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THE EFFICACY OF COMMUNITY-BASED INTERVENTION FOR SERIOUS JUVENILE OFFENDERS

By

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

School of Criminal Justice

2002

ABSTRACT

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The control of juvenile delinquency emerged as an important social concern around the late nineteenth century, and since then, substantial levels of time and money have been expended in an attempt to "fix" delinquency by turning wayward youth into law abiding members of society. Social development theory is put forth as the most appropriate theoretical framework for both understanding the causes of delinquent behavior and for conceptualizing how best to structure intervention efforts for youthful offenders. This research compares the effectiveness of community-based intervention strategies in reducing delinquency compared to traditional probation for adjudicated youthful offenders.

The focus of this research was to determine not only if certain types of intervention models are more effective in reducing delinquency, but also to explain *why* some treatment programs are more effective. More specifically, it is argued reductions in recidivism will be contingent on the extent of initial risk for delinquency (e.g., at court adjudication), the extent of risk reduction attributable to treatment efforts, and the amount and type of services received while in treatment. "Delinquency" was operationalized both as "official recidivism" (any new court referral 18 months after adjudication) and self-reported delinquency (measured 18 months after adjudication).

Findings were contingent on which dependent variable was used. In terms of official recidivism, findings generally failed to support the arguments that risk, change in

risk, or level of treatment services received matter in reducing delinquency. The directions of the relationships suggest the opposite is the case. When controlling for these three core set of variables, little matters in terms of reducing involvement in officially recorded crime expect for treatment modality. Specifically, those exposed to the community-based treatment were most likely to recidivate. Initial risk, especially negative school behavior, was predictive of later levels of self-reported delinquency. There was additional evidence that reductions in risk over the study period, especially for drug use, were related to significant reductions in self-reported delinquency. Treatment modality (community-based or non-secure residential placement) had no effect on levels of self-reported delinquency. Finally, there was evidence that treatment services actually increased instead of reducing official delinquency. Implications for social development theory and policy are discussed.

This work is dedicated to my wife, Tracy A. (O'Connell) Varano, whose unending love and encouragement were crucial to the completion of this work. Words cannot begin to express how grateful I am for your support.

ACKNOWLEDGEMENTS

It would take countless pages of space to thank all of the people whose support and encouragement were important to the completion of this work. However, I would like to acknowledge and thank a few who have been particularly instrumental. First, I am deeply grateful to my dissertation committee, Dr. Tim Bynum, Dr. Christina DeJong, Dr. Bill Davidson, Dr. Ed McGarrell, and the late Dr. Chris Vanderpool, for their countless hours of work during this process. Their guidance and encouragement kept me on tract and focused, and I am very proud to consider them mentors, colleagues, and friends.

I would also like to acknowledge a few of the tremendous friendships I have made throughout the past years at Michigan State University. Beth Huebner and John McCluskey have proven to be two of the best colleagues a person could have. I am proud to have been one of the founding members of Team Bynum. I am also very fortunate to consider Justin Patchin, Amanda Burgess-Proctor, and Sameer Hinduja as co-workers and friends. Karen Sherman has proven to be one of the best friends, neighbors, and office mates. My dissertation greatly benefited not only from her editorial skills, but her ability to listen to my banter without going mad. Also counted among those that have made my experiences fun as well as educational are Michelle Bynum, Cynthia Perez McCluskey, Chris Maxwell, Sheila Maxwell, Dennis Payne, Brandon Kooi, and Cedrick Heraux. I have been fortunate to follow in the footsteps of a several predecessors who were instrumental in demonstrating to me how to complete a Ph.D. program while maintaining some (small) sense of sanity - Joe "The Hula Dancer" Schafer, Meghan

"Let's Get Georgio's" Stroshine, and Jeff "I Don't Have The Resources" Cancino. You have been missed and are still responsible for some of my fondest memories here.

I would like to thank my family for being living examples of love and hard work. The strength and dedication of my mother, Marie J. Varano, is second to none. I can not begin to express how crucial your strength has been to all of our lives. I know my father, the late Theodore F. Varano, would also have been very proud of this accomplishment. It was this thought that often kept me going when it seemed like the end would never be realized. To the rest of my family, including my grandmother, siblings, nieces, nephews, and in-laws - - The example you live each and everyday have again demonstrated to me what it means to strive for success.

Finally, I would like to acknowledge and thank my wife, Tracy (O'Connell) Varano. It is difficult to describe in a concise way how instrumental you have been to all of my professional and personal successes. A few examples of your support have included hanging out with me at the library, conversations over dinner in Baker Hall, and your ever present sense of understanding when I worked on nights and weekends. My degree is as much an indication of your love and support as it is an indication of my hard work.

These acknowledgements barely touch the surface of identifying those who have played an important role in the completion of my Ph.D. degree and my life. Thank you again and I hope to make you all proud.

