationship between competence and violence may only be significant in the multivariate analyses for the oldest sample.

Many of the other associations are in the expected direction, for example, competence is negatively associated with self-control and race. Unexpected, however, is

[64] Correlations of variables at the person-wave unit of analysis may be inflated as compared to correlations at the person level, however substantively the associations remain the same.

the negative association between competence and age. Within the oldest ($r = -.07$, $p<.01$) and youngest ($r = -.10$, $p<.01$) samples, higher levels of social competence are negatively related to age. Although the magnitude of the effect is not large within the youngest or oldest samples, it is significant and counter to the literature. This may help to explain why the overall average growth scores of competence for each sample is negative (-.01; data not shown), however the average growth score is quite close to zero suggesting that perhaps there is not as much linear growth in competence as expected and may be reflective of measurement error rather than a genuine decline over time.[65] However, note that for the youngest sample, the growth rate of competence is negatively associated with the delinquency outcomes. This indicates that positive growth rate coefficients are related to lower levels of delinquency, meaning, higher levels of growth of competence in adolescence are associated with lower levels of delinquency. As expected, competence and self-control are negatively associated with each other for the youngest ($r = -.76$, $p<.01$) and oldest samples as well ($r = -.67$, $p<.01$). Peer delinquency and competence are also negatively associated within each sample ($r = -.18$ and $r = -.13$ $p<.01$), indicating that higher levels of competence are related to a lower number of self-reported deviant peers. In Chapter 2, I briefly discussed the potential for competence to exert both negative and positive outcomes. In a related vein it is certainly possible that competence may lead to involvement with conventional peers as well as delinquent peers.[66] In the

[65] The idea of linear growth regarding the growth of competence over time is discussed more thoroughly in the concluding chapter.

[66] It is important to note that this measure of delinquent peers is youth self-reported, thus it may be contaminated with the youth's own delinquency rather than a true reflection of the number of friends they have who engage in delinquent activities (Hirschi, 1969; Haynie, 2001).

next section I briefly review the findings pertaining to the between-individual effects of competence on the levels of employment and offending.

Multivariate Analyses

Between Level Effects of Competence, Employment and Level of Offending Over Time

The following analyses examine whether average levels of competence established in adolescence vary with the level of offending over time directly and indirectly through the average level of current of employment. As in the previous results chapter, findings from both the GEE and HGLM analyses are presented to confirm results across the type of model assumptions and when increasing controls for heterogeneity. In the following HGLM analyses, race, parental supervision, competence and self-control are treated as static variables, and thus specified as grand-mean centered at the level 2 equation. Time-varying variables include peer delinquency and age, are specified as group-mean centered and entered into the level 1 equation. An error term is included at the level 2 portion of the equation which explains the individual's intercept thereby treating it as a random effects coefficient and controlling for persistent heterogeneity in the average level of offending between individuals. Finally, the effects of age over time are allowed to vary across individuals by adding an error term at the level 2 portion of the equation which explains the slope, allowing for linear time trends to vary across individuals.

For purposes of clarity I break the following discussion into sub-sections that examine the effect of competence on general delinquency, theft and violence and discuss the corresponding results from both samples within each crime specific sub-section.

General Delinquency

Table 33 and Table 34 present the results which examine the direct and indirect effects of between-person levels of competence on general offending over time for the youngest and oldest samples. The first column of the tables present results using the GEE approach and the second and third columns present the results from the HGLM population average and subject specific analyses, respectively. Regardless of which statistical model is used, for both the youngest and oldest samples, the average level of social competence established in adolescence does not have a significant direct effect on the level of general delinquent offending over time. As a result there is no evidence of an indirect of competence through the average probability of being employed on offending as well. The average level of competence remains insignificant throughout each model for each sample.

However, as would be expected given prior literature, low levels of self-control are related to higher levels of general delinquent offending over time for adolescents in the younger sample ($b = .50$, $p<.01$) and the results remain robust across models (Table 33). For the oldest sample (Table 34), self-control has less consistent effects across all models, however the final subject-specific estimates also indicate that low levels of self-control are positively related to higher levels of general delinquency ($b = .32$, $p<.10$). Higher average levels of employment through out the time span is not significantly related to general offending for either sample, and as evidenced by column 3 of Table 33 and Table 34, the inclusion of employment hardly impacts the coefficients for the other variables in the model.

However as shown in Table 35, once the average number of job of hours is included as an employment measure for the youngest sample, the results indicate that higher number of job hours worked is related to higher levels of delinquency (b = .01, p<.05).[67] This finding is line with previous research which has found a positive relationship between adolescent work intensity and delinquency (Wright et al., 1997), however recall the discussion from Chapters 2 and 3 which indicate that recent research indicates this positive association is purely spurious (Paternoster et al., 2003). Thus, the literature on adolescent work intensity and delinquency is mixed regarding the exact direction of the relationship. In fact as we see from Table 36, in the oldest sample, the average number of job hours worked while employed is negatively related to the level of delinquency (b = -.01, p<.05).[68] Thus, similar to the extant research, the current findings indicate similar mixed findings, however, even though both HGLM analyses control for unobserved heterogeneity through the use of the error term at the level 2 intercept equation, this does not influence the accuracy of the time stable variables, only the time-varying variables.[69]

It must be noted however, that the estimates for employment, in particular for the youngest sample, are not causal and may in fact be driven by another unmeasured variable as all of the models conducted thus far do not control for unmeasured differences

[67] Job hours is treated as a supplemental analysis in the current study, and Tables pertaining to the number of hours worked only present results from the final modeling approach.

[68] Note that a statistical comparison of the coefficients across the youngest and oldest samples is not conducted given the differing composition of the outcome variable for each sample. And more importantly, the purpose of the current dissertation is not to compare across groups, however, if possible such statistical comparisons will be a topic of future research stemming from the current dissertation.

[69] However, as we will see later in this chapter, including employment as a time-varying variable greatly reduces the threat of spuriousness when estimating the effects of change in employment on changes in offending.

resulting from static variables. In particular, within individual changes of employment are not accounted for in these models, thus making the causal inference weaker. Nonetheless, it is clear that the average level of competence does not exert a direct or indirect effect on later offending levels over time.

Theft

Table 37 presents results focusing on theft as the delinquency outcome. The average levels of social competence do not exert direct or indirect effects on the level of offending over time. Self-control has a significant and positive effect ($b = .80$, $p<.01$) on average levels of self-reported theft over time, indicating that adolescents with lower levels of self-control, as opposed to those with higher levels, tend to engage in higher levels of theft. In the youngest sample, the average level of employment is not related to levels of theft over time, however once again the average number of job hours worked exerts a small, positive effect once included in the model ($b = .01$, $p<.05$) (see Table 38).

Table 39 presents the results for the oldest sample. The same positive relationship between low levels of self-control and high levels of theft are found in the oldest sample as well ($b = .51$, $p<.05$). However, unlike the youngest sample, all of the estimates ($b = -.47$, $p<.05$; $b = -.63$, $p<.05$; $b = -.62$, $p<.01$) for the average level of employment are negatively and significantly related to levels of theft over time. When the average number of hours worked is used as the primary employment variable it is also significantly related to lower levels of offending over time ($b = -.02$, $p<.01$) (see Table 40).

Violence

Table 41 and 42 present the results which examine the direct and indirect effects of the average levels of competence on the level of violence over time for the youngest and oldest samples. In the youngest sample, column 1 of Table 41 indicates that adolescents with higher levels of competence are more likely to engage in violence over time ($b = .27$, $p<.10$), however this finding is not significant in the more rigorous models ($b = .12$, $p =.16$). The effects for self-control, however, remain significant across models, though the subject specific estimates diminish in significance, indicating that higher levels of low self-control are related to higher levels of violence ($b = .28$, $p<.10$).

Recall from the correlation matrices presented earlier in this chapter that the association between competence and violence was much greater in magnitude for the oldest sample as compared to the youngest sample. This suggests that a stronger finding for the between-individual effects of competence on overall levels of violence may emerge in the oldest sample. Table 42 presents the results for the oldest sample and all estimates are consistent, indicating that higher levels of adolescent competence are related to lower levels of reported violence and aggression ($b = -.91$, $p<.05$). One potential explanation for this finding is that social competence, as compared to the current measures of self-control, more strongly emphasizes the adolescent's ability to get along with others as well the extent to which the adolescent is liked by others and is prone to quarrelling with others. It may be that those adolescents that have higher levels of social competence are less likely to respond to situations of conflict or disagreements with frustration or aggression because of their ability to interact positively with others, or because they possess a skill set that allows them to resolve conflict without resorting to

violence. It may also be that adolescents with this skill set are even less likely to find themselves in such situations of conflict, which furthers reduces the probability of a negative response such as aggression. Additionally, drawing upon the work of general strain theory, (Agnew, 1990), it may be that those adolescents that have higher levels of social competence have access to more coping mechanisms and sources of social support such that they are able to respond and deal with negative interactions without experiencing negative emotions that may lead to anger and subsequent violence.

Another alternative and plausible explanation for the observed relationship between competence and violence among the oldest sample however relies heavily on recent research that has examined the course and development of violence among this particular sample of boys from the PYS (Loeber et al, forthcoming). For example, Loeber and colleagues have reported that the oldest sample of boys grew up at time when community crime rates were high, indeed the oldest boys were in their late teens during the peak of juvenile violent crime rates in the early 1990s (Blumstein and Wallman, 1999; Blumstein and Rosenfeld, 1998). Regarding the sample of boys used in the current analysis, at approximately 50% of the person-observations respondents from the oldest sample were under the age of 19, this finding in conjunction with Loeber and colleagues findings that serious violence was generally higher for the oldest sample from ages 13 to 19, and peaked approximately around ages 18 to 19, indicate that perhaps higher levels of social competence may be more salient for the oldest sample given the backdrop of their development throughout adolescence.

It is also interesting to note that the average levels of self-control established in adolescence had no effect on the level of violence for the oldest sample, yet lower levels

of self-control is significantly related to higher levels of theft over time (b = .51, p<.05)(see Table 39). This is unusual finding thus far, as levels of self-control have been consistently related to offending across models and within samples. For example, in the previous analysis conducted on the youngest sample, lower levels of self-control were related to higher levels of theft (b = .80, p<.01; see Table 37) and violence (b = .28, p<.10; see Table 41). A potential explanation for the lack of a self-control finding in the oldest sample for violent offending may lie in the relationship between self-control and social competence. For example, we know that self-control and social competence significantly vary with each other and thus are related constructs. Specifically, in the oldest sample used in the analysis, self-control and competence are significantly correlated with each other (r = -.68, p<.001; results not shown). Perhaps self-control greatly influences one's level of social competence, but this effect diminishes over time as adolescents, through maturation or experience, learn how to maneuver effectively in social relationships.[70]

Finally, the insignificant effect of current employment (as well as the average number of hours worked) on violence over time indicates that individuals that are more likely to be employed are not any less prone to violence than their less employed peers (Table not shown).[71]

[70] It is important to note that these statements are speculation at this point, and future research will address any potential interactions between self-control and social competence as well as statistical differences in each across age groups. In particular, these statements should not be taken to mean that there is difference in either variable across groups as the current study does not examine statistical differences in coefficients across groups. This will be addressed in future research stemming from this study.

[71] Results not presented but are available upon request. Results from sensitivity analyses that are null are not presented unless they serve as a useful comparison for significant results that are presented in the tables.

In the following section I use alternative measures of social competence to examine the robustness of the above findings. Since much of the analyses presented in this chapter indicate that social competence developed in adolescence has few if any effects on later offending levels either directly or indirectly (via current employment), it is likely that alternative measures such as the growth rate of competence will not have an effect as well. However, recall that the average based measure of social competence weights each competence item equally and it may be that certain components of social competence are more salient than others for predicting later offending levels.

Before moving on to the sensitivity analyses it would be helpful to briefly summarize the above results pertaining to the average levels of social competence on the various offending outcomes given the numerous statistical tests conducted across samples and offending specific outcomes. Moreover, given the high number of statistical tests conducted in this section of the analysis, it also useful to focus on those findings that were consistent across models and those that stand out. In particular, average levels of adolescent competence do not significantly impact overall levels of offending throughout most of the crime-specific outcomes or within the youngest and oldest samples. There is one exception however. Low average levels of competence are significantly associated with higher levels of violence within the oldest sample only (see Table 42). In the all other models, low self-control is significantly related to later levels of offending over time, both within the youngest and oldest samples. This suggests that social competence established in adolescence has very little impact on overall offending levels, and more important for explaining overall levels, are early levels of self-control.

Consistent secondary findings to emerge from this analysis are the conflicting findings regarding the relationship between the number of hours worked and delinquency within the youngest and oldest samples. Whereas the level of work intensity is positively related to higher levels of offending in the youngest sample, it is negatively related to offending levels within the oldest sample.

Sensitivity Analyses: Between-Individual Effects of Social Competence and Offending

Growth Rate

In the correlation matrices presented in Table 31, the growth rate of competence during adolescence was negatively related to the all of the offending outcomes for the youngest but not the oldest sample. This gives some reason to suspect that the relationship between the growth rate and later offending may be significant for the youngest sample, however, recall that the bivariate relation is relatively weak in magnitude. Results regressing each of the offending outcomes on the growth rate of competence indicate that the growth rate of competence in adolescence has very little influence on later offending levels. This null finding holds for all outcomes, across each sample (Tables not shown).

One Factor Model Score

As in the case of the growth rate scores of competence, results from the analyses that use one factor model scores to predict later levels of offending also indicate that the

effects of competence established in adolescence on offending levels are not significant. For all samples and all offending outcomes, the results do not substantively change when using a measure of competence that weights the competence items unequally. The sensitivity analyses thus far bolster the null findings of the primary analyses, however, the possibility remains that perhaps the two underlying constructs of competence (dependability and sociability) exert opposite effects or are of different magnitudes on the offending outcomes and thus the overall effect is null.

Two Factor Model Scores

Results from Table 43 indicate that among the youngest sample the component referred to as sociability is positively and significantly related to later levels of delinquency ($b = .22$, $p<.05$). Note that this finding is positive, indicating that higher levels of sociability, are related to higher levels of general delinquency. In particular, a one unit increase in the sociability score is associated with a 25% increase in the expected number of self-reported delinquent acts. This is contrary to the hypothesis predicted in the current study, which focuses on the negative relationship between social competence and offending, however, it is not theoretically unreasonable or surprising.

The literature presented in Chapter 2 suggests that competence may also facilitate criminal related goals or outcomes as well, recall the references to narratives taken from Steffensmieir and Ulmer (2005). Although, these narratives pertained to adults and largely emphasized a skill set, such as dependability, that facilitated criminal activities, they also highlighted the importance of getting along with others within those criminal networks. In regards to adolescents, perhaps those adolescents that are more outgoing

and gregarious are also more likely to have a larger number of friends and peers. This may increase the probability of exposure and opportunities for deviant behavior. Given the tendency for adolescents to co-offend in groups and the normative tendency to engage in relatively trivial crimes in such settings (Reiss, 1988), it is likely that the more sociable, pleasant adolescents have more friends, and thus more opportunities for association with deviant peer groups. If this is a possibility, then higher levels of competence, measured primarily as sociability, should be related to higher levels of petty crimes, such as many forms of theft. Table 44 presents the results using the two factor scores to predict levels of theft among the youngest sample, and the results indicate that the effects of sociability are indeed significant ($b = .58$, $p<.05$) and the magnitude of the effect is substantial as a unit increase in the sociability score is associated with a 78% increase in the expected number of self-reported thefts. Sociability is not significantly related to the number of self-reported violent acts among the youngest sample. Among the oldest sample, neither factor is related to theft (Table not shown).

Table 45 indicates that higher levels of dependability and productivity are related to lower levels of violence ($b = -.34$, $p<.05$) among the oldest sample. A one unit increase in the dependability score is associated with a 29% decrease in the expected number of violent acts reported. Recall from Table 42 that the overall social competence score is significantly related to a lower number of self-reported violent acts. The current analysis findings indicate that the dependability component is driving the global relationship between competence and violence among the oldest sample. This may seem somewhat surprising as it seems intuitive that one's ability to get along with others may be related to aggression. However, Loeber and colleagues (forthcoming) have found that academic

achievement is related to lower levels of violence among this sample of boys in the PYS, thus the items that comprise the dependability component, such as completes tasks timely, good school work and following directions, may reflect those traits that facilitate positive academic performance and hence lower levels of violent offending.

Additionally, recall from Chapter 3 that the items which reflect maturity (acts age appropriate) and responsibility (behaves responsibly) load heavily on both factors. Such traits are also relevant for higher levels of academic achievement and may also contribute to the observed finding. Finally, neither sociability nor dependability is related to violence ($b = .06$, $p = .54$) for the youngest sample (Table not shown).

The use of two factor scores as a measure of competence established in adolescence provides some support for the direct effects of competence on levels of offending. There is virtually no evidence indicting that adolescence competence has an indirect effect on offending through adolescents' average level of employment in the current analyses. However, the average level of employment does have a significant direct influence on offending outcomes in the theft analysis presented in this section for the oldest sample (see Table 39). This indicates that among the oldest sample, higher levels of employment are related to lower levels of offending over time.[72] These employment findings were not evident in the youngest sample, and in fact, there was a positive association between the number of employment hours worked and offending (see Table 35 and Table 38). This is particularly interesting, as the sociability factor is

[72] It is important to note that employment is treated as a level variable in this analysis, thus the effects of employment may in fact be spurious. The next section addresses the indirect effects of the average level of competence on offending through changes in employment status, thus the within-individual effects of employment are modeled and causal inferences greatly strengthened.

significantly related to higher levels of offending over time so is the average number of hours worked while employed.

Given the fact that these models conceptually and statistically define both competence and employment as "level" variables, it would be premature and inappropriate to conclude that a higher level of either variable causally leads to higher levels of self-reported offending. Although it certainly suggests that the two variables vary with each other significantly, it may be, for example, that the positive relationship between sociability and the number of hours worked on theft is spurious. Indeed recent literature which examines the effects of job intensity on delinquency during adolescence has indicated that any positive relationship is spurious (Apel, et al., 2007; Paternoster et al., 2003). Moreover, in the current analyses the effects of the average number of hours worked are not significant (positive) among the oldest sample for any of the outcome variables.

Summary

The above results section has focused on the between-individual level direct effects of adolescent competence on levels of offending over time. Additionally, I examined the between-individual level direct effects adolescent competence on offending, and indirect effect via between-individual levels of employment involvement. Overall the results suggest that social competence established in adolescence does not have an effect on levels of offending over time. However, low levels of self-control did exhibit a significant and positive relationship with levels of offending across many of the crime outcomes and samples, as well as across various model assumptions. This

indicates that traits, in this case self-control, established in adolescence exert effects on the overall level of offending throughout the time span. The analyses which incorporated the separate factor scores of competence, dependability and sociability, indicated sociability may indeed be statistically relevant for theft. This suggests that perhaps one's ability and tendencies to engage well with others may lead them into social networks or situations that are conducive to delinquent behavior—a suggestion that is particularly interesting given the contrary hypothesis posed in the current study. Finally, there is evidence suggesting that dependability is statistically relevant to lower levels of violence among the oldest sample. A substantial amount of research has indicated that academic performance and achievement is related to lower levels of overall offending, it is likely that the traits that comprise the dependability scale are related to academic achievement and may result in the observed negative relationship between dependability and violence.