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CHAPTER ONE:

INTRODUCTION

It is widely agreed that juvenile delinquency has increased considerably in the United States, most notably since the 1960s. This conclusion is evidenced from dramatic increases in juvenile arrests for serious and violent crime since the early twentieth century (Cook & Laub, 1998) and from more recent problems associated with the rash of school shootings and other incidences of school-related violence (Kaufman et al., 2000). Problems associated with juvenile delinquency have commanded extraordinary levels of public attention, criminal justice resources, and theoretical inquiry for at least the past one hundred years. From the advent of the "Progressive Reformers" of the early twentieth century to the present vast efforts have been harnessed to devise effective measures to ameliorate the conditions that produce delinquency.

The recognition of delinquency as an important social priority has co-occurred with movements to "fix" the problem by transforming delinquents into healthy, law-abiding members of society. A variety of different treatment approaches have been implemented that have vacillated between micro-level approaches focusing on individual-level defects, such as mental illness, to macro-level strategies that have attempted large scale social change (Davidson, Redner, Amdur, & Mitchell, 1990). Delinquency treatment strategies in the United States during the past 100 years are directly related to the prevailing knowledge of the causes of delinquency. The understanding that individuals are malleable and subject to change combined with scientific evidence on the causes and correlates of delinquency have influenced local, state, and national juvenile delinquency policy initiatives that were intended to curb

delinquency by treating the root causes of the behavior. The prevailing notions of causality have varied over time resulting in various and changing types of interventions.

The purpose of this research is to analyze the effectiveness of a contemporary treatment approach in the juvenile justice system that has been identified as a promising approach to intervening in delinquent behavior, the community-based day treatment model. In doing so, several arguments are made. First, since public policy is most often a reactionary response to apparent crises, the argument is made that much of what has historically driven "innovation" in the juvenile justice system is the idea that juvenile delinquency is at unprecedented levels. It is also the case that responses to delinquency at a given point in time are driven by contemporary understandings of human behavior. The movement to "treat" juveniles is reasonable only after children are understood to be malleable and subject to change, a notion that has not always existed. Finally, this section details the intimate relationship between the evolution of treatment modalities and cumulative scientific evidence as to the causes and correlates of delinquent activity.

The analysis in the present study do not focus on the etiology of delinquent behavior but instead on strategies for intervening in delinquent behavior once it has reached a level sufficiently serious to warrant official intervention by the juvenile justice system. However, in order to structure appropriate intervention strategies that recognize the type of intervention services that are most likely to produce the intended outcomes, it is necessary to identify an appropriate conceptual models that recognize the origins and complexity of delinquent behavior. Intervention strategies would only be expected to be effective if programming is directed at the etiology of the problem behavior. This study proposes that the causes of delinquency are best conceptualized by interactional theories

such as social development theory, a theoretical framework that integrates individual, social, and ecological causes. Although some have concluded that treatment has limited efficacy (Lipton, Martinson, & Wilks, 1975) and that most criminal offenders are generally beyond rehabilitation (Bennett, DiIulio, & Walters, 1996), there is a growing body of evidence pinpointing effective intervention strategies. Research suggests appropriate intervention strategies must be developmentally specific (Loeber, 1996), directed toward a limited population, involve sufficient intensity (Lipsey & Wilson, 1998), and conceptualize the underlying causes of delinquency behavior (Catalano & Hawkins, 1996; Lipsey & Wilson, 1998; Loeber, 1990, 1996; Thornberry, 1997b).

The current study will analyze the direct and indirect relationships between the "quantity" of program treatment, delinquency risk factors the treatment programs are intended to affect, and outcome measures such as self-reported and official delinquency. In addition, the current study extends previous research by questioning the extent to which comprehensive and intensive community-based intervention programs actually provide "intensive" efforts. The current research is important because the design and implementation features of programs are related to their efficacy (Lipsey & Wilson, 1998). Further examination of these issues may help to clarify the contradictory findings in the literature on the effectiveness of intervention programs. This study will further the discussion about effectiveness of interventions by disentangling the extent to which program outcomes are related to issues with program design and implementation. Although there is growing evidence surrounding the risk factors associated with delinquency, there is a need for research regarding effective intervention strategies that can affect these factors. Disentangling characteristics of treatment programs that may be

related to outcomes has the potential for creating a better understanding of program performance and has implications for the design of more effective interventions.

Crises and Innovation in the Juvenile Justice System

Bernard (1992: 4) argued the juvenile justice system operates in cycles driven by three coexisting perceptions: "that juvenile crime is at an exceptionally high level, that present juvenile justice policies make the problem worse, and that changing those policies will reduce juvenile crime." The perception that juvenile delinquency is at dangerously high levels functions historically as a crisis prompting change or innovation in the system and moves the "response" pendulum between one of two extremes: harsh punishments or no response at all. Although harsh punishments make intuitive sense from the perspective of punishing undesirable behavior, reasons for a lack of response are less apparent. The option to do nothing is a result of the lack of effective and reasonable responses, especially for minor offenders.[1] In between these two extremes is the option of providing treatment, an option considered more lenient than that of harsh punishment.