Again, it is important to note that causal inferences based on the above section are weak. However comments regarding the associations of the variables are acceptable. In addition, the above section does not shed light on whether the between-individual level effects of competence established in adolescence indirectly impacts later levels offending through within-individual changes in employment status. I now present results pertaining to this issue in the next section.

Between Level Effects of Competence, Role Changes and Offending Over Time

In the following analyses, I use HGLM to estimate the between-individual effects of competence and within-individual effects of employment on levels and changes in offending over time. To accomplish this, competence is again treated as a static variable

and entered in the level 2 equation, while employment is treated as a time-varying variable entered in both the level 1 (group-mean centered) and level 2 (grand-mean centered) equations. To control for persistent unobserved heterogeneity that may bias time-varying estimates of employment, the error term at the level 2 equation is treated as random.[73] Note that there is a significant loss in the number of person-waves available for analysis due to the within-individual analysis of employment changes on offending.[74]

Table 46 presents the first set of analyses pertaining to the effects of early levels of competence on changes in employment status and general offending for the youngest and oldest samples. In both analyses, early levels of competence are not significantly associated with later levels of offending and only among the oldest sample are within-individual changes in employment significantly related to changes in delinquency ($b = -.12$, $p<.05$). Adolescent competence also does not appear to exert any indirect on offending through employment changes in either sample. Additionally, whereas the prior analysis which treated employment as an average level variable found a positive effect on

[73] The GEE model is not used in this portion of the analysis because the primary purpose of this analytical section is on making causal inferences regarding the effects of employment changes on offending, controlling for levels of competence. Thus examining the time-varying effects of employment is central. As stated in Chapter 3 although GEE is frequently used with panel data to examine patterns over time and although results can be similar to other change models, there may be more suitable approaches for examining time-varying variables. In particular, through a fixed effects model or a random effects hybrid model that decomposes the time-varying variables into person-specific and time-varying components (Allison, 2005; Bushway et al., 1999).

[74] This loss of person-wave observations should not impact the internal validity of the time-varying estimates, such as employment and peer delinquency, however it will impact the external validity of between-individual direct and indirect estimates of competence on offending. Internal validity of the between-individual estimates of competence are already compromised in the current analysis given its specification in the model. Additionally, given the loss of person-waves that occurs by including more within-individual variables that vary over time, I do not conduct sensitivity analyses using the factor scores as this would result in a further loss of person-waves. The inclusion of an average based scale that consists of the items representing the separate factors may be useful for retaining cases, and will be the topic of future research stemming from the current study.

delinquency for the youngest sample, there is no evidence of a causal and positive effect for changes in job status or work hours.

In Table 47 the results indicate that average levels of competence are not significantly related to higher levels of theft across the youngest or oldest samples. Recall from the earlier between-individual level analysis of competence and employment on offending levels, that for the youngest sample there was a positive association between the number of hours worked and level of theft. However the within-individual analysis of the employment effects indicate that for both the youngest ($b = -.20$, $p<.10$) and oldest ($b = -.19$, $p<.05$) samples, the transition to employment coincides with decreases in self-reported property offending. This strongly suggests that the positive association found in the earlier between-individual analyses of employment and offending is spurious, and involvement in employment for the current samples actually results in decreases in offending. Moreover, including the number of job hours worked for the youngest sample is not significantly related to self-reported theft ($b = -.00$, $p>.10$) (Table not shown).

Results which examine the effects of adolescent competence and changes in employment on levels and changes in violence over time also indicate that neither is significantly related (e.g., see Table 48). For both samples, individual increases in the association with delinquent peers are positively related to increases in violence over time.

Summary

None of the findings described above indicates that competence treated as an early childhood static trait is significant for levels of offending in either sample, once average levels of self-control, parental supervision and within-individual changes in peer

delinquency, employment and age are taken into account. This is not entirely surprising given the weak, albeit informative, associational findings from the first set of between-individual level analysis. In spite of these null findings for the between-level effects of competence, the above described results are useful for shedding light on the casual within-individual effects of employment on offending. Results from the current study are more in line with recent studies that have found that there is not a positive relationship between adolescent work experiences and delinquency. Although this is mere speculation, recall from Chapter 4, that social competence was positively related to involvement in current employment. The analysis using factor scores revealed that of the two components, sociability is significantly related to involvement with work experiences. Although these findings reflect between-individual differences in levels of sociability on subsequent involvement with employment, thus there may be issues pertaining to spuriousness as well, these findings in conjunction with the findings which indicated that sociability is related to higher levels of theft may lend credence to the extant literature which indicates a spurious relation between the positive association of adolescent work and delinquency. For example, perhaps those adolescents that are likely to be socially active are more likely to be involved in early employment experiences as well as delinquency.

Although I was unable to conduct a within-individual analysis of changes in competence as well as employment and offending over time, the analysis in the next section attempts to strengthen causal statements pertaining to effects of competence on offending over time, by examining within-individual changes in competence and controlling for persistent heterogeneity in the average level of offending between

individuals. Whereas all of the prior analyses have treated both competence and self-control as static constructs that exert between-individual level effects on the probability of employment and offending levels over time, the following analysis examines the within-individual effects of social competence on delinquent offending during adolescence.

Within Individual Effects of Competence on Changes in Offending

In the following section I examine the causal effects of adolescent competence on all three delinquent outcomes. I do so by presenting results from the GEE model, a fixed effects model and a random coefficients mixed "hybrid" model which decomposes all time-varying variables into between and within variation. Chapter 3 details the advantages and disadvantages of each of the panel models in general and, more specifically, in relation to the current data set. The first two models are specified in a relatively straightforward manner (see Chapter 3), however the mixed model requires a brief specification. In the mixed hybrid model using HGLM, all of the time-varying variables are group-mean centered at the level 1 equation, grand-mean centered at level 2 and the error term in the level 2 equation is set to vary across individuals.[75] Additionally, instead of using the same sample of adolescents I have used in prior analyses, I use an expanded sample in an attempt to maximize the within-individual analysis. However, results based on equivalent samples as well as including the time stable variables used in prior analyses (race and socio-economic status) are presented in the appendix in Table 2a

[75] Additionally, the error term for the slope in equation 2 is set to vary across individuals as well, however, in the case of the within-individual change models predicting violence, the error term at this equation is fixed as the models failed to converge otherwise.

through Table 4a. I present results from all three models to ensure the robustness of the findings, and in particular, to demonstrate the consistency of the findings across model assumptions and limitations.

General Delinquency

Table 49 presents the results examining the within-individual effects of changes in competence, self-control, parental supervision, peer delinquency and age on changes in self-reported delinquent offending. For the youngest sample, across all models, self-control is positively related to increases in general delinquent offending ($b = .09$, $p<.05$). As indicated by the fixed effects results in column 1 of Table 49, changes in parental supervision coincide with offending as well, such that decreases in parental supervision leads to increased offending ($b = .05$, $p<.001$). Within-individual changes in competence however, do not correspond with changes in delinquent offending. It is clear that within this analysis, for the youngest sample, decreases in self-control are far more influential for changing offending patterns than changes in competence. Recall that in many of the between individual level analyses, self-control was quite influential among the youngest sample as compared to competence. However given the vulnerability of the between-individual level models to spuriousness, causal inferences regarding self-control were weaker. This analysis provides stronger evidence for the negative, causal effects of low self-control on general delinquent offending. Additionally, the significant relationship between the average level of self-control and overall level of offending suggested that self-control established in childhood exerted effects throughout life, despite being a distal influence. The current analysis also indicates that self-control is a strong proximal source

of changes in offending as well, as short-term increases correspond to increases in offending behaviors.

Also presented in Table 49 is the within-individual analysis for the oldest sample, and unlike the youngest sample, self-control does not exert a causal effect on changes in within-individual delinquency (FE: b = -.02, p>.10). Rather, the rate of offending among the oldest is significantly impacted by changes in competence over time, specifically, increases in social competence correspond with decreases in delinquent offending (b = -.19, p. <.05) and this finding is robust across various model assumptions. As in the case of self-control for the youngest sample, this is strong evidence of the crime influencing effects of social competence. However, does this necessarily indicate that self-control does not have a causal effect on delinquency for the oldest sample? Unfortunately the answer to that question is not as clear based on this analysis alone as this focuses on within-individual *changes* of variable x on offending. If self-control is indeed formed early in life and remains relatively stable thereafter, as many have argued (Gottfredson and Hirschi, 1990) and there is evidence to suggest (Hay, 2006), than it is certainly possible that self-control still contributes to delinquency among the oldest sample by contributing to the initial level of antisocial and delinquent behavior, or the tendency to engage in such behavior. This analysis does reveal that the *time-varying* aspects of self-control (measured as impulsivity), to whatever degree, do not coincide with changes in offending. In many of the prior between-individual analyses, average levels of self-control were significantly related to levels of offending among the oldest sample, more so for general delinquency and theft than for violence. Given the differences in the ages of respondents across the samples, it may be that self-control has already become "static" in

the oldest sample, while competence remains dynamic to a certain extent.[76] This is purely speculative however and will be discussed later in this document in the context of future research.

Theft

Table 50 presents the results for within-individual changes in competence on property offending over time. For the youngest sample, increases in self-control are again significantly related to increases in self-reported theft ($b = .13$, $p<.10$). Although the fixed effects coefficient is marginally significant ($b = .13$, $p<.10$), the HGLM coefficients, in particular the subject-specific coefficient ($b = .18$, $p<.01$), provide confirming evidence that the fixed effect finding is substantively significant. As in the case of the general delinquency outcome, within-individual changes in social competence do not impact concurrent changes in self-reported theft for the youngest sample ($b = .06$, $p>.10$).

Similarly, there is also reason to believe that the effects of within-individual changes in social competence that were observed in the oldest sample for the general delinquency outcome influence changes in theft as well. Results suggest that changes in social competence occur with changes in property offending ($b = -.24$, $p<.10$) for the oldest sample, however, these findings are marginally significant across all models at the 2-tailed level.[77]

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[76] This is statement does not suggest that self-control has differential impacts across the samples, or across ages. Thus, there is no evidence to suggest that there is a different causal process underlying self-control and offending across the samples. Perhaps more importantly, since there are no statistical tests of differences in coefficients across groups included in the current study there is no basis for making such claims. However these will be addressed in future research.

[77] It is important to note that indeed I pose directional hypotheses in the current study, thus arguably a one-tailed test is more appropriate. However, given the theoretical and empirical reason to believe that

Violence

Table 51 presents the results of the within-individual analyses on the violence offending outcome. Given the results from the between-individual level analyses, it might be reasonable to suspect that changes in social competence would not be related to changes in self-reported violent offending for the youngest sample, however an analysis of within-individual changes suggest the answer is not so straightforward or simple. An examination of Table 51 indicates that merely relying on a model that does not partition the between-individual level variation out from the within-individual level variation may possibly overlook significant within-individual effects of competence on violence. Among the youngest sample, within-individual changes in competence are related to decreases in self-reported violent acts ($b = -.12$, $p<.05$) however the magnitude of the effect is relatively small, specifically, an 11% reduction in reported violent acts for each one unit increase in competence.

Also reasonable to suspect from the between-individual analysis, is a negative relationship between increasing social competence and decreasing self-reported violent behavior among the oldest sample. Indeed, the findings across all of the models for the oldest sample indicate that increases in competence correspond with decreases in self-reported violent behavior ($b = -.60$, $p<. 01$). Given previous findings from the between-individual analyses, we may expect a larger effect for the oldest sample and loosely speaking that appears to be the case. For example, a one unit increase in social competence among the oldest sample results in a 45% reduction in the number of self-

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competence may nonetheless have an effect in a direction counter to the direction focused on in the current study, thereby having two directional effects, I employ two tailed tests to ensure a fair test of the effects of competence on offending outcomes.

reported violent acts. In neither sample do changes in self-control have any effect on changes in behavior, supporting an earlier suspicion that perhaps social competence, as compared to self-control, may be more immediately relevant for preventing violent behavior. For both samples ($b = .06$ and $b = .07$, $p<.01$), increases in peer delinquency are significantly related to increases in violence.

Summary of Within-Individual Effects of Competence on Changes in Offending

The conclusion based on the analyses of within-individual changes in social competence on offending over time strongly indicate that changes in competence coincide with changes in offending over time for general, property and violent offending. These findings remain robust across the various panel model assumptions and limitations. It is also evident from the results presented that relying strictly on a model that does not focus solely on within-individual changes or partition out between and within-individual variation may lead to biased estimates of those time-varying variables. Although this was the case in the current analyses, for many of the outcomes the results were substantively similar even if empirically different in regards to strength or magnitude. Importantly however, the trade off between efficiency and bias that is often required when choosing between random and fixed effects models is irrelevant when one relies on the mixed, hybrid approaches that decompose time-varying variables into person specific and time-varying components. This also allows more statements to be made about both the internal and external validity of findings. Another common finding that emerged from this set of analyses is the importance of changes in self-control for the youngest sample, which was significantly related to both changes in general and theft related offending.

The most relevant finding for the current study however is the finding that changes in competence are significantly related to and occur with changes in offending across all outcomes of the oldest sample, and for violence among the youngest sample.

Finally, all of the results presented in Table 49 to Table 51 were solely focused on assessing within-individual changes, and were specified in a way to facilitate an examination of the consistency of the estimates across the various model assumptions, limitations and approaches to analyzing panel data. As a result, even for those models in which time stable variable could be included in the model I omit them for the above purposes. Additionally, the primary purpose of the within-individual analyses in the aforementioned section is to more thoroughly examine the causal influences of social competence on offending by focusing on within-individual change and controlling for time stable differences between individuals that lead to persistent unobserved heterogeneity. Thus I incorporated the maximum possible data points available to conduct this analysis, and in doing so, I use a different sample of youth in the within-individual analyses as compared to the sample of youth used in the earlier analyses. For the purposes of tying all of the analyses in the current study together, I also conducted a within-individual analysis of changes in competence on changes in offending using the same sample of youth and including those relevant time stable variables, such as race and socio-economic status, using GEE and HGLM. These results remain substantively similar within the sample of youth used in all prior analyses in the current study and presented in the Appendix in Tables 2a through Table 4a.

The next section addresses the final hypothesis posed in the current study which focuses on the within-individual effects of cumulative competence on changes in

offending over time. I use the same analytical approach as used in the aforementioned analyses, thus only variables that change over time are included in the analyses.

Changes in Cumulative Competence and Offending

Recall from Chapter 3 that cumulative competence refers to teacher rated academic achievement or performance. In particular it is a scale that consists of items which reflect the teacher's assessment of the youth's reading, math and verbal performance as well as grade retention. For the purposes of the current study the variable was recoded such that each score at each assessment reflects past and prior scores thereby attempting to capture the notion of accumulating competence over time.[78] Again the focus in this section is on within-individual changes in cumulative competence and changes in offending over time. Thus, I employ the use of a within-individual change panel models to examine this issue As demonstrated in the results section pertaining to within-individual change, the mixed model "hybrid" approaches are a suitable approach for doing so, and perhaps more importantly, has the benefit of reducing bias, increasing efficiency in estimation and including time stable co-variates.

Results from the analyses indicate that cumulative competence is only statistically relevant for the youngest sample when explaining changes in general offending over time. When the analysis was conducted examining changes in specific crime types (theft and violence), changes cumulative competence was not statistically related to changes in

[78] This coding scheme obviously relies on the assumption that social competence once obtained in the form of an outcome does not diminish over time. Stated more clearly, I assume that competence once obtained cannot be "lost", it either remains stagnant or increases over time. This is an assumption that should be tested in future research. I further address this issue as well as others related to the limitations of the current measure of cumulative competence in the discussion.

outcomes, controlling for changes in all other relevant co-variates as well as unobserved heterogeneity. Table 52 displays the results from the analysis within the youngest sample. All of the other time-varying variables that were significantly associated with changes in general delinquency in the within-individual competence analysis are also significant in the current analysis. For example, increases in low self-control is positively related to increases in offending ($b = .10$, $p<.001$). Of importance however, is the finding that among adolescents within the youngest sample, increases in cumulative competence coincide with decreases in general offending ($b = -.01$, $p<.001$). This relationship is not evident in the oldest sample however—in none of the outcomes specific analyses is changes cumulative competence related to changes in offending.

Recall that from Table 49 that changes in competence was not related to changes in offending for adolescents in the youngest sample ($b =-.04$, $p>.10$), yet here we find that changes in cumulative competence are significantly related to changes in delinquency. This may suggest that those adolescents who develop competence earlier in life, and hence accrue competency related outcomes earlier in life, are also exhibiting corresponding decreases in offending earlier in the developmental span as well. Importantly, whereas the majority of items in the social competence measure captures behaviors related to getting along with others or abstract behavioral tendencies (i.e., acting responsibly), the current cumulative competence measure captures perceived academic performance. This may indicate that those adolescents that develop and demonstrate academic skills that are perceived as above average may be more likely to invest in those skills and become more involved in school related pursuits are other extracurricular activities that are conventional in nature. Doing so may limit the

opportunity and time necessary to engage with deviant others and reduce the opportunity for delinquent activities. However, it may also be possible that such speculation is unnecessary regarding the meaning of this finding, as this was the only cumulative competence analysis in which there was an effect to explain. Perhaps this finding is due to chance alone as there are a substantially large number of statistical tests conducted within the current study.[79]

[79] Additionally, the cumulative competence analysis was also conducted using perceived academic performance scores that did not take into accumulating competence. For example, I also conducted the analysis merely using the score for that time point and not summing prior scores. Results from those analyses did not indicate that changes in cumulative competence were related to changes in offending.

Chapter 6: Discussion and Conclusions

Social competence is defined as the set of individual cognitive and non-cognitive attributes that facilitate role transitions and adjustment throughout life, and is often measured through such traits as dependability, intellectual involvement and interpersonal skills. Social competence not only emphasizes a set of attributes that are conducive to individual goal obtainment, but more importantly, the ability to do so while maintaining positive interactions within social relationships and institutions. In the beginning of this dissertation, I argue that social competence may be important for criminological theory and research which focuses on offending patterns over time in two main ways. First, social competence may potentially elaborate upon the mechanisms that underlie the empirical association between involvement in conventional social institutions and reductions in offending over time. Social competence may indirectly impact changes in criminal offending through its influence on involvement in conventional social relationships, such as employment. Second, social competence may directly explain reductions in criminal offending patterns over time. Social competence can be viewed within a developmental context, such that increases in competence coincide with increases in age, experience or as a function of maturity. In the following section, I outline the hypotheses and discuss the corresponding results that emerged from this study of social competence and criminal offending over time.

Hypothesis 1a: Higher levels of perceived social competence during adolescence are significantly associated with an increased probability of being employed later in life.

Results 1a: I used two outcomes of involvement in employment, self-reported annual and current employment, and several measures of competence to test this

hypothesis. The overwhelming conclusion based on the results presented in Chapter 4 is that social competence established in adolescence is positively related to an increased probability of self-reporting annual and current involvement in employment over time. These findings were most consistent when using a measure of current employment rather than an annual measure, and in the oldest sample of respondents as compared to the youngest sample. This may largely be a result of the ages of the respondents in each sample. For example, among the youngest sample, the ages ranged from approximately ages 6 to 23, and at approximately 50% of the person-observations used in the analysis respondents were under the age of 12. And although the specific employment questionnaire item asked respondents whether they had a paying a job in the past year and did not inquire about informal versus formal employment, it is likely that many of the youth in the youngest sample were not involved in formal employment. Indeed, it is likely that experiences with work at this point may be largely informal, such as baby sitting, mowing lawns, newspaper delivery, etc. Adolescent competence may be less salient for informal work experiences such as these, and more important for formal work involvement such as restaurant, retail or service work. Moreover, whereas the average level of competence is not related to the probability of annual employment for the youngest sample, it is related to the probability of current employment. This indicates that perhaps increasing age in the youngest sample leads to increasing eligibility for current employment, and thus competence may be more relevant for obtaining formal work.