Delinquency as a Social Problem

The social problem of delinquency is a phenomenon that can be traced to the early nineteenth century. Prior to that period, the control of children was generally considered a duty of individual families and not a societal responsibility (Bernard, 1992; Mennel, 1973). The movement of delinquency into the arena of public policy can be traced to the breakdown of traditional control mechanisms but also to important changes in economic relationships that occurred during the late nineteenth century. The explosion of the industrial revolution resulted in dramatic changes to the face of urban centers as large

[1] Offenders that do not require incarceration are particularly difficult if "lenient treatments" (e.g., rehabilitative treatments) are not available because policymakers often believe harsh punishments will make minor offenders worse by exposing them to criminogenic influences (e.g., prison) (Bernard, 1992).

numbers of impoverished immigrants and people previously employed in the agricultural sector migrated to large cities (Krisberg, 1978). The absolute number of highly impoverished city dwellers increased as many found it difficult to find quality employment. The new urban population found it increasingly more difficult to control their children because many were now subject to negative influences from which they were once shielded. Visible signs of juvenile delinquency such as roaming streets, stealing, public fighting, and general disorderliness grew as traditional social control mechanisms provided by strong family units and steady employment dissolved (Thrasher, 1936).

Juvenile delinquency quickly developed into a crisis as local charities and city governments were presented with increased numbers of delinquent and at-risk youth. Official statistics indicated a distinct change in the nature of juvenile arrests starting around 1950 (Jensen, 1992: 10-11).[2] Prior to 1950, the arrest rates for individuals below 18 rested somewhere near 200 per 100,000. However, exponential increases in the juvenile arrest rate are evident starting around the mid-to-late 1950s. Although this sudden in crease in juvenile arrests was at least partially an artifact of changes in data collection, it provided the "proof" for many to conclude juvenile crime was increasing at an unprecedented rate. The FBI, for example, disregarded its own warning and later

[2] It was difficult to assess the exact extent of delinquency at either the local or national level prior to the 1950s because there was little data collected. The development of national data collection procedures such as the Federal Bureau of Investigation's (FBI) Uniform Crime Report (UCR) served as a major advancement in measuring trends in delinquency. Data collection procedures during the early years of the UCR program were not standardized, a problem that makes comparison of juvenile arrest rates prior to 1950 difficult. Prior to the early 1950s, juvenile arrest statistics were obtained from fingerprint records, the only records that showed the age of a person arrested. Since it was common practice for many jurisdictions to not fingerprint arrested juveniles, these early data are argued to be inadequate (Glueck, 1959: 8). The FBI recognized this problem and initiated a remedy in 1952 to collect the basic demographics of every person arrested in the United States. The potential impact of the change in data collection procedures was so dramatic the FBI warned against the comparison of pre and post 1952 trends (Federal Bureau of Investigations, 1954: 111).

interpreted this increase as an apparent juvenile crime wave (Federal Bureau of Investigations, 1961: 1).

Taken as a whole, the information detailed above indicates there have been changes in juvenile delinquency over the past 100 years that are reflected partly explained by the breakdown of traditional social control mechanisms but also partly explained by changes in data collection procedures. Although there has been a decrease in juvenile arrests for violent crime since 1994, the general perception is that even today juvenile crime rates remain high. At nearly every point in time over the past 100 years, there has been a perception that juvenile crime is on the increase and that the current generation of youth is somehow much more violent than in the past. It is this perception that drives policy in the juvenile justice system (Bernard, 1992).

Bernard (1992) argued innovation in the juvenile justice system is induced by the perception of public officials that juvenile crime is at an unacceptably high level and that a new strategy is needed for correcting the behavior. Innovation, however, must exist within the prevailing ideology of what is an "acceptable" likely alternative to be explored. Similar to Thomas Kuhn's (1970) argument about incremental advancements in scientific thought, "normal" innovation in criminal justice policy is highly contingent on two important considerations: the strategies currently being used and popular conceptualization of the underlying causes of the behavior. These two factors direct responses to the delinquency problem along the continuum from very punitive to very lenient.

Early Responses to Delinquency

The notion of implementing strategies to "fix" delinquent behavior developed into meaningful options only after children were conceptualized as a legal class developmentally distinct from adults and malleable (Aries, 1962). The House of Refuge and Child Savers movements were two early initiatives organized by religious reformers faced with growing levels of delinquency during the nineteenth century. Early reformers were members of the privileged class that became involved in delinquency work out of a sense of charity.[3]

The House of Refuge (1825-1860) was one of the first major movements to direct resources to delinquent and wayward youth (Krisberg, 1978). The movement was started by a group of wealthy Christian philanthropists who viewed themselves as "God's elect" and responsible for providing moral leadership. The philanthropists attributed delinquency to inadequate family lives and the pervasiveness of social vices, and thought reformation could be achieved through the development of regimented work schedules and daily routines in institutional settings. These types of institutional reformatories stressing moral righteousness and a strong work ethic were considered favorable for children to adult jails or workhouses because housing children with adult offenders was believed to increase exposure to delinquent lifestyles. Moreover, creating youth-specific institutions was also believed to decrease the likelihood that judges would acquit young offenders to avoid sending them to adult jails (Mennel, 1973).