On the contrary, in the oldest sample, the ages ranged from approximately ages 12 to 29 and at approximately 50% of the person-observations used in the analysis

respondents were under the age of 19. Many of the youth in the oldest sample would be in a position in which they are transitioning from informal to formal work experiences, and as stated, it is likely that social competence is more salient for securing involvement in formal work experiences.

Additional analyses of the effects of competence on employment using growth scores did not find any significant effects for either sample. The average level of growth for both samples indicated (-.01) that there is very little growth in competence over time, or it may indicate that growth is non-linear, or it may indicate that the growth is more qualitative rather quantitative.

Analyses using both 1-factor and 2-factor competence scores found that higher levels of competence are significantly associated with a probability of annual and current employment. Of particular interest is the finding that the sociability component of social competence was consistently and significantly related to the probability of involvement in employment over time for the oldest sample. Recall the age distribution of the person-observations included in the oldest sample, at approximately 50% of the person-observations respondents were under the age of 19. Given this age distribution, my earlier speculation that many of the jobs available to the respondents during this age range would likely be customer service oriented jobs, such as restaurant or retail work, is more plausible. It is likely that these types of jobs place a heavy emphasis on one's ability to get along with others pleasantly and the appearance of likeability, rather than dependability.

Another interesting finding to emerge pertains to the relationship between self-control and involvement in annual employment. When using factor scores of

competence, lower levels of self-control are related to an increased probability of annual employment for both the youngest and oldest samples. This is especially interesting because it highlights the possibility that the culprit behind the observed positive spurious relationship between adolescent work intensity and delinquency (see Paternoster et al., 2003) may be low self-control. This finding combined with the aforementioned findings suggest that individual traits—social competence and self-control—influence the probability of involvement in conventional social institutions such as employment.

Hypothesis 1b: Higher levels of perceived social competence during adolescence are significantly associated with job stability over time.

Results 1b: Results from this exploratory analysis also provide preliminary support for the notion that adolescent competence is significantly associated with increased job stability, measured as job hours, over time. Although this measure of job stability is certainly debatable, it represents a first look into the possibility of competence effects on more nuanced job experiences. These findings suggest that more thorough examinations, which take into account the quality, type and character of employment, should be conducted in the future. Overall, the majority of the findings to emerge from this portion of the competence and employment analyses indicate that competence is related to increases in the probability of working more hours for the oldest sample. Again, it is likely that the youngest sample has more limited opportunities for formal, paying work experiences and involvement in informal work experiences (e.g., babysitting/mowing the lawn) often do not require nor demand working a substantial number of hours.

As in the prior analyses, the growth score of competence is unrelated to the number of hours worked while employed for either sample. For the analysis that used 1-factor and 2-factor competence scores, an interesting finding to emerge is that both adolescent competence and low self-control have independent, significant positive effects on the number of hours worked. Also similar to prior analyses, sociability is the competence component that appears to be driving the significant relationship between competence and job hours. Thus, adolescents with higher levels of sociability are more likely to work longer hours when employed as opposed to their less sociable and pleasant peers. This may be a result of two processes. One, employers may prefer adolescents with such qualities and be more likely to hire them and retain them over time. Second, adolescents that are more sociable may be more likely to seek out employment because they gravitate towards social venues in general and those activities that take them outside the confines of an arguably more restrictive, and socially isolating home environment.

Finally, I also mentioned that low self-control was positively related to an increased number of hours worked while employed. This finding, along with the findings from hypothesis 1a regarding the positive association between low self-control and involvement in employment, bolster the suggestion that low self-control may lead adolescents to abandon school related activities and long-term academic pursuits, in favor of the short-term rewards related to both intensive work and delinquent activities. However, perhaps even more interesting, is the possibility that social competence may also influence both involvement in intensive work and delinquency. Recall the potential underlying mechanisms of the sociability and increased number of hours worked finding I specify in the preceding paragraph. Adolescents that are more sociable may be more

gregarious and seek out activities or environments that take them away from those areas that are likely to have stronger sources of formal social control, such as the home and school environment, in favor of environments that are less restrictive. If indeed employment opportunities among this age group (under 19) are largely located in the service, retail and entertainment (e.g., movies) markets, than it is likely that there are less sources exercising formal social control over behavior (Osgood et al., 1996).

Irrespective of the underlying mechanism, there is evidence from this analysis to suggest that individual level traits such as self-control and social competence are important for determining involvement in conventional social relationships such as employment.

Hypothesis 2a: The average level of social competence established in adolescence is significantly associated with a lower level of offending over time.

Results 2a: There were a substantial number of statistical tests conducted in Chapter 5 to examine the between-person effects of competence on overall levels of offending over time. Several consistent and prominent results emerged, however these results pertained to the effects of self-control on overall levels of offending. In fact, in most of the analyses, self-control is consistently related to overall levels of offending within both the youngest and the oldest samples. This not surprising at all given the previous literature pertaining to the effects of early childhood traits and the long lasting impacts of such traits for future development (Loeber et al., forthcoming; Farkas, 2003). In regards to self-control, Gottfredson and Hirschi (1990) have argued that once formed, self-control is relatively stable and impacts a variety of behaviors and outcomes throughout life, in particular it results in higher levels of offending and lower levels of

involvement in conventional, pro-social pursuits. The results from the current analysis provide support for that contention. Nonetheless, there is slight evidence to suggest that the average level of social competence established in adolescence is significantly associated with a lower level of offending over time.

The major source of support to emerge pertains to the relationship between the average level of social competence and the average level of violent offending among the oldest sample. Across each model specification of violence for the oldest sample, higher levels of social competence were related to lower levels of violence. This finding was not observed in the youngest sample. One potential explanation for this finding is that one's ability to maneuver effectively within social relationships is more salient for violent offending, as compared to property related offending. However, once we moved from the summary based measure of competence to the 2-factor competence score, the analysis revealed that the components dependability and productivity were significantly related to lower levels of violence among the oldest sample. Although on its face this finding seems odd, research pertaining to this particular sample of boys from the PYS makes this finding more understandable. As discussed in the results section of Chapter 5, the boys from the oldest sample grew up in the context of high national and community crime rates. In particular, recall that at approximately 50% of the person-observations used in the analysis respondents were under the age of 19 and the observational period coincided with a national increase in juvenile violent offending for juveniles in this particular age group (Blumstein and Wallman, 2000). Even more importantly for explaining this finding is research which indicates that the boys from the oldest sample of the PYS were more involved in serious violence during early adolescence through the

late teens, with violence peaking at around ages 18 to 19 (Loeber et al., forthcoming). Given the finding that academic achievement is strongly related to lower levels of delinquency within the PYS data and the general high levels of violence for respondents during this developmental span, it may be that the traits reflected by the dependability factor capture elements that are salient for facilitating high academic performance. Loeber and colleagues have found that academic achievement can act as a preventive promotive factor, which is defined as a factor that predicts a low probability of later delinquency in the general population. Perhaps adolescents from the oldest sample that obtained competence early in adolescence, in the form of dependability and productivity, were able to reap the rewards of such early advantages and avoid involvement with violence.

However, recall the contrary finding which emerged from the youngest sample that indicated that higher levels of social competence are related to higher levels of self-reported theft. In particular, sociability was found to be significantly and positively related to higher levels of theft among the youngest sample. This finding although contrary to the hypothesis posed in the current study is not at all contrary to prior literature which implies that competence may have a positive effect on persistence in offending (Steffensmeier and Ulmer, 2005) and implications from the peer delinquency and co-offending literature (Reiss, 1988). It is certainly plausible that more sociable adolescents are likely to have higher levels of self-reported theft by virtue of their involvement in peer networks and the resulting increased opportunities to offend that may arise as a result of the relatively normative and group nature of delinquency during adolescence.

In sum, although this hypothesis was not supported fully across all crime types, there was evidence indicating that higher levels of social competence are related to lower levels of violence for the oldest sample.

Hypothesis 2b: The growth rate of social competence in adolescence is significantly associated with a lower level of offending over time.

Results 2b: As reviewed in the preceding discussions of the results, the growth rate of social competence was not significantly related to higher levels of offending among either the youngest or oldest samples. However, I must note that this may reflect the nature of the measurement used, rather than the concept which underlies the measurement. That is, the current study used a measure which captured the rate of growth from the first assessment to the last assessment. The overall average rate of growth in each sample was negative and close to zero, indicating at best no growth in competence and at worst negative "growth" in competence over time. Additionally, correlations between age and competence were also negative in direction. Earlier I stated that the growth of competence may be non-linear and the current measurement cannot capture that movement, however, the correlation between competence and age squared was non-significant for each sample. Perhaps the growth of competence during adolescence is obscured by other psychosocial difficulties and stress that may periodically characterize adolescent development. Whatever the cause of the non-significant relationship, the conclusion based on the analysis indicates that there is no support for the hypothesis that the growth of competence, measured as a growth rate, influences levels of offending over time.

Hypothesis 3a: Within-individual increases in perceived social competence result in within-individual decreases in criminal offending, controlling for both unobserved and observed heterogeneity in offending.

Results 3a: Findings from the series of within-individual change models provide strong support for this hypothesis among the oldest sample and moderate support among the youngest sample. Among the oldest sample, within-individual increases in competence are significantly associated with decreases in general and violent offending, and to a lesser degree property offending. Among the youngest sample, increases in competence are associated with decreases in violent offending only. This result provides strong support for the direct and within-individual effects of competence on changes in offending patterns over time. These results are also supportive of findings stemming from the social-psychological literature on the role of adolescent competence for adulthood transitions and maturation (Clausen, 1993; Farkas, 2003; Harter, 1982). An interesting implication of this finding in comparison to the competence findings (or lack thereof) from hypothesis 2a, is the possibility that competence is less important for the overall level of offending and more important for changes in those levels. Compare this with the overwhelming finding that the average level of self-control is significantly related to levels of criminal offending, yet changes in self-control are not related to changes in offending. Perhaps self-control is more static and less resistant to change than social competence, which remains dynamic and malleable for a longer period of time. In sum the findings pertaining to within-individual changes in competence are consistent with the theoretical framework posed in Chapter 1 which outlined the potential importance of competence for explaining why only certain individuals are able to select

into conventional relationships that can alter previously established trajectories of criminal offending. Changes in within-individual competence may not only lead to reductions in within-individual offending, but it may also be related to changes in involvement in structural roles, at least more so than self-control.

Hypothesis 4: Increases in within-individual perceived cumulative competence, measured as teacher reported perceived academic performance, are associated with decreases in criminal offending over time.

Results 4: This hypothesis was weakly supported in the current analysis. Effects for cumulative competence were only observed for one outcome in one sample. Specifically, I found that within-individual increases in cumulative competence are related to within-individual decreases in general delinquent offending among the youngest sample only. Recall the discussion pertaining to the effects of academic achievement among boys from the PYS sample which emphasized the importance of academic achievement and performance for preventing offending (preventative promotive factor) and encouraging lower levels of violence and theft. Unlike social competence, perhaps cumulative competence measured as academic performance is most salient for setting the initial levels of delinquency rather than changing levels of delinquency. Or, perhaps the lack of statistical finding is due to measurement error. Whereas many of the prior studies have measured academic performance as grades, the current study uses teacher reported assessments of how well the student is performing in relation to others as well as grade retention to capture the performance. Moreover, the current measure also assumes that once adolescents obtain competence they cannot lose such skills sets or outcomes, rather the level of competence remains stagnant or increases

over time. This assumption demands testing in future research, as does another implicit assumption of the cumulative competence measured in the current study. In particular the current study also ignores the possibility that distal (further back in time) and proximal (closer to the present) cumulative competence have differing effects on transitions throughout adulthood. It is certainly plausible that those adolescents with higher levels of recently obtained competence or perceived competence will fare much better during the transition to adulthood as compared to their currently less competent peers.

In the following section I discuss the limitations of the current study, as well the directions and issues for future research.

Limitations and Future Research

As with many studies, this study and the findings reported are vulnerable to certain limitations. In particular, generalizing findings from the current study to the general population is limited for one fairly obvious reasons—the sample only contains males. This is an important limitation because prior evidence suggests that social competence levels vary between males and females (higher) and the effects of social competence vary across conventional life outcomes such as marriage (Clausen, 1993). In a related vein there is research that indicates competence levels vary by social structural positions such as race and socio-economic status, with African Americans and lower class individuals having less competence as compared to others. Much of this research focuses on the how cultural capital and structural disadvantages can impair the development of competence and competency related skills (Farkas, 2003). Although the current study controlled for race and class, I did nothing to explore the relationship

between social structural disadvantage, competence and subsequent opportunities for conventional relationships that may act as vehicles of change. This point is especially important as Giordano and colleagues (2002) have highlighted the importance of structural disadvantage for cognitive transformations that may lead individuals to seek out "hooks" for change when re-directing their prior criminal behavior.

Another limitation of the current study—attrition and subsequent missing data—is also common to all longitudinal studies more generally. The current study did not address the impact of missing data, and it is likely that some bias exists as a result. However, such bias should only be relevant for findings from the between-individual level analyses and not for findings which emerged from within-individual analyses, which focused on identifying the causal influence of competence by treating each individual as their own control (Allison, 2005). Recall that the strongest findings for the negative relationship between social competence and changes in criminal offending are found in the within-individual analyses. The within-individual results in combination with the fact that the PYS had a relatively high retention rate is comforting, and suggests that any bias related to missing data as a result of attrition would most likely influence the extent to which those within-individual analyses findings are generalizable to the larger population.

Although not necessarily a limitation, it is important to note that although this study examined the effects of changes in social competence on offending patterns over time, the focus is inevitably on short term change as compared to long term change. Future analyses should attempt to replicate and extend the current findings in analyses

that focus on ascertaining the effects of competence on long term changes in criminal offending patterns.

There is also considerable overlap in the conceptual framing and measurement of competence with other constructs, such as self-control. Although every attempt was taken to purge the current measure of social competence from confounding with other related yet distinct concepts, it is likely that over lap remains. For example, some researchers have (Felson and Staff, 2006; Carter et al, 2006) measured self-control using items similar or identical to the items others used to measure competence (Harter, 1982; Epstein, 2004; Frankel and Myatt, 1994). However, it is important to note that the two constructs are theoretically hypothesized to share some variation as they are related yet theoretically distinct concepts. Earlier in Chapter 2, I state some have claimed that Gottfredson and Hirschi's (1990) original notion of self-control is overly inclusive, and although Gottfredson and Hirschi have since limited the definition to focus on a failure to defer immediate gratification, many researchers continue to include numerous individual attributes into a single measure with the conceptual title "self-control". The point is that conceptual boundaries must be drawn when defining self-control, and similarly, the same must be done when defining social competence (see Clausen, 1993). Alternatively, a conceptual expansion of the current notions of self-control within criminology that takes into account the aspects of sociability or dependability explicitly may also be suitable, however, it may not be appropriate to refer to such as concept as self-control and more appropriate to label it social competence, as competence reflects a broader skill set of cognitive and non-cognitive individual attributes (Clausen, 1993). Future research should explore more thoroughly the role of various individual attributes for not only establishing

levels offending, but also the ability of such attributes for changing offending patterns as well. The former represents population heterogeneity effects and the latter state dependent effects.

Future research should also focus on examining the differences between the components used to reflect both self-control and social competence in the prior literature but also on the potential for interactions between the variables, and the potential for varying effects on crime outcomes by age. In particular the findings from the current study indicate that self-control is relatively static and is a strong predictor of later levels of offending yet does not influence changes in offending. This leads one to wonder if the developmental window for self-control and competence differ, with self-control formed earlier in childhood while competence remains more malleable and becomes relatively stable later in adolescence. Indeed, it may be that self-control influences but does not predetermine competence through its effects on more dynamic attributes such as productivity, dependability and maturity. Such suggestions also have implications for interventions that seek to prevent and reduce the likelihood of delinquent behavior. For example, it may be that certain individual attributes related to delinquency and problem behavior are more malleable and better suited for targeted intervention at different developmental periods of life. In short, perhaps more nuanced examinations of self-control and social competence can better inform those interventions that seek to reduce delinquency among adolescents.

The final point related to this issue indicates that future research should examine the possibility of positive and negative effects of social competence that differ by age. For example, social competence may encourage precocious development among many

adolescents, resulting in the disruption of normal adolescent development. However at older ages perhaps social competence is useful for securing those conventional opportunities that facilitate transitions in to adulthood and changes in offending patterns.

The potential for omitted variable bias due to time stable variables still remains, as does bias due to unmeasured sources of time-varying heterogeneity such as changes in stress related experiences (Slocum et al., 2005). Stress may influence both one's ability to act competently as well as criminal offending. Additionally, although this study controls for parental supervision, parental attachment likely influences both the development of competence (Amato, 1986) and criminal offending (Hirschi, 1969; Farrington, 1988). Future research should expand the level of co-variates when examining the between-person effects of social competence on changes in offending over time.

The current study only focused on employment, however, there are certainly other social relationships related to both competence and criminal offending that are worthy of study as well. Future research should examine competence on criminal offending patterns in conjunction with other social relationships and life events as well, such as involvement in romantic relationships, friendship networks (delinquent and conventional), volunteering/civic participation, vocational schooling, and other school related experiences. Importantly, perhaps increases in social competence and other conventional outcomes as well as decreases in antisocial behavior are part and parcel of a larger transition into adulthood.

In the final section of this dissertation I conclude with a discussion of the relevance of social competence for criminology more generally and in particular, for the current study.

Implications and Relevance for Criminology

The concept of social competence is relevant for criminological theory more generally but also for current theoretical discussions in the field which focus on explaining the relationship between involvement in conventional institutions and criminal offending. Social competence is compatible with virtually all existing criminological theories, and is better suited as a compliment to these existing theories rather than a theory of crime in and of itself. In particular, social competence is especially relevant for those theories which allow for the influence of individual level attributes when explaining the development and cessation of delinquent and criminal offending.

For example, social competence is relevant for social control theories (Hirschi, 1969; Sampson and Laub, 1993) as it may influence the development of social bonds (e.g., attachment and commitment to social institutions and norms) and the degree to which individuals become involved in those social relationships that have the potential to exert informal social control or give rise to social capital. Social competence—defined as a set of cognitive and non-cognitive individual attributes that reflect dependability, productivity, maturity, and likeability—may directly influence one's involvement and commitment to conventional social institutions as well as conventional norms and values. It is likely that those adolescents that develop competence early in life are better suited to find success in those conventional institutions, such as school, that are influential for

shaping and controlling individual behavior. Additionally, as argued in Chapter 2, individuals with higher levels of social competence may also be more likely to be selected and select into those social relationships that are linked to reductions in criminal offending later in life (Clausen, 1993).