Similar to the House of Refugee movement, the Child Savers movement (1850-1890) identified growing levels of juvenile delinquency as a major social problem. There

[3] Although most accounts describe the motives of early reformers as "doing Gods work," those critical of the movements suggest their motivations were based more in a desire to maintain existing social relation and to quell rising dissention among the urban poor (Platt, 1991).

was, however, a fundamental difference in their approach in that these reformers identified urban poverty as one of the primary factors underlying delinquency. Reformers in this movement were more optimistic about the possibilities of reforming delinquent youth and believed firmly that institutionalization was not effective reformation. Instead they believed the family environment was intuitively better to institutional care and devised methods to either strengthen the families of delinquents or to align wayward youth with families through a process of "placing out." The idea of placing out children was based on the notion of the ideal American family and served as a way of connecting children in need with what were thought to be "good" families. The strategy was very similar to the traditional practice in agricultural communities of "binding out" delinquent children to other families so that they could learn a trade (Bernard, 1992).

There were several important implications to the House of Refuge and Child Saving movements. First, both groups clearly articulated the notion that children should be treated differently than adults. For the House of Refuge movement this entailed housing them in separate institutions, but the shift marked an important point of departure. Second, the movements also stand as important transition points in understanding the "causes" of delinquency. For the first time, delinquency was beginning to be understood as related to prevailing economic and social conditions. In addition, the Child Savers movement was particularly important because it was reform ideas from this period that were responsible for the development of the first juvenile court system in Chicago, Illinois in 1899.

Delinquency Prevention/Intervention and Scientific Inquiry

Attention to juvenile delinquency as a separate form of deviance resulted from both a conceptualization of "childhood" as a developmental phase distinct from adulthood and by a growth in the prevalence of delinquents and other wayward youth in urban centers. Additionally, principles of scientific inquiry began to be applied to the study of criminal behavior that included both implicit and explicit treatment implications. Cesare Lombroso's book *The Criminal Man (1876)* used the scientific method to study the physical attributes of institutionalized criminal offenders concluded that criminals are biological throwbacks that are less highly evolved.[4] Although methodologically crude, the technique added a welcomed sense of formality to the question of delinquency. The use of the scientific method eventually gave way to applying many different paradigms of thought to the study of delinquency including Freud's psychoanalysis (Vold, Bernard, & Snipes, 1998).

William Healy's *The individual delinquent: A textbook of diagnosis and prognosis for all concerned in understanding offenders (1915)* moved scientific inquiry to the forefront of delinquency research and offered social, medical, and psychological viewpoints on the causes of delinquency. The institutionalization of science in early treatment models provided an analytical framework and added legitimacy for a group of "experts" and "professionals" to devise future courses of action. Healy was influential in the early development of the juvenile court and its related treatment model. Influenced heavily by Freud's advances in psychology, Healy believed the key to delinquency lay deep in the personalities of offenders. Although he and his colleagues were not able to

[4] The implication of such an argument is that criminals are inherently different and more dangerous than law-abiding citizens. As such, a reasonable "solution" would be to ensure they would not be able to commit additional crimes by incarcerating them for long periods of time.

isolate a limited set of causes for delinquency, they concluded that delinquency was a result of mental dissatisfactions, adolescent mental instabilities and impulsions, and mental peculiarities (Healy, 1915: 34). Healy did, however, also realize that delinquency was a product of unjust social and economic relationships.

After his work in Chicago, Healy moved to Boston and became an important figure in the spread of child treatment centers throughout the United States. Krisberg and Austin (1978) describe Healy as a "proselytizer" for the institutionalization of over 230 child guidance clinics by 1931. The child guidance clinics have been described as a "branch of mental hygiene" (Glueck & Glueck, 1934: 34) and were concerned with childhood personality and conduct disorders. The clinics recognized the complex interaction of children with their environments and wanted to help needy children gain a "workable orientation" to their world. The child guidance clinics collected a wide range of social and psychological information on children referred to clinics and their families.

Clifford Shaw, a sociologist at the University of Chicago, extended the inquiry into the causes of delinquency by identifying the environmental factors associated with crime. Influenced by the work of Robert Park, Shaw and his colleague Henry McKay applied the concept of contextual influences to delinquency. They questioned "why... relatively large numbers of boys from the inner urban areas appear in court with... striking regularity" (Shaw & McKay, 1969: 140). The work of Shaw and McKay was unique in that it abandoned the grand macro level analyses initiated by Emile Durkheim in favor of research that focused on the effects of smaller geographical areas such as neighborhoods. More importantly, their research shifted the focus from the individual to contextual influences.