Competence may also be incorporated into general strain theory (Agnew, 1994) and may reflect individual attributes that condition the effects of stress or the ability to seek out social support as well as the development of coping skills. Agnew (1992;1994) has argued that negative life events or experiences can lead individuals to experience negative emotions and when such emotions take the form of anger, individuals may resort to delinquency and criminal offending as a way of reducing such negative affect. The important link between negative experiences and subsequent criminal offending is the presence of anger which acts as a triggering mechanism and results in the use of delinquency as a coping tactic (Brezina, 1996). However, he also argues that legitimate coping skills in the form of psychological, behavioral or social skills may prevent the progression from negative experiences to anger to criminal offending. Social competence may be relevant for general strain theory as those adolescents with higher levels of social competence may be more likely to have access to legitimate coping mechanisms that can serve to allay negative affect arising from stressful situations or experiences. It is likely that adolescents with higher levels of social competence have access to more social networks and relationships by virtue of their ability to get along with others. Additionally, adolescents with higher levels of social competence should also be better able to obtain personal goals within social relationships, and as a result, have a broader range of legitimate coping mechanisms.

Competence is also amenable to rational choice theory (Cornish and Clarke, 1986), as some have argued (Clausen, 1993; Shanahan, 1997) or implied (Shover, 1996) that competence is a reflection of human agency and facilitates planful choice making. At the most basic level, rational choice theory posits that individuals use the information they have, albeit incomplete and uncertain at times, to make decisions which will produce and maximize favorable outcomes (Cornish and Clarke, 1986). Just as crime is considered a choice in RCT, so is desistance and termination from offending (Shover, 1996). Shover's (1996) qualitative account of desistance among persistent thieves is especially interesting because he appears to rely on an explanation that incorporates both social influences for desistance (e.g., restraining effects of conventional bonds) as well individual level choice and human agency within a rational choice framework. The two sets of contingencies most influential for changes in criminal activity are the subjective feelings of the individual—specifically, the individual's desire to pursue or cease criminal offending (resolve and determination) and the corresponding perception of their identity—and the development of conventional bonds to others (Shover, 1996). Social competence conceptualized as a proxy for human agency and as purposeful action can aid in the decision making process and facilitate decisions to desist from criminal offending. Social competence defined as an individual skill set may also influence the extent to which such decisions come to fruition or are enacted successfully.

Theoretical explanations of criminal behavior based in symbolic interactionism, such as the recently developed theory of cognitive transformation (Giordano et al., 2001), also allow for the role of competence by emphasizing the influence of the individual actor and human agency in the process of desistance. According to Giordano and colleagues'

(2001: 992), characterizations of behavioral change based in control theories tend to "bracket off the 'up front' work accomplished by actor themselves—as they make initial moves toward, help to craft, and work to sustain a different way of life". They address this issue by offering a theory of cognitive transformation that is compatible with and enhances a social control explanation of desistance, and subsequently accords a more prominent place for the role human agency in the process of change. They emphasize the individual's creativity and selectivity in appropriating elements in the environment that are conducive to changing criminal offending trajectories and sustaining new behavioral patterns. Social competence is relevant for a theoretical explanation based on cognitive transformations as individuals that are more competent may be more likely selected into those structural roles that solidify cognitive changes and facilitate subsequent behavioral changes. Additionally, conventional others may be more likely to select those individuals that are perceived as more competence as well as the possibility that competent individuals may have more access to legitimate and conventional opportunities and networks.

Finally, competence is also related to risk and protective factor paradigms that focus on how adolescents obtain pro-social skills through a developmental process, and the failure to acquire such skills can lead to antisocial and delinquent behavior (Loeber et al., forthcoming). For example, Loeber and colleagues (forthcoming) use the term remedial promotive factors to refer to those individual level attributes that facilitate desistance from offending in populations of known delinquents. The within-individual development of social competence over time may act as a remedial promotive factor and not only generally facilitate the transition to adulthood, but also the transition from

delinquency to non-delinquency. Additionally, they use the term protective factor to refer to the interaction of promotive factors and risk factors that result in a buffering effect on the likelihood of delinquency. In particular, social competence may help to explain why certain individuals who have risk factors for delinquency or have previously been involved in delinquency are able to rebound or emerge relatively unscathed despite the presence of such risk and prior delinquent involvement.

Thus, it is clear that social competence is relevant for criminological theories or explanations that attempt to explain levels of criminal offending as well as changes in offending patterns. Social competence may also be relevant for those intervention programs that seek to prevent or reduce delinquency. Although much more research needs to be conducted on the relationship between social competence and criminal offending before making policy recommendations based on such findings, there are several suggestions that can be made that are relevant for delinquency intervention programs. For example, as stated earlier, those delinquency intervention programs that target individual level attributes such as self-control or social competence may be more successful if conducted during specific developmental windows and age ranges. Additionally, there is evidence which suggests existing cognitive-behavioral interventions that focus on increasing competency may be successful for reducing delinquency as well (Sherman et al., 2002). There are also implications for those interventions that target criminal offending by providing job specific skills or by providing more opportunities for work. Specifically, if individual attributes influence the extent to which individuals are able to maintain stable employment, then this suggests that employment based interventions should also incorporate components that target

individual competency skills as well. Results from the current study are promising for delinquency prevention programs and interventions and future research should better link such findings with specific existing programs. In the following section, I conclude by briefly discussing the specific relevance of social competence as it relates to the current dissertation for explaining the development of criminal offending, as well as changes or reductions in criminal offending.

The results that emerged from the current study are important for the study of criminal offending patterns over time in two ways. First, results from Chapter 4 have indicated that involvement in employment is not entirely random and is heavily influenced by individual attributes. Second, results from Chapter 5 further support the importance of examining individual attributes as the effects for early childhood traits had short and long term effects on criminal offending. In particular the results highlighted the importance of the effects of self-control developed early in life for producing long lasting results on the overall level of offending. Additionally, results from the current dissertation emphasize the effects of changes in social competence on changes in offending patterns. Although there are conflicting results regarding which individual attribute is related to involvement in employment, (social competence versus self-control) what is clear is that dismissal of early childhood traits for explaining later involvement in structural roles is inappropriate.

Moreover, the recent focus on structural roles changes as largely exogenous sources of individual behavioral change ignores potential explanations and mechanisms which may underlie the observed relationship between involvement in conventional institutions and criminal offending. Such a focus also tends to downplay the ways in

which individuals actively contribute to the shaping of their life course (Giordano et al., 2002). A focus on individual level traits may illuminate the underlying mechanisms of the work intensity-delinquency relationship found among adolescents and the employment-desistence relationship found among younger and older adults. Finally, including a role for social competence in existing theories of criminal offending also increases the visibility and importance of the individual, by focusing on the role of individual attributes and actions for the development of and changes in criminal offending patterns. However, it is also equally important to emphasize that structural role changes are indeed useful and imperative for securing behavioral change as well.

In conclusion, the concept of social competence is compatible with several criminological theories that seek to explain changes and reductions in offending patterns. The importance of social competence lies in its ability to explain reductions in criminal offending within a developmental context and to illuminate the underlying mechanisms of the empirical association between employment and criminal offending.

Table 1. Wave, Year and Approximate Age of Interviews in the PYS.

C1	1987		1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000	
C2	1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		2001	
	Sp	Fa	Sp	Fa	Sp	Fa	Sp	Fa	Sp	Fa	Sp	Fa	Sp	Fa	Sp	Fa	Sp	Fa	Sp	Fa	Sp	Fa	Sp	Fa	Sp	Fa	Sp	
Youngest																												
Age	7	7.5	8	8.5	9	9.5	10	10.5	11		12		13		14		15		16		17		18		19		20	
Wave Number	1	2	3	4	5	6	7	8	9		10		11		12		13		14		15		16		17		18	
Wave Letter	S	A	B	C	D	E	F	G	H		J		L		N		P		R		T		V		Y		AA	
Oldest																												
Age	13	13.5	14	14.5	15	15.5	16.5		17.5		18.5		19.5		20.5		21.5		22.5		23.5		24.5		25.5			
Wave Number	1	2	3	4	5	6	7		8		9		10		11		12		13		14		15		16			
Wave Letter	S	A	B	C	D	E	G		I		K		M		O		Q		SS		U		W		ZZ			

Table 2. Approximate Timing of Data Collection.

	1987		1988		1989		1990		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Youngest																		
Current Wave Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Wave Letter	S	A	B	C	D	E	F	G	H	J	L	N	P	R	T	V	Y	AA
Caretaker	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Teacher	x	x	x	x	x	x	x	x	X	x	x	X	x	X				
Youth	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Oldest																		
Current Wave Number	1	2	3	4	5	6	7		8	9	10	11	12	13	14	15	16	
Wave Letter	S	A	B	C	D	E	G		I	K	M	O	Q	SS	U	W	ZZ	
Caretaker	x	x	x	x	x	x	x		X									
Teacher	x	x	x	x	x	x	x		x									
Youth	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	

Table 3. Descriptive Statistics, Pooled Sample (N =1009).

	%	Mean	SD	Min	Max
Race (n= 907)					
White	42.9				
African American	55.0				
Asian	.8				
Hispanic	.3				
Other	1.1				
Age					
T2 (n = 1009)		10.7	3.3	5.8	16.8
T16 (n = 1006)		21.9	4.1	16.1	28.7
T18 (n = 503)		20.1	.6	18.3	22.9
SES (n = 932)		36.8	10.9	8.8	66.0
Ever Employed (n = 971)					
No	3.3				
Yes	96.7				
Ever Currently Employed (n = 971)					
No	12.8				
Yes	87.2				
Ever Arrested at:		*# of Arrests*			
T9 (n = 943)	9.7	1			
T16 (n = 861)	29.1	3[b]			

[*] Weighted estimates reported; [a] Average of annual estimates; [b] Median is reported.

Table 4. Descriptive Statistics, Oldest Sample (N =506).

	%	Mean	SD	Min	Max
Race (n= 472)					
White	42.7				
African American	55.1				
Asian	.6				
Hispanic	.3				
Other	1.3				
Age (n = 506)					
T2		13.8	.8	12.2	16.8
T18		25.9	.8	24.2	28.6
SES (n = 453)		37.5	11.4	9.0	66.0
Ever Employed (n= 497)					
No	1.4				
Yes	98.6				
Ever Arrested at:		*# of Arrests*			
T2 (n = 505)	7.2	1.0			
T9 (n = 472)	18.7	1.6			
T16 (n = 426)	36.1	3.0[b]			
Analysis Sample					
Theft Crime (n = 5389)		0.4	1.08	0	10
Violent Crime (n = 5388)		0.12	0.4	0	4
Variety Score (n = 5389)		0.73	1.58	0	14
Age (n = 384)		19.21	0.79	17.67	21.96
Low Parental Supervision (n = 384)		12.43	2.31	8	19.33
Peer Delinquency (n = 384)		7.15	4.8	0.27	22.81
Self-Control (n = 384)		0.47	0.39	0	1.83
Competence (n = 384)		1.4	0.36	0.25	2
Annual Job (n = 384)		0.83	0.22	0	1
Current Job (n = 384)		0.57	0.29	0	1
Job Hours (n = 384)		28.02	10.36	0	40
Cumulative Competence		9.65	3.44	0	19.02

[*] Weighted estimates reported; [a] Average of annual estimates; [b] Median is reported.

Table 5. Descriptive Statistics, Youngest Sample (N =503).

	%	Mean	SD	Min	Max
Race (n= 435)					
White	43.1				
African American	54.8				
Asian	1.0				
Hispanic	.3				
Other	.8				
Age (n = 503)					
T2		7.5	.6	5.8	9.7
T18		20.1	.6	18.0	23.0
SES (n = 476)		36.8	10.6	8.9	66.0
Ever Employed (n= 474)					
No	5.3				
Yes	94.7				
Ever Arrested at:		*# of Arrests*			
T9 (n = 471) ^	2.1	1.1			
T13 (n = 453) ^	21.9	1.0[b]			
T17 (n = 418) ^	31.8	2.0[b]			
Analysis Sample					
Theft Crime (n = 6512)		0.3	0.9	0	9
Violent Crime (n = 6513)		0.47	0.81	0	4
Variety Score (n = 6507)		0.96	1.6	0	14
Age (n = 405)		12.8	0.55	11.14	14.37
Low Parental Supervision (n = 405)		11.49	1.72	8.43	17.71
Peer Delinquency (n = 405)		5.67	3.46	0.63	20.31
Self-Control (n = 405)		0.59	0.44	0	1.79
Competence (n = 405)		1.39	0.38	0.47	2
Job (n = 405)		0.68	0.27	0	1
Current Job (n = 405)		0.4	0.29	0	1
Job Hours (n = 405)		18.62	9.43	0	40.00
Cumulative Competence (n = 405)		10.23	3.81	0	19.02

[*] Weighted estimates reported. [a] Average of annual estimates; [b] Median is reported.

Table 6. Teacher Reports: Social Competence Items.*

		N	Mean	SD	Min	Max	Proportion with change in status
Completes assigned tasks	Overall	8309	1.20	.79	0	2	
	Within	1004	1.16	.51	0	2	.93
Follows directions	Overall	8315	1.31	.74	0	2	
	Within	1005	1.31	.49	0	2	.89
Good school work	Overall	8278	1.22	.79	0	2	
	Within	1005	1.17	.54	0	2	.91
Doesn't act too young for age	Overall	8298	1.43	.72	0	2	
	Within	1005	1.43	.44	0	2	.87
Behaves responsibly	Overall	8071	1.51	.73	0	2	
	Within	1004	1.50	.46	0	2	.81
Gets along with others	Overall	8252	1.54	.66	0	2	
	Within	1005	1.56	.44	0	2	.75
Liked by others	Overall	8082	1.74	.54	0	2	
	Within	1005	1.72	.33	.25	2	.67
Does not quarrel easily with other kids	Overall	8052	1.64	.62	0	2	
	Within	1005	1.66	.40	0	2	.67

*Weighted estimates reported.

Table 7. Caretaker Reports: Social Competence Items.*

		N	Mean	SD	Min	Max	Proportion with change in status
Completes assigned tasks	Overall	8801	1.43	.59	0	2	
	Within	1008	1.40	.45	0	2	.75
Follows directions	Overall	8801	1.56	.59	0	2	
	Within	1008	1.54	.46	0	2	.67
Good school work	Overall	8771	1.48	.67	0	2	
	Within	1008	1.40	.51	0	2	.79
Does not act too young for age	Overall	8803	1.56	.58	0	2	
	Within	1008	1.52	.45	0	2	.70
Behaves responsibly	Overall	8802	1.71	.53	0	2	
	Within	1008	1.66	.40	0	2	.64
Gets along with others	Overall	8802	1.73	.48	0	2	
	Within	1008	1.71	.37	0	2	.58
Liked by others	Overall	8803	1.86	.38	0	2	
	Within	1008	1.84	.27	.38	2	.39
Does not quarrel easily with other kids	Overall	8801	1.71	.49	0	2	
	Within	1008	1.70	.36	0	2	.61

*Weighted estimates reported.

Table 8. Construct Validation: Correlations between Average Levels of Competence and Known Correlates.

	Competence	Self-control	Negative Emotionality	Age	Parental Supervision	Race	Job	Delinquency
Competence	1	-.831**	-.775**	-.023	-.276**	-.235**	.232**	-.311**
	1005	*1005*	*1005*	*1005*	*1003*	*903*	*968*	*1005*
Self-control	-.831**	1	.821**	-.102**	.182**	.220**	-.207**	.306**
	1005	*1006*	*1005*	*1006*	*1004*	*904*	*969*	*1006*
Negative Emotionality	-.775**	.821**	1	-.011	.222**	.230**	-.200**	.321**
	1005	*1005*	*1005*	*1005*	*1003*	*903*	*968*	*1005*
Age	-.023	-.102**	-.011	1	.250**	.033	.277**	-.116**
	1005	*1006*	*1005*	*1009*	*1006*	*906*	*971*	*1008*
Parental Sup.	-.276**	.182**	.222**	.250**	1	.300**	-.177**	.283**
	1003	*1004*	*1003*	*1006*	*1006*	*905*	*970*	*1006*
Race	-.235**	.220**	.230**	.033	.300**	1	-.295**	.043
	903	*904*	*903*	*906*	*905*	*906*	*906*	*906*
Job	.232**	-.207**	-.200**	.277**	-.177**	-.295**	1	-.166**
	968	*969*	*968*	*971*	*970*	*906*	*971*	*971*
Variety	-.311**	.306**	.321**	-.116**	.283**	.043	-.166**	1
	1005	*1006*	*1005*	*1008*	*1006*	*906*	*971*	*1008*

** Correlation is significant at the 0.01 level (2-tailed). Sample size it italics.

Table 9. Cronbach's Alpha for all Social Competence Items by Wave and by Teacher and Caretaker Report.*

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Teacher	.85	.87	.86	.87	.86	.87	.87	.89	.90	.88	.88	.88	.84	
N	*885*	*875*	*809*	*798*	*774*	*772*	*680*	*427*	*411*	*412*	*408*	*373*	*336*	
Caretaker	.77	.77	.77	.79	.80	.81	.81	.79	.79	.81	.80	.79	.80	.77
N	*1003*	*955*	*914*	*915*	*907*	*479*	*463*	*463*	*465*	*461*	*452*	*440*	*428*	*411*

*Weighted estimates reported; "n" refers to sample size at each wave.

Table 10. Factor Loadings for One Factor Model for Social Competence Items Taken from Teacher Reports by Wave

	2	3	4	5	6	7	8	9	10	11	12	13	14
Completes tasks	.75	.74	.73	.72	.72	.72	.73	.78	.80	.81	.77	.72	.74
Follows directions	.77	.78	.76	.78	.74	.75	.75	.77	.81	.81	.79	.79	.74
Good school work	.74	.71	.75	.76	.75	.73	.75	.78	.78	.80	.77	.73	.77
Does not act too young	.63	.64	.63	.64	.66	.63	.64	.66	.65	.65	.65	.65	.64
Behaves responsibly	.75	.76	.75	.75	.76	.78	.78	.76	.77	.80	.79	.82	.69
Gets along with others	.77	.79	.76	.78	.72	.79	.78	.82	.82	.76	.81	.78	.71
Liked by others	.61	.71	.64	.68	.64	.71	.65	.71	.72	.61	.71	.71	.59
Does not quarrel easily with other kids	.64	.71	.66	.71	.66	.73	.69	.73	.74	.62	.69	.72	.58
Variance	50.03	53.27	50.56	53.924	50.76	53.34	52.14	56.46	58.18	54.32	55.65	54.99	47.17
N	*885*	*875*	*809*	*798*	*774*	*772*	*680*	*427*	*411*	*412*	*408*	*373*	*336*

*Weighted estimates reported.

Table 11. Factor Loadings for One Factor Model for Social Competence Items Taken from Caretaker Reports by Wave.*

	2	3	4	5	6	7	8	9	10	11	12	13	14
Completes tasks	.72	.71	.68	.64	.67	.64	.67	.61	.69	.75	.69	.71	.69
Follows directions	.74	.71	.73	.76	.74	.76	.75	.76	.72	.77	.77	.72	.72
Good school work	.62	.56	.60	.58	.56	.63	.65	.60	.64	.61	.59	.60	.53
Does not act too young	.54	.53	.56	.54	.55	.57	.55	.52	.42	.54	.58	.58	.58
Behaves responsibly	.67	.68	.69	.74	.72	.71	.66	.65	.63	.75	.68	.69	.72
Gets along with others	.59	.64	.57	.63	.70	.63	.71	.70	.71	.65	.62	.68	.68
Liked by others	.53	.52	.58	.63	.63	.67	.67	.61	.64	.62	.61	.59	.66
Does not quarrel easily with other kids	.55	.57	.57	.61	.66	.63	.62	.65	.63	.59	.67	.61	.65
Variance	39.10	38.51	39.15	41.55	42.95	43.03	43.72	40.96	40.99	44.08	42.48	42.35	43.29
N	*1003*	*955*	*914*	*915*	*907*	*479*	*463*	*463*	*466*	*461*	*452*	*441*	*429*

*Weighted estimates reported.