Shaw and McKay hypothesized that the invasion of businesses and immigrants resulted in disorganized communities that lack effective social control mechanisms. Social control mechanisms are important features of communities because they intervene in the transmission of delinquency through cultural norms. Social disorganization theory posits that areas characterized by economic deprivation experience higher rates of population turnover (movement in and out of an area) and population heterogeneity, two features that reduce the formulation of social control (Bursik Jr., 1988). These findings led Shaw and McKay to conclude "the basic solution of [juvenile delinquency] and other problems of urban life lies in a program of the physical rehabilitation of slum areas and the development of community organization" (Shaw & McKay, 1942: xi). During the early 1930's, Shaw instituted the Chicago Area Project (CAP), a program that intended to create long-term change in the life course of juveniles by ameliorating contextual symptoms. Based on their understanding of the primary causes of delinquent behavior, the authors to suggest the form and function of intervention efforts should be directed toward community level attributes.

Shaw perceived community organization and mobilization as a promising strategy to increase levels of formal and informal social control. Program staff developed social programs that mobilized local neighborhoods, provided participants the authority to be active decision-makers, and decentralized program management responsibilities to local community members. Chicago's CAP was based on the assumptions that individuals are involved in a web of regular relationships, individuals will only participate in programs if they have a meaningful role, and that there are people in most communities that have the capacity to organize and run programs if given adequate training (Krisberg, 1978).

Within the first few years, twelve independent and self-governing community committees were developed with seed money from grants.

CAP projects ranged from improvements to schools and sanitation to traffic patterns, resources directed to levels of law enforcement, and community recreational renewal projects (Schlossman & Sedlak, 1983). There were also projects intended to work directly with delinquent youth including "visitation programs for incarcerated children, with delinquent gangs, and volunteer assistance in parole and probation" (Krisberg, 1978: 33). The concept of "detached workers," agency workers that were removed from their offices and assigned to local communities to work directly with gang members, was also initiated under the CAP program (Howell, 1998). Woodson (1981) argued the residual effects of CAP programs were largely responsible for large decreases in gang deaths between 1973 and 1976. Ultimately, CAP was a major initiative that was one the first to move away from institutional treatment approaches and psychological explanations for delinquent behavior.

During the 1960s, scientific theories continued to influence policy developments in the juvenile justice system. Cloward and Ohlin's (1960) strain theory, for example, had a tremendous affect on President Kennedy's Commission on Juvenile Delinquency and Youth Crime and President Johnson's "War on Poverty." Strain is particularly likely to exist in high poverty areas. Individuals living in high poverty areas experience a greater disparity between socially defined goals of success (e.g., wealth and status) along with few legitimate opportunities to achieve socially defined goals of success. Strain was hypothesized to be positively related to the development of delinquent behavior. Individuals experiencing strain do not lack the motivation to conform their behavior but

instead "the desire to meet social expectations itself becomes the source of delinquent behavior" (Cloward & Ohlin, 1960: 44).

Strain theory had a profound impact on public policy. The War on Poverty, for example, was a large-scale program that developed federal antipoverty measures such as compensatory job training/schooling and income redistribution policies. The purpose of the War on Poverty was to give the disadvantaged the income and skills they needed to function in the free market. Mobilization for Youth was one such effort directed primarily at minority youth in Manhattan's lower east side. This program was a comprehensive effort that provided resources in the areas of educational assistance, job-training, subsidized work, and vocational-guidance programs for unemployed or out-of-school youth (Jensen, 1992).

The Juvenile Delinquency and Youth Offenses Acts (1961, 1968) and other related initiatives[5] were devised to increase the legitimate opportunities for youth to succeed in conventional society. They were particularly important because they were the first major pieces of federal legislation aimed at controlling and preventing delinquency and were part of larger initiatives that provided services to youth and families such as Head Start. Federal attention continued to be given to juvenile justice issues, and in 1968 the Juvenile Justice and Delinquency Prevention Act was enacted with responsibilities for the prevention and control of juvenile delinquency. In addition to these pieces of legislation, additional measures were enacted that gave the federal government increasingly more involvement in funding efforts directed at curbing juvenile delinquency.

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[5] Similar programs were implemented by the Department of Health, Education, and Welfare, the Equal Employment Opportunity Act (1964), and Manpower Development and Training Act (1962).

The labeling theory perspective is another important framework that affected public policy around the same period. Advocates of the labeling theory posit delinquents are essentially no different from nondelinquents and that process of applying the delinquent label marginalizes certain individuals from non-labeled youth. Marginalized youth subsequently associate with delinquent youth, thereby increasingly their own involvement in delinquency (Eddy & Gribskov, 1998; Liska, 1987). Strain and labeling theories were popular with both politicians and researchers during the 1960s and 1970s. Those advocating the strain perspective argued increasing opportunities for youth would reduce the likelihood of delinquency. From a labeling perspective, the affects of the "delinquent label" would be mitigated by decriminalizing status offenses and by reducing the frequency and extent to which juveniles were incarcerated.

The federal government has been increasingly involved in the prevention and control of juvenile delinquency for some period of time. Although early interventions tended to be initiated and funded by social reformers, by the 1960s the federal government evolved into the primary power broker directing research and treatment agendas. The federal government's power to direct research and treatment agendas comes from the infusion of large amounts of research dollars. In 1974, for example, federal appropriations for the Office of Juvenile Justice and Delinquency Prevention were $75 million, a figure that was to increase to $125 million in 1975 and $150 million in 1976 (Olson-Raymer, 1984: 37). Much of the funding was disseminated as grants for research and treatment initiatives. In general, juvenile justice policy has remained in concert with popular theories of delinquency. However, the federal government's involvement in delinquency prevention was a piecemeal approach to legislation and

lacked clarity about big picture objectives, goals, and responsibilities of the various agencies. Olson-Raymer (1984: 33) concluded:

> "such policies were built upon traditional fragmented philosophical and methodological foundations – little agreement about children and youth's needs; no clear differentiations between delinquent, neglected, abuse, or exploited youth; and no consensual body of professional knowledge pointing to delinquent causation factors or efficient treatment methods."

One of the most significant advancements in the treatment of juvenile delinquency during the early to mid-1900s was the impact of research on the understanding of the causes of delinquency. The direction of prevention and intervention efforts was tightly connected to prevailing ideology around the causes of delinquency. Ultimately, there was an important shift from prevention efforts that focused on the individual offender during the early 1900s to holistic strategies that sought to prevent delinquency by creating opportunity.

Yet increases in federal funding for research and advances in criminological theory did not "solve" the problem of crime. Instead, the United States experienced one of the largest increases in crime rates during the 1960s and 1970s. Macro efforts failed to create the desired effects of reducing delinquency and the "cycle" of juvenile justice policy (Bernard, 1992) refocused attention to the traits of individual offenders. This shift was influenced by the groundbreaking work by Marvin Wolfgang and his colleagues who suggested that important characteristics such as age of delinquency onset and extent of specialization demarcate criminal offenders. More importantly the authors' finding that crime is disproportionately concentrated among a small population of

offenders created a fervor around the notion of identifying serious and violent offenders early in the their careers by the 1980s.

Birth Cohort Studies: Characteristics of Criminal Careers

Wolfgang, Figlio, and Sellin's (1972) *Delinquency in a Birth Cohort* is an important contribution to delinquency research because it details the developmental patterns of delinquent careers. In many ways an extension of the work of Eleanor and Sheldon Glueck, *Delinquency in a Birth Cohort* detailed delinquent careers of a cohort of all males born in the City of Philadelphia in 1945 and traced their official contacts with police during their juvenile court age from 7 to 18. The cohort study indicated juvenile offenders could be differentiated based on the onset of delinquency and the extent of persistence or desistence from delinquent activity.

Of the nearly 3,500 juveniles born in 1945 with records of official police contacts, 46 percent were one-time offenders while the remainder had at least one additional recorded contact after their initial contact. Recidivists could be differentiated from nondelinquents and one-time delinquents based on the extent of their transience between various homes and schools, IQ, and socioeconomic status. Lower socioeconomic status boys, for example, were much more likely to be delinquents, recidivists, and chronic offenders than those from higher socio-economic statuses.

Wolfgang et al.'s (1972) data also revealed important findings regarding the age of delinquency onset. For example, the mean age of delinquency onset was 14.4 years (Wolfgang et al., 1972: 130-135) and has been consistently

confirmed by other research (Gottfredson & Hirschi, 1990; Steffensmeier, Allan, Harer, & Streifel, 1989). Age of onset is an important characteristic to consider because individuals that begin their delinquent careers before age 13 will commit more offenses through age 17 than those that began later even when controlling for time at risk (Benda & Toombs, 2002). Wolfgang et al.'s data indicated age at first contact was positively associated with proportion of offenses classified as index or serious crimes (murder, rape, robbery, burglary, motor vehicle theft, and arson) (142). Moreover, the probability of desisting from crime decreased substantially after each police contact. For example, although slightly less than half of the delinquents desisted from delinquency after the first arrest, only 35 percent desisted after the second arrest and 25 percent after the fifth arrest (Wolfgang et al., 1972: 163). Thus, the probability of desistance decreases with each subsequent arrest.

There are several implications to the findings of Wolfgang and his colleagues. First, a small proportion of all offenders (6 percent) are responsible for a large percentage (52 percent) of all crime committed by individuals in the birth cohort.[6] Second, not all juvenile offenders are the same with regard to the probability that they will recidivate. The data indicate, for example, that a large percentage (54 percent) of first time juvenile offenders are likely to desist from future offending with little to no direct intervention by the juvenile justice system. Also implicit in these findings is that there is a potential to offset substantial

[6] A different way to assess the prevalence of these chronic offenders is to determine what percentage they represent not of the entire birth cohort in general, but the birth cohort that experienced at least one arrest. In this case, the data indicate 18 percent of all individuals arrested are considered to be chronic offenders (Blumstein, Farrington, & Moitra, 1985).

levels of crime in the future if intervention efforts addressed the needs of high-risk offenders early in their offending careers. Clearly, then, juvenile delinquents are not a uniform population of offenders that demonstrate constant likelihood of recidivism. Instead, there are discernible differences between offenders that are manifest in the prevalence of offending, age of onset, duration of criminal career, escalation and de-escalation of behavior, and desistance from criminal behavior.