Table 12. Factor Loadings for Two Factor Model for Social Competence Items Taken from Teacher Reports by Wave.*

	2		3		4		5		6		7		8		9		10		11		12		13		14	
	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S
Completes tasks	.85	.37	.88	.42	.85	.37	.89	.37	.87	.27	.90	.38	.87	.31	.90	.48	.91	.51	.89	.42	.92	.45	.90	.39	.88	.30
Follows directions	.82	.42	.83	.53	.84	.43	.80	.57	.78	.43	.76	.54	.78	.47	.84	.53	.87	.59	.84	.49	.79	.61	.79	.60	.74	.49
Good school work	.84	.36	.88	.37	.89	.37	.90	.41	.89	.29	.91	.37	.89	.34	.92	.46	.91	.50	.89	.39	.92	.45	.91	.41	.88	.35
Does not act too young	.64	.38	.55	.56	.57	.52	.54	.57	.62	.49	.46	.59	.61	.47	.49	.64	.533	.64	.59	.54	.48	.65	.52	.60	.55	.54
Behaves responsibly	.69	.59	.69	.63	.66	.63	.67	.63	.71	.59	.69	.66	.74	.58	.70	.65	.71	.69	.82	.53	.71	.69	.73	.71	.72	.40
Gets along with others	.51	.88	.49	.90	.47	.88	.48	.89	.44	.88	.44	.91	.50	.92	.53	.91	.56	.91	.52	.89	.50	.91	.46	.89	.44	.87
Liked by Others	.34	.83	.41	.84	.37	.78	.40	.81	.33	.84	.37	.83	.37	.85	.39	.87	.45	.84	.37	.82	.40	.83	.36	.84	.33	.78
Does not quarrel easily with other kids	.39	.80	.41	.84	.35	.84	.40	.84	.34	.84	.37	.86	.41	.86	.49	.81	.49	.83	.42	.76	.42	.78	.41	.82	.31	.75
Variance	65.80		68.48		66.32		67.69		67.83		68.99		.68.88		70.47		71.28		68.25		69.36		69.92		62.72	
N	*885*		*875*		*809*		*798*		*774*		*772*		*680*		*427*		*411*		*412*		*408*		*373*		*336*	

*Weighted estimates reported.

Table 13. Teacher Reports: Cumulative Competence.*

		N	Mean	SD	Min	Max	Proportion with change in status
Current reading performance	Overall	7012	2.73	1.11	1	5	
	Within	998	2.71	.91	1	5	.96
Current writing performance	Overall	6973	2.68	1.01	1	5	
	Within	999	2.65	.78	1	5	.97
Current spelling performance	Overall	6838	2.76	1.07	1	5	
	Within	999	2.7	.84	1	5	.96
Current math performance	Overall	5843	2.76	1.08	1	5	
	Within	978	2.7	.90	1	5	.94
Grade Retention	Overall	8436	.94	.24	0	1	
	Within	998	.94	.14	0	1	.27

*Weighted estimates reported.

Table 14. Cronbach's Alpha Cumulative Competence Items by Wave, Teacher Reports.*

	2	3	4	5	6	7	8	9	10	11	12	13	14
Teacher	.83	.83	.79	.82	.82	.86	.84	.82	.81	.84	.87	.87	.89
N	*687*	*712*	*448*	*468*	*383*	*431*	*343*	*345*	*274*	*229*	*189*	*123*	*81*

*Weighted estimates reported.

Table 15. Youth Self-Reports: Outcomes.*

		N	Mean	SD	Min	Max	Proportion with change in status
General Variety Score	Overall	14590	.83	1.60	0	17.00	
	Within	1008	.85	.91	0	8.14	.91
Property Variety Score	Overall	14623	.33	.98	0	10.00	
	Within	1009	.34	.50	0	4.29	.69
Violence Variety Score	Overall	14621	.30	.67	0	5.00	
	Within	1009	.30	.33	0	2.00	.69

*Weighted estimates reported.

Table 16. Correlations: Employment and Competence, Pooled Sample.

	Avg Social Competence	Growth Rate	Avg Low Self Control	Age	Race	SES	Annual Job	Current Job	Job Hours
Avg Social Competence	1 *13176*	-.05** *13124*	-.83** *13176*	-.00 *13176*	-.26** *12330*	.26** *12684*	.13** *5966*	.16** *5965*	.07** *5960*
Growth Rate	-.05** *13124*	1 *13129*	.11** *13124*	-.01 *13129*	-.03** *12283*	.10** *12642*	-.01 *5934*	.01 *5933*	-.03* *5928*
Avg Self Control	-.83** *13176*	.11** *13124*	1 *13190*	-.08** *13190*	.24** *12344*	-.17** *12698*	-.11** *5974*	-.14** *5973*	-.08** *5968*
Age	-.00 *13176*	-.01 *13129*	-.08** *13190*	1 *13217*	.01 *12360*	-.01 *12698*	.23** *5994*	.30** *5993*	.41** *5988*
Race	-.26** *12330*	-.03** *12283*	.24** *12344*	.01 *12360*	1 *12360*	-.23** *11949*	-.18** *5831*	-.22** *5830*	-.16** *5825*
SES	.26** *12684*	.10** *12642*	-.17** *12698*	-.01 *12698*	-.23** *11949*	1 *12698*	.11** *5704*	.10** *5703*	.03** *5698*
Annual Job	.13** *5966*	-.01 *5934*	-.11** *5974*	.23** *5994*	-.18* *5831*	.11** *5704*	1 *5994*	.54** *5993*	.70** *5988*
Current Job	.16** *5965*	.01 *5933*	-.14** *5973*	.30** *5993*	-.22** *5830*	.10** *5703*	.54** *5993*	1 *5993*	.45** *5988*
Job Hours	.07** *5960*	-.03* *5928*	-.08** *5968*	.41** *5988*	-.16** *5825*	.03** *5698*	.70** *5988*	.45** *5988*	1 *5988*

**Correlation significant at the 0.01 level (2-tailed).

*Correlation significant at the 0.05 level (2-tailed).

Table 17. Correlations: Employment and Competence, Youngest Sample.

	Avg Social Competence	Growth Rate	Avg Low Self Control	Age	Race	SES	Annual Job	Current Job	Job Hours
Avg Social Competence	1 *7270*	-.02* *7270*	-.88** *7270*	-.00 *7270*	-.33** *6605*	.28** *7121*	.08** *2186*	.13** *2186*	.03 *2185*
Growth Rate	-.02* *7270*	1 *7270*	.07** *7270*	.02 *7270*	-.01 *6605*	.10** *7121*	.00 *2186*	.04 *2186*	-.02 *2185*
Avg Self Control	-.88** *7270*	.07** *7270*	1 *7270*	.00 *7270*	.29** *6605*	-.21** *7121*	-.06** *2186*	-.10** *2186*	-.03 *2185*
Age	-.00 *7270*	.02 *7270*	.00 *7270*	1 *7270*	.00 *6605*	-.01 *7121*	.34** *2186*	.29** *2186*	.48** *2185*
Race	-.33** *6605*	-.01 *6605*	.29** *6605*	.00 *6605*	1 *6605*	-.25** *6517*	-.12** *2099*	-.19** *2099*	-.09** *2098*
SES	.28** *7121*	.10** *7121*	-.21** *7121*	-.01 *7121*	-.25** *6517*	1 *7121*	.09** *2135*	.09** *2135*	.02 *2134*
Annual Job	.08** *2186*	.00 *2186*	-.06** *2186*	.34** *2186*	-.12** *2099*	.09** *2135*	1 *2186*	.55** *2186*	.73** *2185*
Current Job	.13** *2186*	.04 *2186*	-.10** *2186*	.29** *2186*	-.19** *2099*	.09** *2135*	.55** *2186*	1 *2186*	.41** *2185*
Job Hours	.03 *2185*	-.02 *2185*	-.03 *2185*	.48** *2185*	-.09** *2098*	.02 *2134*	.73** *2185*	.41** *2185*	1 *2185*

**Correlation significant at the 0.01 level (2-tailed).

*Correlation significant at the 0.05 level (2-tailed).

Table 18. Correlations: Employment and Competence, Oldest Sample.

	Avg Social Competence	Growth Rate	Avg Self Low Control	Age	Race	SES	Annual Job	Current Job	Job Hours
Avg Social Competence	1 *5906*	-.07** *5854*	-.77** *5906*	-.03* *5906*	-.19** *5725*	.23** *5563*	.18** *3780*	.17** *3779*	.09** *3775*
Growth Rate	-.07** *5854*	1 *5859*	.15** *5854*	.000 *5859*	-.05** *5678*	.11** *5521*	-.00 *3748*	.01 *3747*	-.03 *3743*
Avg Self Control	-.77** *5906*	.15** *5854*	1 *5920*	.00 *5920*	.17** *5739*	-.11** *5577*	-.12** *3788*	-.14** *3787*	-.06** *3783*
Age	-.03* *5906*	.00 *5859*	.00 *5920*	1 *5947*	.03* *5755*	-.05** *5577*	.10** *3808*	.25** *3807*	.31** *3803*
Race	-.19** *5725*	-.05** *5678*	.17** *5739*	.03* *5755*	1 *5755*	-.21** *5432*	-.22** *3732*	-.23** *3731*	-.20** *3727*
SES	.23** *5563*	.11** *5521*	-.11** *5577*	-.05** *5577*	-.21** *5432*	1 *5577*	.11** *3569*	.09** *3568*	.03* *3564*
Annual Job	.18** *3780*	-.00 *3748*	-.12** *3788*	.10** *3808*	-.22** *3732*	.11** *3569*	1 *3808*	.52** *3807*	.67** *3803*
Current Job	.17** *3779*	.01 *3747*	-.14** *3787*	.25** *3807*	-.23** *3731*	.09** *3568*	.52** *3807*	1 *3807*	.44** *3803*
Job Hours	.09** *3775*	-.03 *3743*	-.06** *3783*	.31** *3803*	-.20** *3727*	.03* *3564*	.67** *3803*	.44** *3803*	1 *3803*

**Correlation significant at the 0.01 level (2-tailed).

*Correlation significant at the 0.05 level (2-tailed).

Table 19. Effect of Adolescent Competence on the Probability of Annual Employment.

	Model 1 GEE Random Effects Logistic			Model 2 HGLM					
				Population Average			Subject Specific		
Pooled	*b*	*se*	*Chi Square*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.73	.10	-7.31**	-.87	.10	8.46**	-1.06	.13	7.75**
SES	.01	.01	2.76*	.01	.01	2.10*	.02	.01	2.72*
Competence	.68	.23	2.92**	.93	.25	3.67**	1.17	.30	3.80**
Low Self Control	.13	.20	.65	.37	.24	1.52	.46	.25	1.82^
Age	.25	.02	11.98**	.23	.02	10.93**	.29	.02	21.34**
N	786			789			789		
NT	5545			5557			5557		
Youngest	*b*	*se*	*Chi Square*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.44	.15	3.00 *	-.53	.15	3.12**	-.67	.18	3.65**
SES	.01	00	2.32*	.01	.01	1.88*	.02	.01	2.20*
Competence	.67	.39	1.72^	.51	.40	1.11	.63	.49	1.29
Low Self Control	.30	.34	.88	.21	.35	.55	.28	.39	.73
Age	.56	.04	2.32**	.58	.04	15.28**	.72	.15	18.97**
N	405			405			405		
NT	2062			2056			2056		
Oldest	*b*	*se*	*Chi Square*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-1.27	.16	7.66**	-1.28	.19	7.48**	-1.58	.21	7.39**
SES	.01	.01	1.65^	.01	.01	.70	.01	.01	1.46
Competence	1.23	.31	3.94**	1.26	.39	3.67**	1.66	.44	3.79**
Low Self Control	.22	.28	.78	.31	.35	1.04	.46	.38	.24
Age	.15	.02	6.94**	.15	.02	7.10**	.18	.02	11.67**
N	381			384			384		
NT	3483			3505			3505		

**p<.01; *p<.05; ^p<.10 (2-tailed).

20Table 20. Effect of Adolescent Competence on the Probability of Current Employment.

	Model 1 GEE Random Effects Logistic			Model 2 HGLM					
				Population Average			Subject Specific		
Pooled	*b*	*se*	*Chi Square*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.86	.09	9.43**	-.87	.09	9.47**	-1.10	.11	9.70**
SES	.00	.00	1.40	.01	.00	1.18	.01	.00	1.38
Competence	.88	.21	4.21**	.80	.21	3.80**	1.00	.28	3.56**
Low Self Control	.19	.18	1.02	.15	.19	.83	.19	.24	.79
Age	.26	.01	19.3**	.27	.01	18.3**	.34	.01	27.6**
N	786			789			789		
NT	5544			5556			5556		
Youngest	*b*	*se*	*Chi Square*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.76	.14	5.52**	-.78	.14	5.63**	-.95	.16	6.06**
SES	.01	.01	1.15	.01	.01	1.23	.01	.01	.1.30
Competence	.92	.36	2.55*	.83	.36	2.30*	.98	.45	2.16*
Low Self Control	.33	.30	1.10	.35	.30	1.16	.41	.36	1.09
Age	.42	.03	13.6**	.44	.30	13.5**	.53	.04	14.9**
N	405			405			405		
NT	2062			2056			2056		
Oldest	*b*	*se*	*Chi Square*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.98	.13	7.73**	-.97	.13	7.46**	-1.23	.17	7.35**
SES	.01	.01	.98	.00	.00	.44	.00	.00	.69
Competence	.88	.26	3.39**	.83	.26	3.16*	1.09	.38	2.89*
Low Self Control	-.06	.24	.23	.01	.24	.96	.04	.33	.117
Age	.23	.01	15.3**	.24	.01	15.1**	.30	.01	22.9**
N	381			384			384		
NT	3482			3507			3507		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 21. Effect of Adolescent Competence on the Probability of Annual Employment, Growth Rate of Competence Measure.

	HGLM					
	Population Average			Subject Specific		
Pooled	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.89	.10	8.70**	-1.08	.14	7.81**
SES	.02	.00	2.90**	.02	.00	3.69**
Growth Rate Comp	-.19	.59	.33	-.16	.49	.34
Low Self Control	-.32	.13	2.51**	-.39	.15	2.66**
Age	.24	.02	10.84**	.29	.01	21.31**
N	785			785		
NT	5529			5529		
	b	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Youngest						
Race	-.56	.14	3.87**	-.70	.19	3.78**
SES	.02	.00	2.45*	.02	.00	2.52*
Growth Rate Comp	-.51	1.63	.32	-.66	1.62	.41
Low Self Control	-.15	.18	.83	-.16	.19	.85
Age	.58	.04	14.34**	.72	.04	18.97**
N	405			405		
NT	2056			2056		
	b	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Oldest						
Race	-1.29	.17	7.63**	-1.58	.22	7.20**
SES	.01	.01	1.44	.02	.01	2.32*
Growth Rate Comp	-.04	.57	.07	.03	.63	.05
Low Self Control	-.61	.20	3.13**	-.77	.25	3.06**
Age	.15	.02	7.03**	.19	.02	11.71**
N	380			380		
NT	3467			3467		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 22. Effect of Adolescent Competence on the Probability of Current Employment, Growth Rate of Competence Measure.

	HGLM					
	Population Average			Subject Specific		
Pooled	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Constant	.03	.04	.73	-.03	.05	.73
Race	-.88	.09	9.52**	-1.10	.11	9.69**
SES	.01	.00	1.72^	.01	.00	2.00*
Growth Rate Comp	.57	.45	1.26	.71	.44	1.62
Low Self Control	-.46	.12	-3.94**	-.58	.13	4.46**
Age	.27	.01	18.24**	.34	.01	27.56**
N	785			785		
NT	5529			5529		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Constant	-.45	.06	7.02**	-.55	.08	7.27**
Race	-.80	.14	5.82**	-.98	.16	6.29**
SES	.01	.01	1.45	.01	.00	1.56
Growth Rate Comp	1.86	1.25	1.48	2.12	1.78	1.19
Low Self Control	-.28	.17	1.66^	-.34	.17	1.99*
Age	.43	.03	13.55**	.53	.04	14.93**
N	405			405		
NT	2056			2056		
Oldest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Constant	.38	.06	6.05**	.48	.08	6.09**
Race	-.95	.13	7.32**	-1.20	.17	7.14**
SES	.00	.01	.75	.01	.01	1.00
Growth Rate Comp	.51	.47	1.08	.67	.50	1.36
Low Self Control	-.66	.18	-3.82**	-.86	.20	4.27**
Age	.24	.02	15.06**	.31	.01	22.93**
N	380			380		
NT	3467			3467		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 23. Effect of Adolescent Competence on the Probability of Annual Employment, One Factor Competence Measure.

	HGLM					
	Population Average			Subject Specific		
Pooled	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.88	.10	8.49**	-1.06	.14	7.74**
SES	.01	.00	2.01*	.01	.00	2.63*
1 Factor Competence	.60	.13	4.53**	.74	.15	4.80**
Low Self Control	.56	.23	2.39*	.71	.26	2.70**
Age	.24	.02	10.93**	.29	.01	21.39**
N	788			788		
NT	5557			5557		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.53	.15	3.66**	-.67	.18	3.62**
SES	.01	.00	2.12*	.02	.00	2.16*
1 Factor Competence	.36	.21	1.68^	.44	.26	1.68^
Low Self Control	.36	.37	.97	.47	.41	1.13
Age	.58	.04	14.35**	.72	.03	18.96**
N	405			405		
NT	2056			2056		
Oldest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-1.29	.17	7.60**	-1.59	.22	7.36**
SES	.01	.01	.66	.01	.01	1.40
1 Factor Competence	.74	.17	4.30**	.95	.22	4.41**
Low Self Control	.51	.30	1.69^	.67	.40	1.69^
Age	.15	.02	7.08**	.19	.02	11.77**
N	383			383		
NT	3495			3495		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 24. Effect of Adolescent Competence on the Probability of Current Employment, One Factor Competence Measure.

	HGLM					
	Population Average			Subject Specific		
Pooled	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.87	.09	9.26**	-1.09	.11	9.70**
SES	.01	.00	1.13	.01	.00	1.34
1 Factor Competence	.47	.11	4.38**	.59	.14	4.09**
Low Self Control	.27	.19	1.44	.33	.25	1.30
Age	.27	.01	18.33**	.33	.01	27.58**
N	788			788		
NT	5556			5556		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.78	.14	5.65**	-.95	.16	6.07**
SES	.01	.01	1.24	.01	.01	1.32
1 Factor Competence	.43	.20	2.19*	.51	.24	2.13*
Low Self Control	.37	.32	1.15	.44	.39	1.11
Age	.44	.03	13.56**	.53	.04	14.94**
N	405			405		
NT	2056			2056		
Oldest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.96	.13	7.45**	-1.22	.16	7.37**
SES	.00	.01	.28	.00	.01	.48
1 Factor Competence	.49	.13	3.75**	.62	.19	3.28**
Low Self Control	.11	.24	.46	.14	.35	.41
Age	.24	.02	15.09**	.30	.01	22.98**
N	383			383		
NT	3494			3494		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 25. Effect of Adolescent Competence on the Probability of Annual Employment, Two Factor Competence Measure.