Other cohort studies have demonstrated there is regularity to offending patterns. Criminal career research in Philadelphia, London, Marion County, Oregon, and Racine, Wisconsin reveal similar findings. Namely, a high level of involvement in official delinquency that ranges from 25 percent of the birth cohort in Philadelphia to 70 percent in Racine, a rapidly increasing probability of reoffending through the first few arrests, stability in recidivism rates through approximately the sixth arrest, and increasingly high and stable recidivism rates for subsequent involvement (Blumstein et al., 1985).[7] Although there is disagreement as to the extent of regularity in criminal careers (see Blumstein, Cohen, & Farrington, 1988a, 1988b; Gottfredson & Hirschi, 1986) the findings can be interpreted as providing useful ways of classifying offenders based on characteristics of their offending patterns. Early cohort studies, however, were lacking in their ability to *explain* why the apparent difference between subgroup of delinquents existed. For example, the research failed to address why some juveniles are more likely to partake in delinquency earlier than others. Moreover, the research failed to answer why age of onset should substantively matter in the

[7] Blumstein, Farrington, and Moitra (1985) noted substantial variation in many of these attributes between sites yet interpreted the findings as being consistent with findings from the Philadelphia Cohort Study.

trajectories of criminal careers. Detailing the etiology of delinquency, especially the developmental sequencing of serious and chronic offending, has the ability to serve as the next step to intervening in the transition from nondelinquents to delinquents, occasional delinquent to persister, and more importantly, how desisters are differentiated from persisters.

Summary

The juvenile justice system has undergone continual change throughout much of the nineteenth and twentieth centuries caused primarily by perceived increases in delinquency. The perception that a "crisis of delinquency" exists, however real or imaginary, has served as one of the main factors driving innovation. In the face of crises, bureaucracies are driven to institute responses that give the appearance that the necessary steps are being taken to increase order and reduce problem behavior (Habermas, 1988).

"Progressive" reformers of the early 1900s were one of the first reform movements to devise systematic responses to delinquency (Platt, 1977). Although early efforts identified institutional reformatories as the most effective mechanism for "correcting" wayward and delinquent youth, prevention and intervention efforts were soon moved beyond institutions to community settings. Responses to delinquency are not historical accidents, but were and continue to be intimately connected to the prevailing ideology about the causes of delinquent behavior.

The scientific understanding of the causes and correlates of delinquency have had a tremendous impact on prevention and intervention efforts. In the early 1900s, Dr. William Healy identified the primary causes of delinquency as mental

defects. Prevention efforts were then geared toward correcting this behavior through intensive counseling and often, the removal of children from their families. Later, research by Shaw and McKay identified ecological correlates of delinquent behavior, findings that directed prevention efforts toward community-level changes that gave funding to local organizations to create recreational and economic opportunities.

During the past several decades, major research efforts have been initiated aimed at detailing a picture of the causes of delinquent behavior. Research initiatives operate in certain paradigms that are generally accepted as presenting the most accurate representation of the relationships of interest during a particular time period. In the 1930s and 1940s, the prevailing theory argued delinquency is a product of ecological factors that increase exposure to criminogenic influences. According to the Chicago School, delinquency has its roots in detachment from conventional groups caused by residential and employment segregation caused by the "natural" ecology of urban areas. At risk populations in urban areas become increasingly concentrated in locations that are characterized by physical decay and criminogenic influences and limited their exposure and attachment to groups with normative value systems thereby increasing delinquency (Shaw & McKay, 1931, 1942). As would be expected, conceptual and empirical models posited causal relationships between features of urban ecology such as patterns in migration, land use, urban decay, and delinquency rates.

Until the 1960s criminological inquiry concentrated primarily on the relationships between micro influences and delinquency. The work of Merton,

and later Cloward and Ohlin, expanded the discussion on the relationships between macro influences and delinquency by suggesting from unequal access to the means to achieve socially defined success. In this case, individuals experience "strain" between socially acceptable means of achieving wealth and success and instead resort to anti-social methods such as delinquency. Based on this notion, researchers concentrated analytic methods on the conceptual relationships between socioeconomic characteristics, the extent of blocked opportunities, and involvement in crime.

The above are two examples of the relationships between prevailing paradigms and how they influence the direction of delinquency research. Throughout much of the twentieth century the paradigms compelling research have fluctuated between individual, social, and ecological explanations. Implicit to most of the above theories is also a set of interventions that should diminish the impact of risk factors if the theoretical framework is sound. For example, policymakers implemented several national policy initiatves such as Head Start and other efforts during the 1960s and 1970s that were aimed at increasing access to legitimate opportunities, policies that were based on Cloward and Ohlin's version of strain theory.

While successful in advancing theoretical relationships among elements of the causes of delinquency, these conceptual frameworks have been overly restrictive in their ability to make the necessary connections between the theoretical frameworks. Social development theory has been proposed as a theoretical framework for integrating many of the existing theories into a unified

theory of delinquency. Thornberry and others propose that social development theory holds the potential for explaining the complex interactions of individuals and their environments in the production of delinquency. More importantly, the theory has the potential for conceptualizing the relationships between these factors and developmental maturation. Social development theory also has the potential for suggesting appropriate intervention strategies, especially for more serious juvenile offenders. If delinquency truly is a byproduct of individual, social, and ecological forces, intervention strategies must recognize these risk factors in treatment models.