	HGLM					
	Population Average			Subject Specific		
Pooled	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.90	.10	8.75**	-1.08	.14	7.87**
SES	.01	.00	2.36*	.01	.00	2.90**
Dependability	.16	.13	1.19	.23	.13	1.68^
Sociability	.49	.15	3.37**	.58	.14	4.12**
Low Self Control	.56	.24	2.31*	.70	.26	2.65**
Age	.24	.02	10.89**	.29	.01	21.36**
N	788			788		
NT	5551			5551		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.54	.15	3.70**	-.68	.18	3.68**
SES	.01	.01	2.15*	.02	.01	2.19*
Dependability	.11	.21	.54	.14	.22	.64
Sociability	.32	.26	1.22	.38	.29	1.34
Low Self Control	.41	.40	.30	.53	.46	1.15
Age	.58	.04	14.33**	.72	.04	18.98**
N	405			405		
NT	2055			2055		
Oldest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-1.35	.17	8.10**	-1.63	.22	7.48**
SES	.01	.01	1.16	.02	.01	1.76^
Dependability	.12	.18	.66	.24	.20	1.18
Sociability	.64	.18	3.48**	.74	.18	4.07**
Low Self Control	.43	.30	1.42	.58	.40	1.44
Age	.15	.02	7.04**	.19	.02	11.75**
N	383			383		
NT	3494			3494		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 26. The Effects of Adolescent Competence on the Probability of Current Employment, Two Factor Competence Measure.

	HGLM					
	Population Average			Subject Specific		
Pooled	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.88	.09	9.51**	-1.10	.11	9.81**
SES	.01	.00	1.35	.01	.00	1.54
Dependability	.18	.11	1.69^	.22	.13	1.75^
Sociability	.35	.12	2.97**	.45	.13	3.29**
Low Self Control	.27	.19	1.44	.35	.25	1.33
Age	.27	.01	18.36**	.34	.01	27.51**
N	788			788		
NT	5555			5555		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.78	.14	5.64**	-.95	.16	6.12**
SES	.01	.01	1.27	.01	.01	1.36
Dependability	.19	.18	1.08	.22	.22	.98
Sociability	.31	.22	1.37	.37	.27	1.36
Low Self Control	.40	.34	1.15	.47	.43	1.09
Age	.44	.03	13.57**	.53	.04	14.94**
N	405			405		
NT	2055			2055		
Oldest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.98	.13	7.50**	-1.23	.16	7.48**
SES	.00	.01	.56	.01	.01	.73
Dependability	.15	.13	1.17	.20	.17	1.20
Sociability	.38	.14	2.74**	.48	.16	2.98**
Low Self Control	.09	.24	.39	.13	.35	.38
Age	.24	.06	15.11**	.30	.01	22.91**
N	383			383		
NT	3493			3493		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 27. The Effects of Adolescent Competence on Number of Hours Worked.

	Model 1 GEE			Model 2 HGLM					
				Population Average			Subject Specific		
Pooled	*b*	*se*	*Chi Square*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.25	.03	7.86**	-.24	.03	7.78**	-.31	.06	5.54**
SES	.00	.00	.20	.00	.00	.13	.00	.00	.11
Competence	.19	.07	2.64**	.16	.07	2.21*	.29	.13	2.28*
Low Self Control	.09	.07	1.40	.07	.07	1.13	.09	.10	.89
Age	.13	.00	31.19**	.10	.00	11.90**	.10	.00	365.7**
N	786			789			789		
NT	5539			5551			5551		
Youngest	*b*	*se*	*Chi Square*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.16	.07	2.51**	-.21	.05	4.24**	-.27	.09	3.02**
SES	.00	.00	.32	.00	.00	.74	.00	.00	.66
Competence	.18	.16	1.17	.02	.14	.18	.20	.22	.90
Low Self Control	.13	.14	.89	-.01	.12	.11	.03	.17	.16
Age	.33	.02	21.39**	.30	.01	24.22**	.30	.00	316.5**
N	405			405			405		
NT	2061			2055			2055		
Oldest	*b*	*se*	*Chi Square*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.31	.04	8.47**	-.27	.03	8.08**	-.34	.13	4.52**
SES	-.00	.00	.33	-.00	.00	.87	-.00	.00	.90
Competence	.27	.08	3.30**	.27	.08	3.24**	.34	.13	2.63**
Low Self Control	.11	.07	1.45	.14	.07	1.91^	.14	.11	1.26
Age	.09	.00	20.72**	.08	.00	20.53**	.08	.00	248.5**
N	381			384			384		
NT	3478			3500			3500		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 28. The Effects of Adolescent Competence on the Number of Hours Worked, Growth Rate of Competence Measure.

	HGLM					
	Population Average			Subject Specific		
Pooled	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.24	.03	7.77**	-.32	.06	5.65**
SES	.00	.00	.58	.00	.00	.63
Growth Rate Comp	-.16	.14	1.12	-.10	.20	.51
Low Self Control	-.04	.04	.88	-.12	.05	2.41*
Age	.10	.00	25.97**	.10	.00	366.33**
N	785			785		
NT	5523			5523		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.21	.05	4.24**	-.28	.09	3.14**
SES	.00	.00	.89	.00	.00	.88
Growth Rate Comp	-.59	.56	1.06	-.47	.63	.74
Low Self Control	-.02	.06	.38	-.11	.09	1.29
Age	.30	.01	24.20**	.90	.00	316.16**
N	405			405		
NT	2055			2055		
Oldest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.27	.03	7.75**	-.33	.08	4.34**
SES	.00	.00	.31	.00	.00	.39
Growth Rate Comp	-.10	.16	.68	-.06	.14	.44
Low Self Control	-.05	.06	.80	-.11	.06	1.79^
Age	.08	.00	20.36**	.08	.00	247.46**
N	380			380		
NT	3462			3462		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 29. The Effects of Adolescent Competence on the Number of Hours Worked, One Factor Competence Measure.

	HGLM					
	Population Average			Subject Specific		
Pooled	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.24	.03	7.70**	-.31	.06	5.55**
SES	-.00	.00	.02	.00	.00	.02
1 Factor Competence	.12	.04	3.15**	.20	.06	3.22**
Low Self Control	.14	.07	1.94*	.18	.10	1.75^
Age	.10	.00	26.05**	.10	.00	365.73**
N	788			788		
NT	5551			5551		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.21	.05	4.19**	-.27	.09	.09**
SES	.00	.00	.69	.00	.00	.62
1 Factor Competence	.04	.08	.49	.14	.12	1.17
Low Self Control	.02	.13	.18	.09	.19	.47
Age	.30	.01	24.24**	.30	.00	316.47**
N	405			405		
NT	2055			2055		
Oldest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.28	.03	7.98**	-.33	.07	4.57**
SES	-.00	.00	.97	-.00	.00	1.02
1 Factor Competence	.17	.04	4.11**	.23	.06	3.81**
Low Self Control	.22	.08	2.71**	.23	.11	2.17*
Age	.08	.00	20.60**	.08	.00	248.16**
N	383			383		
NT	3490			3490		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 30. The Effects of Adolescent Competence on the Number of Hours Worked, Two Factor Competence Measure.

	HGLM					
	Population Average			Subject Specific		
Pooled	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.24	.03	7.73**	-.32	.06	5.57**
SES	.00	.00	.12	.00	.00	.17
Dependability	.03	.04	.88	.06	.06	1.15
Sociability	.10	.04	2.19*	.15	.06	2.64**
Low Self Control	.13	.07	1.91^	.17	.10	1.60
Age	.10	.00	26.05**	.10	.00	366.21**
N	788			788		
NT	5550			5550		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.21	.05	4.17**	-.27	.09	2.97**
SES	.00	.00	.67	.00	.00	.64
Dependability	.04	.07	.52	.09	.11	.78
Sociability	-.01	.09	.11	.03	.14	.27
Low Self Control	-.00	.14	.01	.03	.22	.16
Age	.30	.01	24.23**	.30	.00	316.09**
N	405			405		
NT	2054			2054		
Oldest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.28	.03	8.08**	-.34	.07	4.65**
SES	-.00	.00	.73	-.00	.00	.73
Dependability	.04	.04	.80	.06	.05	1.03
Sociability	.14	.05	2.72**	.18	.05	3.97**
Low Self Control	.18	.08	2.26*	.21	.11	1.91^
Age	.08	.00	20.48**	.08	.00	248.64**
N	383			383		
NT	3488			3488		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 31. Correlation Matrix, Youngest Sample.

	Age	Age2	Low Parental Supervision	Peer Delinquency	Competence	Theft	Violence	Delinq.	Race	SES	Low Self Control	Current Job	Job Hours	Growth Rate
Age	1	.99**	.07**	.12**	-.10**	.06**	-.47**	-.21**	.01	-.01	.08**	.29**	.43**	.02
	7270	*7270*	*5980*	*6429*	*5034*	*7264*	*7265*	*7255*	*6605*	*7121*	*5020*	*2186*	*2185*	*7270*
Age2	.99**	1	.08**	.11**	-.09**	.04**	-.44**	-.21**	.01	-.01	.07**	.28**	.42**	.02
	7270	*7270*	*5980*	*6429*	*5034*	*7264*	*7265*	*7255*	*6605*	*7121*	*5020*	*2186*	*2185*	*7270*
Supervision	.07**	.08**	1	.23**	-.16**	.20**	.08**	.20**	.22**	-.18**	.10**	-.13**	.03	-.07**
	5980	*5980*	*5980*	*5608*	*4983*	*5978*	*5979*	*5978*	*5357*	*5865*	*4969*	*954*	*954*	*5980*
Peer Delinq.	.12**	.11**	.23**	1	-.18**	.39**	.19**	.42**	.18**	-.09**	.15**	-.12**	-.06**	-.04**
	6429	*6429*	*5608*	*6429*	*4689*	*6427*	*6429*	*6427*	*5818*	*6302*	*4678*	*1727*	*1727*	*6429*
Competence	-.10**	-.09**	-.16**	-.18**	1	-.13**	-.04**	-.13**	-.23**	.20**	-.76**	.09*	-.08	-.01
	5034	*5034*	*4983*	*4689*	*5034*	*5031*	*5031*	*5028*	*4486*	*4943*	*4985*	*414*	*414*	*5034*
Theft	.06**	.04**	.20**	.39**	-.13**	1	.15**	.79**	.00	-.03**	.12**	-.10**	-.02	-.04**
	7264	*7264*	*5978*	*6427*	*5031*	*7264*	*7263*	*7255*	*6600*	*7115*	*5017*	*2186*	*2185*	*7264*
Violence	-.47**	-.44**	.08**	.19**	-.04**	.15**	1	.65**	.08**	-.02	.04**	-.09**	-.04*	-.02*
	7265	*7265*	*5979*	*6429*	*5031*	*7263*	*7265*	*7254*	*6601*	*7116*	*5017*	*2186*	*2185*	*7265*
Delinquency	-.21**	-.21**	.20**	.42**	-.13**	.79**	.65**	1	.06**	-.03**	.13**	-.11**	-.04	-.04**
	7255	*7255*	*5978*	*6427*	*5028*	*7255*	*7254*	*7255*	*6595*	*7107*	*5014*	*2186*	*2185*	*7255*
Race	.00	.00	.22**	.18**	-.23**	.00	.08**	.06**	1	-.25**	.20**	-.19**	-.07**	-.01
	6605	*6605*	*5357*	*5818*	*4486*	*6600*	*6601*	*6595*	*6605*	*6517*	*4475*	*2099*	*2098*	*6605*
SES	-.01	-.01	-.18**	-.09**	.20**	-.03**	-.02	-.03**	-.25**	1	-.15**	.09**	.01	.10**
	7121	*7121*	*5865*	*6302*	*4943*	*7115*	*7116*	*7107*	*6517*	*7121*	*4930*	*2135*	*2134*	*7121*
Self-Control	.08**	.07**	.10**	.15**	-.76**	.12**	.04**	.13**	.20**	-.15**	1	-.02	.08	.04**
	5020	*5020*	*4969*	*4678*	*4985*	*5017*	*5017*	*5014*	*4475*	*4930*	*5020*	*424*	*424*	*5020*
Current Job	.29**	.28**	-.13**	-.12**	.09*	-.10**	-.09**	-.11**	-.19**	.09**	-.02	1	.37**	.04
	2186	*2186*	*954*	*1727*	*414*	*2186*	*2186*	*2186*	*2099*	*2135*	*424*	*2186*	*2185*	*2186*
Job Hours	.43**	.42**	.03	-.06**	-.08	-.02	-.04*	-.04*	-.07**	.01	.08	.37**	1	-.01
	2185	*2185*	*954*	*1727*	*414*	*2185*	*2185*	*2185*	*2098*	*2134*	*424*	*2185*	*2185*	*2185*
Growth	.02	.02	-.07**	-.04**	-.01	-.04**	-.02*	-.04**	-.01	.10**	.04**	.04	-.01	1
	7270	*7270*	*5980*	*6429*	*5034*	*7264*	*7265*	*7255*	*6605*	*7121*	*5020*	*2186*	*2185*	*7270*

** Correlation is significant at the 0.01 level; * Correlation is significant at the 0.05 level (2-tailed).

Table 32. Correlation Matrix, Oldest Sample.

	Age	Age2	Low Parental Supervision	Peer Delinquency	Competence	Theft	Violence	Delinq.	Race	SES	Low Self Control	Current Job	Job Hours	Growth Rate
Age	1	.99**	.28**	-.18**	-.07**	-.15**	-.08**	-.19**	.03*	-.05**	.02	.25**	.25**	.00
	5947	*5947*	*2761*	*5423*	*2139*	*5881*	*5878*	*5881*	*5755*	*5577*	*2179*	*3807*	*3803*	*5859*
Age2	.99**	1	.28**	-.19**	-.07**	-.16**	-.09**	-.19**	.03*	-.05**	.01	.24**	.24**	-.00
	5947	*5947*	*2761*	*5423*	*2139*	*5881*	*5878*	*5881*	*5755*	*5577*	*2179*	*3807*	*3803*	*5859*
Supervision	.28**	.28**	1	.26**	-.15**	.18**	.17**	.20**	.25**	-.19**	.06**	-.12**	-.02	-.03
	2761	*2761*	*2761*	*2657*	*2099*	*2751*	*2749*	*2751*	*2650*	*2657*	*2132*	*717*	*713*	*2731*
Peer Delinq.	-.18**	-.19**	.26**	1	-.13**	.41**	.37**	.50**	.03*	-.07**	.13**	-.18**	-.15**	.01
	5423	*5423*	*2657*	*5423*	*2064*	*5423*	*5421*	*5423*	*5268*	*5137*	*2101*	*3423*	*3419*	*5356*
Competence	-.07**	-.07**	-.15**	-.13**	1	-.13**	-.18**	-.16**	-.14**	.18**	-.67**	.03	-.00	-.02
	2139	*2139*	*2099*	*2064*	*2139*	*2137*	*2135*	*2137*	*2052*	*2053*	*2044*	*475*	*473*	*2135*
Theft	-.15**	-.16**	.18**	.41**	-.13**	1	.31**	.90**	-.05**	-.04**	.09**	-.10**	-.07**	.01
	5881	*5881*	*2751*	*5423*	*2137*	*5881*	*5878*	*5881*	*5699*	*5539*	*2177*	*3807*	*3803*	*5796*
Violence	-.08**	-.09**	.17**	.37**	-.18**	.31**	1	.58**	.08**	-.08**	.12**	-.11**	-.09**	.00
	5878	*5878*	*2749*	*5421*	*2135*	*5878*	*5878*	*5878*	*5697*	*5537*	*2175*	*3806*	*3802*	*5793*
Delinquency	-.19**	-.19**	.20**	.50**	-.16**	.90**	.58**	1	-.02	-.05**	.11**	-.12**	-.09**	.02
	5881	*5881*	*2751*	*5423*	*2137*	*5881*	*5878*	*5881*	*5699*	*5539*	*2177*	*3807*	*3803*	*5796*
Race	.03*	.03*	.25**	.03**	-.14**	-.05**	.08**	-.02	1	-.21**	.12**	-.23**	-.17**	-.05**
	5755	*5755*	*2650*	*5268*	*2052*	*5699*	*5697*	*5699*	*5755*	*5432*	*2090*	*3731*	*3727*	*5678*
SES	-.05**	-.05**	-.19**	-.07**	.18**	-.04**	-.08**	-.05**	-.21**	1	-.08**	.09**	.02	.11**
	5577	*5577*	*2657*	*5137*	*2053*	*5539*	*5537*	*5539*	*5432*	*5577*	*2092*	*3568*	*3564*	*5521*
Self-Control	.02	.01	.06**	.13**	-.67**	.09**	.12**	.11**	.12**	-.08**	1	-.09*	-.05	.08**
	2179	*2179*	*2132*	*2101*	*2044*	*2177*	*2175*	*2177*	*2090*	*2092*	*2179*	*502*	*500*	*2174*
Current Job	.25**	.24**	-.12**	-.18**	.03	-.10**	-.11**	-.12**	-.23**	.09**	-.09*	1	.41**	.01
	3807	*3807*	*717*	*3423*	*475*	*3807*	*3806*	*3807*	*3731*	*3568*	*502*	*3807*	*3803*	*3747*
Job Hours	.25**	.24**	-.02	-.15**	-.00	-.07**	-.09**	-.09**	-.17**	.02	-.05	.41**	1	-.01
	3803	*3803*	*713*	*3419*	*473*	*3803*	*3802*	*3803*	*3727*	*3564*	*500*	*3803*	*3803*	*3743*
Growth	.00	-.00	-.03	.01	-.02	.01	.00	.02	-.05**	.11**	.08**	.01	-.01	1
	5859	*5859*	*2731*	*5356*	*2135*	*5796*	*5793*	*5796*	*5678*	*5521*	*2174*	*3747*	*3743*	*5859*

** Correlation is significant at the 0.01 level; * Correlation is significant at the 0.05 level (2-tailed).

Table 33. Between-Individual Effects of Competence, Current Employment and General Delinquency.

Youngest Sample	Model 1 GEE		HGLM			
			Population Average		Subject Specific	
	Reduced	Full	Reduced	Full	Reduced	Full
Race	-.21**	-.20**	-.07	-.07	-.06	-.06
	.06	*.06*	*.06*	*.06*	*.07*	*.07*
SES	.01^	.00	.01*	.01*	.01*	.01*
	.00	*.00*	*.00*	*.00*	*.00*	*.00*
Low Parental Supervision	.09**	.09**	.10**	.10**	.11**	.10**
	.01	*.01*	*.02*	*.02*	*.02*	*.02*
Low Self Control	.46**	.46**	.45**	.45**	.50**	.50**
	.14	*.13*	*.14*	*.14*	*.16*	*.16*
Social Competence	.26	.26	.24	.25	.30	.30
	.17	*.17*	*.17*	*.17*	*.19*	*.19*
Peer Delinquency	.08**	.08*	.07**	.07**	.07**	.07**
	.00	*.00*	*.00*	*.00*	*.00*	*.00*
Age	-.23**	-.23**	-.21**	-.21**	-.03	-.03
	.05	*.66*	*.04*	*.04*	*.03*	*.03*
Age Squared	.00^	.00^	.00**	.00^	-.01**	-.01**
	.00	*.00*	*.00*	*.00*	*.00*	*.00*
Current Job		.02		-.03		-.00
		.10		*.11*		*.13*
Lagged Delinquency	.24**	.24**				
	.01	*.02*				
N	405	405	405	405	405	405
NT	5100	5100	5090	5090	5090	5090

**p<.01; *p<.05; ^p<.10 (2-tailed); Standard Error in italics.

Table 34. Between-Individual Effects of Competence, Current Employment and General Delinquency

Oldest Sample	Model 1 GEE		HGLM			
			Population Average		Subject Specific	
	Reduced	Full	Reduced	Full	Reduced	Full
Race	-.25**	-.27**	-.31**	-.34**	-.26**	-.30**
	.09	*.09*	*.09*	*.10*	*.11*	*.19*
SES	-.00	-.00	-.01*	-.01*	-.01*	-.01^
	.00	*.00*	*.00*	*.00*	*.00*	*.00*
Low Parental Supervision	.06**	.06**	.07**	.07**	.07**	.07**
	.02	*.02*	*.02*	*.02*	*.02*	*.03*
Low Self Control	.36*	.35*	.15	.15	.32^	.30
	.18	*.19*	*.20*	*.18*	*.19*	*.19*
Social Competence	.08	.09	-.16	-.13	-.06	-.04
	.21	*.22*	*.23*	*.21*	*.21*	*.21*
Peer Delinquency	.08**	.08**	.07**	.07**	.07**	.07**
	.00	*.00*	*.00*	*.00*	*.00*	*.00*
Age	.38**	.38**	.34**	.34**	.80**	.80**
	.11	*.11*	*.08*	*.10*	*.05*	*.05*
Age Squared	-.01	-.01**	-.02**	-.01**	-.02**	-.03**
	.00	*.00*	*.00*	*.00*	*.00*	*.00*
Current Job		-.09		-.18		-.18
		.15		*.18*		*.19*
Lagged Delinquency	.23**	.23**				
	.02	*.02*				
N	384	384	384	384	384	384
NT	4528	4528	4515	4514	4515	4514

**p<.01; *p<.05; ^p<.10 (2-tailed); Standard Error in italics.

Table 35. Between-Individual Effects of Competence, Employment Hours and General Delinquency.

Youngest Sample	HGLM	
	Population Average	Subject Specific
Race	-.04 *.06*	-.04 *.07*
SES	.46** *.14*	.01* *.00*
Low Parental Supervision	.11** *.02*	.11** *.00*
Low Self Control	.46** *.14*	.52** *.15*
Social Competence	.26 *.17*	.32^ *.19*
Peer Delinquency	.07** *.00*	.07** *.00*
Age	-*.22*** .04	-*.03* .03
Age Squared	.00^ *.00*	-*.01*** .00
Employment Hours	*.01*^ .00	.01* *.00*
N	405	405
NT	5734	5734

**p<.01; *p<.05; ^p<.10 (2-tailed) ; Standard Error in italics.

Table 36. Between-Individual Effects of Competence, Employment Hours and General Delinquency.

Oldest Sample	HGLM	
	Population Average	Subject Specific
Race	-.40**	-.35**
	.09	*.11*
SES	-.01**	-.01*
	.00	*.00*
Low Parental Supervision	.07**	.07**
	.02	*.02*
Low Self Control	.17	.31
	.19	*.20*
Social Competence	-.10	-.02
	.22	*.21*
Peer Delinquency	.07**	.07**
	.00	*.00*
Age	*.34***	.81**
	.08	*.05*
Age Squared	-.01**	.03**
	.00	*.00*
Employment Hours	-.01*	-.01*
	.00	*.00*
N	384	384
NT	4982	4982

**p<.01; *p<.05; ^p<.10 (2-tailed) ; Standard Error in italics.

Table 37. Between-Individual Effects of Competence, Current Employment and Theft.

Youngest Sample	Model 1 GEE		HGLM			
			Population Average		Subject Specific	
	Reduced	Full	Reduced	Full	Reduced	Full
Race	-.52**	-.50**	-.42**	-.41**	-.49**	-.48**
	.11	*.12*	*.11*	*.12*	*.14*	*.14*
SES	.00	.00	.00	.00	.00	.00
	.01	*.01*	*.00*	*.00*	*.01*	*.01*
Low Parental Supervision	.18**	.18**	.22**	.22**	.25**	.25**
	.03	*.03*	*.03*	*.03*	*.04*	*.04*
Low Self Control	.56**	.55*	.69*	.70**	.80**	.80**
	.26	*.26*	*.27*	*.27*	*.28*	*.28*
Social Competence	.19	.18	.24	.24	.38	.37
	.32	*.32*	*.33*	*.33*	*.34*	*.34*
Peer Delinquency	.10**	.10**	.08**	.08**	.08**	.08**
	.00	*.01*	*.00*	*.00*	*.00*	*.00*
Age	.51**	.51**	.41**	.41**	.94**	.94**
	.10	*.10*	*.05*	*.07*	*.05*	*.05*
Age Squared	-.02**	-.02**	-.01**	-.01**	-.04**	-.04**
	.00	*.00*	*.00*	*.00*	*.00*	*.00*
Current Job		.10		.04		.09
		.22		*.21*		*24*
Lagged Delinquency	.28**	.28**				
	.03	*.03*				
N	405	405	405	405	405	405
NT	5100	5100	5096	5089	5096	5089

**p<.01; *p<.05; ^p<.10 (2-tailed) ; Standard Error in italics

Table 38. Between-Individual Effects of Competence, Employment Hours and Theft.

Youngest Sample	HGLM	
	Population Average	Subject Specific
Race	-.37**	-.45**
	.11	*.14*
SES	.00	.00
	.00	*.00*
Low Parental Supervision	.23**	.26**
	.03	*.05*
Low Self Control	.70*	.83**
	.27	*.28*
Social Competence	.24	.42
	.34	*.34*
Peer Delinquency	.08**	.08**
	.00	*.00*
Age	.41**	.94**
	.07	*.05*
Age Squared	-.01	-.04**
	.00	*.00*
Employment Hours	.01^	.01*
	.00	*.01*
N	405	405
NT	5734	5734

**p<.01; *p<.05; ^p<.10 (2-tailed) ; Standard Error in italics.

Table 39. Between-Individual Effects of Competence, Current Employment and Theft.

Oldest Sample	Model 1 GEE		HGLM			
			Population Average		Subject Specific	
	Reduced	Full	Reduced	Full	Reduced	Full
Race	-.47**	-.58**	-.56**	-.68**	-.57**	-.69**
	.11	*.12*	*.11*	*.11*	*.14*	*.15*
SES	-.00	-.00	-.01*	-.01*	-.01*	-.01*
	.00	*.00*	*.00*	*.00*	*.01*	*.00*
Low Parental Supervision	.09	-.09**	.11**	.10**	.10**	.09**
	*.03***	*.03*	*.03*	*.03*	*.03*	*.03*
Low Self Control	.53*	.54*	.31	.31	.53*	.51*
	.27	*.28*	*.29*	*.28*	*.24*	*.23*
Social Competence	.31	.39	.04	.15	.16	.24
	.30	*.30*	*.32*	*.30*	*.27*	*.26*
Peer Delinquency	.08**	.09**	.07**	.07**	.07**	.07**
	.00	*.00*	*.00*	*.00*	*.00*	*.00*
Lagged Delinquency	.22**	.22**				
	.03	*.03*				
Age	.42**	.44**	.33**	.34**	1.06**	1.07**
	.15	*.15*	*.10*	*.10*	*.07*	*.07*
Age Squared	-.01**	-.01	-.01**	-.01**	-.03	-.03**
	.00	*.00***	*.00*	*.00*	*.00*	*.00*
Current Job		-.47*		-.63*		-.62**
		.21		*.25*		*.25*
N	384	384	384	384	384	384
NT	4528	4528	4515	4514	4515	4514

**p<.01; *p<.05; ^p<.10 (2-tailed) ; Standard Error in italics.

Table 40. Between-Individual Effects of Competence, Employment Hours and Theft.

Youngest Sample	HGLM	
	Population Average	Subject Specific
Race	-.76**	-.75**
	.11	*.15*
SES	-.01**	-.02*
	.00	*.00*
Low Parental Supervision	.11**	.10**
	.03	*.03*
Low Self Control	.56*	.67**
	.22	*.24*
Social Competence	.36	.35
	.27	*.27*
Peer Delinquency	.07**	.07**
	.00	*.00*
Age	.37**	1.07**
	.10	*.07*
Age Squared	-.01**	-.03**
	.00	*.00*
Employment Hours	-.02**	-.02**
	.00	*.00*
N	384	384
NT	4987	4987

**p<.01; *p<.05; ^p<.10 (2-tailed) ; Standard Error in italics.

Table 41. Between-Individual Effects of Competence, Current Employment and Violence.

Youngest Sample	Model 1 GEE		HGLM			
			Population Average		Subject Specific	
	Reduced	Full	Reduced	Full	Reduced	Full
Race	.07	.09	.08	.07	.08	.07
	.07	*.07*	*.06*	*.06*	*.08*	*.07*
SES	.00	.00	.00^	.00	.00	.00
	.00	*.00*	*.00*	*.00^*	*.00*	*.00*
Low Parental Supervision	.03*	.03*	.03*	.03^	.04^	.04^
	.02	*.02*	*.02*	*.02*	*.02*	*.02*
Low Self Control	.30*	.29*	.28*	.28**	.28^	.28^
	.14	*.14*	*.12*	*.12*	*.15*	*.15*
Social Competence	.30^	.27^	.11	.12	.12	.13
	.16	*.16*	*15*	*.15*	*.18*	*.18*
Peer Delinquency	.05**	.05**	.10**	.06**	.06**	.06**
	.00	*.00*	*.01*	*.00*	*.00*	*.00*
Lagged Delinquency	.16**	.16**				
	.02	*.02*				
Age	-.48**	-.48**	-.50**	-.50**	-.37**	-.36**
	.08	*.08*	*.06*	*.06*	*.06*	*.06*
Age Squared	.01	.01	.01*	.01*	-.00	-.00
	.00	*.00*	*.00*	*.00*	*.00*	*.00*
Current Job		.12				-.09
		.11				*.11*
N	405	405	405	405	405	405
NT	5101	5101	5091	5090	5091	5090

**p<.01; *p<.05; ^p<.10 (2-tailed) ; Standard Error in italics.

Table 42. Between-Individual Effects of Competence, Current Employment and Violence.

Oldest Sample	Model 1 GEE		HGLM			
			Population Average		Subject Specific	
	Reduced	Full	Reduced	Full	Reduced	Full
Race	.30^	.30^	.34**	.33**	.38*	.35^
	.17	*.17*	*.15*	*.15*	*.17*	*.19*
SES	-.01*	-.01*	-.02**	-.02**	-.02*	-.02*
	.01	*.00*	*.01*	*.01*	*.01*	*.01*
Low Parental Supervision	.02	.02	.02	-.02	.00	.03
	.04	*.04*	*.03*	*.03*	*.04*	*.04*
Low Self Control	-.04	-.03	-.16	-.16	-.08	-.08
	.28	*.27*	*.25*	*.25*	*.32*	*.32*
Social Competence	-.72*	-.72*	-.97**	-.98**	-.93**	-.91**
	.35	*.36*	*.34*	*.34*	*.34*	*.35*
Peer Delinquency	.07**	.07**	.06**	.06**	.07**	.07**
	.00	*.00*	*.00*	*.01*	*.00*	*.00*
Lagged Delinquency	.18**	.18**				
	.03	*.03*				
Age	1.25**	1.26**	1.12**	1.12**	1.74**	1.74**
	.19	*.19*	*.12*	*.12*	*.21*	*.21*
Age Squared	-.03**	-.03**	-.03**	-.03**	-.05**	-.05**
	.00	*.00*	*.00*	*.00*	*.00*	*.01*
Current Job		.01		-.27		-.15
		.28		*25*		*.33*
N	384	384	384	384	384	384
NT	4528	4528	4515	4514	4515	4514

**p<.01; *p<.05; ^p<.10 (2-tailed) ; Standard Error in italics.

Table 43. Between-Individual Effects of Two Factor Competence and General Delinquency.

Youngest Sample

	HGLM			
	Population Average		Subject Specific	
	Reduced	Full	Reduced	Full
Race	-.07	-.07	-.06	-.06
	.06	*.06*	*.07*	*.07*
SES	.01*	.01*	.00	.01*
	.00	*.00*	*.00**	*.00*
Low Parental Supervision	.10**	.10**	.10**	.10**
	.02	*.02*	*.02*	*.02*
Low Self Control	.56**	.56**	.63**	.63**
	.15	*.15*	*.18*	*.18*
Dependability	.03	.03	.03	.03
	.08	.08	*.09*	.09
Sociability	.17^	.18^	.22*	.22*
	.10	*.10*	*.11*	*.11*
Peer Delinquency	.07**	.07**	.07**	.07**
	.00	*.00*	*.00*	*.00*
Age	-.21**	-.21**	-.03*	-.03
	.04	*.04*	*.03*	*.03*
Age Squared	.00^	.00^	-.01**	-.01**
	.00	*.00*	*.00*	*.00*
Current Job		-.04		-.01
		.08		*.13*
N	405	405	405	405
NT	5734	5734	5734	5734

**p<.01; *p<.05; ^p<.10 (2-tailed) ; Standard Error in italics.

Table 44. Between-Individual Effects of Two Factor Competence, Current Job and Theft.

Youngest Sample

	HGLM			
	Population Average		Subject Specific	
	Reduced	Full	Reduced	Full
Race	-.42**	-.42**	-.50**	-.50**
	.11	*.12*	*.14*	*.15*
SES	.00	.00	.00	.00
	.01	*.00*	*.01*	*.00*
Low Parental Supervision	.22**	.22**	.25**	.25**
	.03	*.03*	*.05*	*.05*
Low Self Control	1.01**	1.01**	1.21**	1.21**
	.15	*.29*	*.33*	*.33*
Dependability	-.13	-.12	-.12	-.12
	.15	.15	*.19*	.19
Sociability	.44**	.44*	.58*	.58*
	.17	*.17*	*.23*	*.23*
Peer Delinquency	.08**	.08**	.08**	.08**
	.00	*.00*	*.00*	*.00*
Age	.41**	.41**	.94**	.94**
	.07	*.07*	*.05*	*.05*
Age Squared	-.01**	-.01**	-.04**	-.04**
	.00	*.00*	*.00*	*.00*
Current Job		.00		.06
		.21		*.24*
N	405	405	405	405
NT	5734	5734	5734	5734

**p<.01; *p<.05; ^p<.10 (2-tailed) ; Standard Error in italics.

Table 45. Between-Individual Effects of Two Factor Competence, Job and Violence.

Oldest Sample

	HGLM			
	Population Average		Subject Specific	
	Reduced	Full	Reduced	Full
Race	.32^	.31^	.34*	.31^
	.17	*.17*	*.17*	*.19*
SES	-.02**	-.02**	-.02**	-.02*
	.00	*.00*	*.01*	*.00*
Low Parental Supervision	.02	.02	.03	.02
	.04	*.04*	*.04*	*.04*
Low Self Control	.16	.16	.13	.13
	.26	*.27*	*.35*	*.35*
Dependability	-.37*	-.37*	-.34*	-.34*
	.15	.15	*.17*	.17
Sociability	.11	.10	.08	.09
	.14	*.14*	*.18*	*.19*
Peer Delinquency	.07**	.07**	.07**	.07**
	.00	*.00*	*.01*	*.00*
Age	1.18**	1.18**	1.17**	1.17**
	.14	*.14*	*.18*	*.19*
Age Squared	-.03**	-.03**	-.03**	-.03**
	.00	*.00*	*.00*	*.00*
Current Job		-.01		-.15
		.30		*.32*
N	384	384	384	384
NT	4983	4983	4983	4983

**p<.01; *p<.05; ^p<.10 (2-tailed); Standard Error in italics.

Table 46. Levels of Competence and Changes in Employment on General Delinquency.

	Model 2 HGLM					
	Population Average			Subject Specific		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.83	.15	5.74**	-.72	.22	-3.34***
SES	-.00	.01	.53	-.01	.00	1.12
Low Parental Supervision	.08	.04	1.80^	.09	.06	1.45
Low Self Control	.30	.28	1.05	.50	.48	1.03
Competence	-.12	.35	.33	.12	.59	.20
Peer Delinquency	.07	.00	21.44**	.07	.00	14.85**
Employment	-.02	.09	.26	-.05	.09	.58
Age	-.67	.39	1.70^	1.34	.49	2.70**
Age2	.01	.01	1.18	-.05	.01	-3.35**
N	405			405		
NT	1617			1617		
Oldest	*b*	*se*	*T Ratio*	*B*	*se*	*T Ratio*
Race	-.25	.14	1.80**	-.20	.15	1.37
SES	-.01	.01	1.62	-.01	.01	1.65^
Low Parental Supervision	.04	.03	1.20	.04	.03	1.10
Low Self Control	.39	.24	1.59^	.54	.26	2.09*
Competence	-.10	.28	.37	.06	.30	.20
Peer Delinquency	.06	.00	19.22**	.06	.00	24.34**
Employment	-.11	.06	2.23*	-.13	.05	2.40*
Age	.43	.13	3.30**	-.04	.00	11.36**
Age2	-.01	.00	4.49**	-.04	.00	11.36**
	384			384		
	3174			3174		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 47. Levels of Competence and Changes in Employment on Theft.

	Model 2 HGLM					
	Population Average			Subject Specific		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-1.13	.14	7.83**	-1.01	.25	4.02**
SES	-.00	.01	.52	.01	.01	-.58
Low Parental Supervision	.11	.05	2.45*	.13	.08	1.88^
Low Self Control	.44	.32	1.38	.65	.54	1.20
Competence	.06	.38	.15	.32	.68	.48
Peer Delinquency	.07	.00	20.22**	.07	.01	11.20**
Employment	-.19	.09	2.04*	-.20	.11	1.77^
Age	-.70	.45	1.58	-.09	.02	4.76**
Age2	.01	.01	1.17	2.81	.65	4.30**
N	405			405		
NT	1616			1616		
Oldest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.64	.13	4.97**	-.64	.19	3.31**
SES	-.01	.00	1.72^	-.01	.01	1.57
Low Parental Supervision	.08	.04	1.85^	.07	.03	1.78^
Low Self Control	.54	.34	1.58	.71	.32	2.27*
Competence	.19	.39	.50	.42	.36	1.18
Peer Delinquency	.07	.00	12.28**	.06	.00	17.27**
Employment	-.17	.08	2.16*	-.19	.07	2.59*
Age	.22	.18	1.18	1.39	.19	7.39**
Age2	-.01	.00	1.97**	-.04	.00	8.57**
	384			384		
	3174			3174		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 48. Levels of Competence and Changes in Employment on Violence.

	Model 2 HGLM					
	Population Average			Subject Specific		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	.17	.20	.87	.10	.43	.24
SES	-.02	.01	2.21*	-.02	.02	1.19
Competence	-1.17	.54	2.20*	-1.04	.99	1.04
Low Self Control	-.40	.41	.98	-.19	.81	.23
Low Parental Supervision	-.07	.05	1.49	-.07	.12	.59
Peer Delinquency	.07	.00	8.87**	.07	.01	5.74**
Employment	-.12	.15	.78	-.14	.31	.44
Age	.29	.72	.39	.39	1.48	.26
Age2	-.01	.02	.60	-.01	.04	.36
N	405			405		
NT	1616			1616		
Oldest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	.60	.21	2.86**	.61	.26	2.36*
SES	-.03	.01	3.40**	-.03	.01	2.73**
Low Parental Supervision	-.01	.05	.27	-.01	.05	.22
Low Self Control	.26	.38	.68	.35	.40	.86
Competence	-.71	.51	1.37	-.57	.44	1.28
Peer Delinquency	.06	.00	11.30**	.06	.01	9.04**
Employment	.13	.08	1.50	.12	.16	.72
Age	1.51	.29	5.15**	1.53	.40	3.80**
Age2	-.04	.00	5.86**	-.04	.00	-4.17**
	384			384		
	3174			3174		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 49. Within-Individual Effects of Competence and General Delinquency.

	Model 1	Model 2	Model 3 (HGLM)	
	Random Effect	Fixed Effects	PA	SS
Youngest				
Competence	-.03	-.04	-.04	-.04
	(.06)	(.06)	(.06)	(.05)
Low Self Control	.10	.09	.09	.10
	(.05)*	(.04)*	(.04)*	(.03)**
Low Parental Supervision	.05	.05	.03	.03
	(.01)**	(.00)**	(.01)**	(.01)**
Peer Delinquency	.08	.07	.06	.06
	(.00)**	(.00)**	(.00)**	(.00)**
Age	-.48	-.38	-.45	-.24
	(.06)**	(.06)**	(.06)**	(.05)**
Age2	.01	.01	.01	.00
	(.00)**	(.00)**	(.00)**	(.00)
Lagged Delinquency	.22			
	(.02)**			
N	451	451	475	475
NT	3788	4436	4494	4494
Oldest				
Competence	-.23	-.19	-.19	-.19
	(.10)*	(.10)*	(.08)*	(.10)^
Low Self Control	.01	-.02	-.07	-.07
	(.08)	(.07)	(.06)	(.07)
Low Parental Supervision	.02	.02	.01	.01
	(.02)	(.02)	(.02)	(.02)
Peer Delinquency	.09	.08	.08	.08
	(.01)**	(.00)**	(.00)**	(.01)**
Age	-.81	-1.75	-.69	-1.50
	(.55)	(.44)**	(.48)	(.44)**
Age2	.02	.05	.01	.05
	(.02)	(.01)**	(.01)	(.01)**
Lagged Delinquency	.12			
	(.03)**			
N	297	299	440	440
NT	1112	1394	1928	1928

**p<.01; *p<.05; ^p<.10 (2-tailed) ; Standard Error in parenthesis.

Table 50. Within-Individual Effects of Competence and Theft

	Model 1 Random Effect	Model 2 Fixed Effects	Model 3 (HGLM) PA	SS
Youngest				
Competence	.03	.06	.14	.11
	(.10)	(.10)	(.08)^	(.10)
Low Self Control	.08	.13	.16	.18
	(.08)	(.08)^	(.06)**	(.07)**
Low Parental Supervision	.07	.07	.06	.06
	(.02)**	(.01)**	(.01)**	(.01)**
Peer Delinquency	.08	.09	.08	.08
	(.00)**	(.00)**	(.00)**	(.00)**
Age	-.02	.01	-.07	.45
	(.14)	(.11)	(.10)	(.10)**
Age2	.00	.00	.01	-.02
	(.00)	(.00)	(.00)^	(.00)**
Lagged Delinquency	.20			
	(.03)**			
N	287	287	475	475
NT	2547	2893	4494	4494
Oldest				
Competence	-.17	-.24	-.23	-.23
	(.15)	(.14)^	(.10)*	(.14)^
Low Self Control	.09	.06	-.02	-.01
	(.11)	(.10)	(.08)	(.10)
Low Parental Supervision	.04	.03	.01	-.00
	(.02)*	(.03)	(.02)	(.02)
Peer Delinquency	.08	.10	.08	.09
	(.01)**	(.00)**	(.00)**	(.01)**
Age	.22	-1.65	.70	-.128
	(.94)	(.68)*	(.66)	(.62)*
Age2	-.00	.05	-.02	-.01
	(.03)	(.02)*	(.02)	(.08)
Lagged Delinquency	.09			
	(.03)**			
N	223	225	440	440
NT	834	1051	1928	1928

**p<.01; *p<.05; ^p<.10 (2-tailed) Standard Error in parenthesis.

Table 51. Within-Individual Effects of Competence and Violence.

	Model 1 Random Effect	Model 2 Fixed Effects	Model 3 (HGLM) PA	SS
Youngest				
Competence	-.04	-.12	-.12	-.12
	(.06)	(.06)*	(.06)*	(.08)
Low Self Control	.06	.06	.05	.02
	(.05)	(.04)	(.05)	(.06)
Low Parental Supervision	.01	.02	.01	.01
	(.01)	(.01)*	(.00)*	(.01)
Peer Delinquency	.05	.06	.06	.06
	(.00)**	(.00)**	(.00)**	(.00)**
Age	-.19	-.07	-.18	-.11
	(.12)	(.07)	(.09)*	(.09)
Age2	-.01	-.02	-.00	-.01
	(.00)	(.00)**	(.00)^	(.00)**
Lagged Delinquency	.15			
	(.01)**			
N	443	443	475	475
NT	3788	4360	4595	4595
Oldest				
Competence	-.48	-.60	-.61	-.63
	(.16)**	(.19)**	(.16)**	(.27)*
Low Self Control	.02	-.09	-.09	-.09
	(.11)	(.14)	(.12)	(.19)
Low Parental Supervision	.03	.04	.03	.03
	(.02)	(.04)	(.03)	(.04)
Peer Delinquency	.06	.06	.07	.07
	(.00)**	(.01)**	(.01)**	(.01)**
Age	.22	-.35	-.28	-.31
	(1.00)	(.91)	(.79)	(1.26)
Age2	-.00	.01	.01	.01
	(.03)	(.03)	(.02)	(.04)
Lagged Delinquency	.04			
	(.04)			
N	131	133	440	440
NT	478	602	1926	1926

**p<.01; *p<.05; ^p<.10 (2-tailed) Standard Error in parenthesis.

Table 52. Within-Individual Effects of Cumulative Competence on General Delinquency.

Youngest Sample	Model 2 HGLM					
	Population Average			Subject Specific		
Youngest	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	-.04	.07	.54	-.02	.07	.30
SES	.01	.00	2.60**	.01	.00	2.48*
Cumulative Competence	.01	.01	1.47	-.01	.00	3.84**
Low Self Control	.37	.07	4.95**	.10	.03	3.48**
Low Parental Supervision	.03	.01	3.21**	.028	.01	3.93**
Peer Delinquency	.07	.00	16.19**	.07	.00	26.13**
Age	-.19	.12	1.53	.06	.11	.55
Age2	.01	.00	1.69^	-.01	.00	1.42
N	405			405		
NT	3787			3787		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Appendix

Table 1a. Codebook

Variables	
Caretaker and Teacher Social Competence	
If true of pupil now(or over past 6 mo):	
1. Fails to carry out assigned tasks	0 Very True
2. Difficulty following directions	1 Sometimes
3. Poor school work	2 Not True
4. Acts too young for his age	
5. Behaves irresponsibly	
6. Does Not get along with other pupils	
7. Not liked by other pupils	
8. Quarrels with other kids for a slight reason	
Teacher Report Cumulative Competence	
Current performance in:	1 Far Below Grade
1. Reading	2 Somewhat Below
2. Writing	3 At Grade level
3. Spelling	4 Somewhat Above
4. Math	5 Far Above Grade
5. Grade Retention	0 Yes
	1 No
Teacher Reported Low Self Control	
1. Impulsive or acts without stopping to think	0 Not True
2. Lies or cheats	1 Sometimes True
3. Demands must be met immediately	2 Very True
Peer Delinquency Scale (Youth Reported)	
Summary measure of the number of friends that engage in:	
1. Skipped School	
2. Lied/Disobeyed/Talked Back	
3. Damaged Property	
4. Stole <$5	
5. Stole $5-100	
6. Stole >$100	
7. Broke Into Building	
8. Went Joyriding	
9. Hit to Hurt Someone	
10. Attacked With Weapon	

11. Weapon/Force/Strong arm

Peer Delinquency Scale (continued)

12. Sold Hard Drugs
13. Used Alcohol
14. Used Marijuana
15. Used Hard Drugs

Parental Supervision

Summary Measure of Caretaker and Youth Self-Reports:

1. Leaves note when going out
2. Companions known to caretaker
3. Knows how to reach caretaker
4. Says time he will return

Age, Age2

Wave Dummies

Hollinshead SES

Race

0 Non-black
1 Black

Youth Self-Report Employment

1. In the past year, have you had a paying job?

0 No
1 Yes

2. Are you currently employed?

3. How many hours did you work per week at your job?

Youth Self-Report Delinquency Items in General Variety Score

0 No
1 Yes

1. Have you on purpose broken or damaged something belonging to your parents or other people in your family? (SRA)
2. Have you on purpose broken or damaged or destroyed something that belonged to a school? (SRA)
3. Have you on purpose broken or damaged or destroyed something that did not belong to you (not counting things that belonged to your family or school)? (SRA)
4. Have you purposely damaged or destroyed property that did not belong to you? (SRD)
5. Have you stolen or tried to steal a bicycle or

skateboard? (SRA)

6. Have you stolen or tried to steal a motor vehicle such as a car or motorcycle? (SRD)
7. Have you taken something from a store without paying for it? (SRA and SRD)
8. Have you taken money at home that did not belong to you? (SRA)
9. Have you taken anything else from your home that did not belong to you? (SRA)
10. Have you taken anything from the teacher or other kids that did not belong to you? (SRA)
11. Have you stolen or tried to steal things worth $5 or less? (SRD)
12. Have you stolen or tried to steal things worth between $5 and $50? (SRD)
13. Have you stolen or tried to steal something worth between $50 and $100? (SRD)
14. Have you stolen or tried to steal something worth $100 or more? (SRD)
15. Have you gone into a building or somebodys house, yard, or garage and taken something that did not belong to you? (SRA)
16. Have you gone into or tried to go into a building to steal something? (SRD)
17. Have you taken something from a car that did not belong to you? (SRA and SRD)
18. Have you written things or sprayed paint on walls or sidewalks or cars, where you were not supposed to do that? (SRA)
19. Have you purposely set fire to a building, car, or something else or tried to do so? (SRA and SRD)
20. Have you avoided paying for things such as movies, bus or subway rides, or food? (SRA and SRD)
21. Have you snatched someone's purse or wallet or picked someone's pocket? (SRA and SRD)
22. Have you knowingly bought, sold, or held stolen goods or tried to do any of these things? (SRD)
23. Have you gone joyriding, that is, taken a motor vehicle, such as a car or motorcycle, for a ride or drive without the permission of the owner? (SRD)
24. Have you used checks illegally or used a slug or fake money to pay for something? (SRD)
25. Have you used or tried to use credit cards or bank cards without the permission of the owner? (SRD)
26. Have you tried to cheat someone by selling them something that was worthless or not what you said it

was? (SRD)
27. Have you attacked someone with a weapon or with the idea of seriously hurting or killing them? (SRD)
28. Have you used a weapon, force, or strong-arm methods to get money or things from people? (SRD)
29. Have you been involved in a gang fight? (SRD)
30. Have you hurt or threatened to hurt someone to get them to have sex with you? (SRD)
31. Have you had or tried to have sexual relations with someone against their will? (SRD)

Youth Self-Report Delinquency Items in Property Variety Score

0 No
1 Yes

Have you stolen or tried to steal a bicycle or skateboard?
Have you taken something from a store without paying for it?
Have you taken some money at home that did not belong to you like from your mothers purse or from your parents dresser?
Have you taken anything else from home that did not belong to you?
Have you taken anything at school from the teacher or other kids that did not belong to you?
Have you gone into a building or somebodys house, yard, or garage and taken something that did not belong to you?
Have you taken something from a car that did not belong to you?
Have you snatched someone`s purse or wallet or picked someone`s pocket?
Have you gone joyriding, that is, taken a motor vehicle, such as a car or motorcycle, for a ride or drive without the permission of the owner?
Have you taken anything from the teacher or other kids that did not belong to you?
Have you stolen or tried to steal things worth $5 or less?
Have you stolen or tried to steal things worth between $5 and $50?
Have you stolen or tried to steal something worth between $50 and $100?
Have you stolen or tried to steal something worth $100 or more?
Have you knowingly bought, sold, or held stolen goods or tried to do any of these things?

Youth Self-Report Delinquency Items in Violence Variety Score	0	No
	1	Yes
Have you hit, slapped, or shoved a teacher or another grown-up at school?		
Have you hit, slapped or shoved one of your parents?		
Have you hit, slapped, or shoved your brother or sister or got into a physical fight with him/her?		
Have you hit, slapped, or shoved other kids or got into a physical fight with them?		
Have you thrown rocks or bottles at people?		
Have you attacked someone with a weapon or with the idea of seriously hurting or killing them?		
Have you used a weapon, force, or strong-arm methods to get money or things from people?		
Have you been involved in a gang fight?		
Have you hurt or threatened to hurt someone to get them to have sex with you?		
Have you had or tried to have sexual relations with someone against their will?		

Table 2a. Within-Individual Effects of Competence and General Delinquency, Expanded Model.

	Model 1 GEE			Model 2 HGLM					
				Population Average			Subject Specific		
Youngest	*b*	*se*	*Z*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Constant	1.24	.41	2.99**	-.17	.03	5.07**	-.41	.03	11.44**
Race	-.05	.07	.64	-.06	.07	.88	-.05	.08	.63
SES	.00	.00	1.75^	.01	.00	2.54*	.01	.00	2.52*
Competence	-.06	.07	.91	-.05	.06	.73	-.05	.05	1.00
Low Self Control	.12	.05	2.33*	.08	.05	1.72^	.09	.04	2.40*
Low Parental Supervision	.06	.00	6.76**	.03	.01	3.82**	.03	.01	4.41**
Peer Delinquency	.09	.00	21.89**	.07	.00	16.71**	.07	.00	27.22**
Age	-.34	.07	4.87**	-.47	.07	6.95**	-.24	.06	4.03**
Age2	.01	.00	2.68**	.01	.00	4.65**	.00	.00	.66
N	405			405			405		
NT	4057			4048			4048		
Oldest	*b*	*se*	*Z*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Constant	9.17	3.3	15.75**	-.35	.06	6.37**	-.75	.06	12.84**
Race	-.14	.11	1.19	-.34	.11	3.03**	-.33	.13	2.50*
SES	-.01	.00	1.64	-.00	.00	1.02	-.00	.01	.55
Competence	-.22	.11	-2.09*	-.21	.11	1.85^	-.21	.08	2.60**
Low Self Control	.03	.08	.43	-.05	.08	.66	-.05	.07	.76
Low Parental Supervision	.05	.02	3.27**	.01	.02	.88	.02	.02	1.08
Peer Delinquency	.11	.01	21.84**	.09	.01	10.72**	.09	.00	18.48**
Age	-1.28	.43	2.95**	-1.73	.44	3.91**	-1.05	.50	2.09*
Age2	.04	.01	2.78**	.05	.01	3.84**	.03	.02	1.86^
N	381			379			379		
NT	1795			1780			1780		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 3a. Within-Individual Effects of Competence and Theft, Expanded Model.

	Model 1 GEE			Model 2 HGLM					
				Population Average			Subject Specific		
Youngest	*b*	*se*	*Z*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Constant	-4.08	.97	5.98**	-1.71	.06	27.23**	-2.31	.07	31.56**
Race	-.24	.14	1.65	-.40	.13	3.13**	-.46	.16	-2.98**
SES	.00	.01	.03	.00	.01	.31	.00	.01	.73
Competence	.07	.13	.54	.15	.09	1.72^	.12	.10	1.23
Low Self Control	.19	.10	1.98*	.16	.07	2.39*	.17	.07	2.25*
Low Parental Supervision	.09	.02	5.14**	.05	.01	3.64**	.05	.01	3.53**
Peer Delinquency	.12	.01	20.39**	.09	.00	22.89**	.09	.00	18.52**
Age	.04	.15	.27	-.16	.11	1.39	.44	.10	4.07**
Age2	.00	.01	.24	.01	.00	2.40*	-.02	.00	3.33**
N	405			405			405		
NT	4057			4048			4048		
Oldest	*b*	*se*	*Z*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Constant	2.07	5.2	.39	-1.01	.07	14.31**	-1.66	.08	20.41**
Race	-.25	.16	1.54	-.50	.14	3.67**	-.60	.19	3.24**
SES	-.01	.01	1.52	-.01	.01	1.36	-.01	.01	1.00
Competence	-.19	.15	1.21	-.23	.16	1.54	-.21	.11	1.95*
Low Self Control	.16	.12	1.30	.08	.11	.71	.07	.08	.87
Low Parental Supervision	.07	.02	2.96**	.00	.02	.19	.02	.02	.69
Peer Delinquency	.12	.01	19.03**	.10	.01	9.67**	.10	.01	14.15**
Age	-.49	.67	.73	1.42	.64	2.22*	.32	.68	.47
Age2	.01	.02	.65	.05	.02	2.28*	-.01	.02	.55
N	381			379			379		
NT	1795			1780			1780		

**p<.01; *p<.05; ^p<.10 (2-tailed).

Table 4a Within-Individual Effects of Competence and Violence, Expanded Model

	Model 1 GEE			Model 2 HGLM					
				Population Average			Subject Specific		
Youngest	*b*	*se*	*Z*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	.09	.06	1.34	.07	.06	1.14	.07	.08	.88
SES	.01	.00	2.08*	.01	.00	2.18*	.01	.00	2.04*
Competence	-.05	.06	.88	-.12	.07	1.76^	-.12	.09	1.34
Low Self Control	.06	.05	1.21	.02	.05	.43	.02	.06	.38
Low Parental Supervision	.02	.00	2.36*	.01	.01	1.33	.01	.01	.83
Peer Delinquency	.06	.00	12.91**	.06	.00	11.92**	.06	.00	12.81**
Age	.21	.14	1.49	-.16	.11	-1.45	-.06	.01	.60
Age2	-.03	.00	3.81**	-.01	.01	1.91^	-.02	.00	3.73**
N	405			405			405		
NT	4057			4048			4048		
Oldest	*b*	*se*	*Z*	*b*	*se*	*T Ratio*	*b*	*se*	*T Ratio*
Race	.12	.18	.67	-.07	.19	.36	-.10	.23	.42
SES	-.01	.01	1.37	-.01	.01	1.02	-.01	.01	1.01
Competence	-.75	.18	4.24**	-.64	.18	3.57**	-.66	.29	2.23*
Low Self Control	-.07	.12	.54	-.07	.13	.53	-.07	.23	.31
Low Parental Supervision	.04	.03	1.41	.04	.03	1.11	.04	.05	.84
Peer Delinquency	.09	.01	11.47**	.08	.01	6.68**	.08	.01	5.45**
Age	-.21	.90	.24	-.38	.83	.45	-.43	1.3	.32
Age2	.01	.03	.34	.01	.03	.56	.02	.04	.39
N	381			379			379		
NT	1795			1780			1780		

**p<.01; *p<.05; ^p<.10 (2-tailed).

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