Developmental theory holds a tremendous promise for integrating multiple risk factors into models that present a comprehensive assessment of characteristics of delinquency. Interactional theories such as social developmental theory have influenced but have also been influenced by "birth cohort" research and "pathways to delinquency" models. The combination of all of these initiatves were instrumental in the implementation of the U.S. Department of Justice's Office of Juvenile Justice and Delinquency Prevention (OJJDP) "Comprehensive Strategies" (Howell, 1995).

CHAPTER 2

RISK FACTORS FOR DELINQUENCY AND DEVELOPMENTAL CRIMINOLOGY

The juvenile justice system has been faced with an unprecedented increase in the number of delinquents adjudicated for serious and violent crimes (Snyder & Sickmund, 1999) and a subsequent need to develop and implement effective intervention programs for these offenders. Since juvenile offenders have a right to rehabilitation (Rotman, 1986) effective intervention should be recognized as a crucial part of the dispositions and sanctions applied by the juvenile justice system. The first step in structuring an effective program for juvenile offenders is to identify the existence and interactions of the causes of delinquency.

This section will identify the risk factors traditionally associated with delinquency. It will focus on individual, social, and ecological influences that differentiate delinquents from nondelinquents, and also delineate characteristics of delinquent careers. I will make the argument that although delinquency explanations under traditional theoretical frameworks of strain theory, social control theory, differential association theory, and learning theory have been supported by empirical evidence, they have been overly restrictive in limiting models to a narrow set of causal variables. Integrative theories such as developmental and interactional models present a more representative picture of the onset, trajectory, persistence, and diversification of criminal careers. A better understanding of the dynamic characteristics of delinquency provides a framework for structuring effective interventions to offset continued delinquency.

Risk Factors For Delinquency

Cumulative evidence from the past several decades of delinquency research have clearly documented five categories of causes and correlates of delinquency: (1) individual risk factors such as demographics, attitudes, self-esteem, and substance abuse; (2) family influences such as family history of substance abuse and criminality; (3) school influences such as school bonding and low academic achievement; (4) peer influences such as involvement in delinquency, experimentation with illegal substances, and attitudes toward delinquency; and (5) neighborhood influences such as crime rates, low neighborhood attachment and levels of disorganization (Wilson & Howell, 1995). The concept of readily identifiable predictors of delinquency lends itself to the design of intervention efforts directed at particular target populations.

Individual Risk Factors

During the past 100 years researchers have identified precursors of delinquent behavior. Primary among these "risk factors" has are individual level traits such as age, gender, and ethnicity. In addition, individual risk factors important to the production of delinquency include self-esteem, alcohol and drug abuse, and attitudes toward delinquency. While neither sufficient nor necessary correlates of delinquency, research continues to demonstrate their importance in the prediction of characteristics of delinquency careers.

Age

Age is one of the most important predictors of onset and levels of involvement in delinquency. Age-specific arrest rates increase steadily from early adolescence (10-13) through the early to late teens. This pattern remains relatively high as individuals mature

to their mid-twenties and then decreases at a similarly dramatic rate (Farrington, 1985; Greenberg, 1985; Shavit & Rattner, 1988). The trend is not only apparent for males but also remains reasonably consistent for female offenders. This "law of nature" (Goring, 1913) is largely invariant across communities, cultures and historical time periods (Gottfredson & Hirschi, 1990).

There are several age-related features of adolescence that increase the likelihood of involvement in delinquency. Since the family serves as the most important socializing agent during early childhood (pre-adolescence), children spend most of their time with their parents and similar caregivers during this period who are responsible for childrearing. Parents and other caregivers are vital in establishing core value systems, attitudes, ambition, and structuring behavior of children (Furstenberg Jr. et al., 1999).

Parental influences during early childhood have been linked to important aspects of childhood development such as self-control, a factor argued to be largely responsible for variations in delinquent behavior (Gottfredson & Hirschi, 1990). "In order to teach the child self-control, someone must (1) monitor the child's behavior; (2) recognize deviant behavior when it occurs, and (3) punish such behavior" (Gottfredson & Hirschi, 1990: 97). In this situation, children are generally exposed to a set of attitudes and behaviors that are, under ideal settings, consistent with mainstream pro-social values. Families are the central socializing agent to children during much of adolescence and during these early years children are more likely to model their attitudes and behaviors (Furstenberg, Cook, Eccles, Elder Jr., & Sameroff, 1999). In the case of healthy family environments, young children would be expected to model pro-social behavior that is consistent with parental examples.

Children begin to spend more time with their peers and less time with their parents as they make the transition to adolescence. It is during this transition that they are generally given freedom to spend more time out of the watchful eyes of their parents or guardians. Their free time is spent with peers and socializing in peer networks and they are more likely to look to these groups (as opposed to parents/families) for important cues of behaviors and attitudes to model (Elliott & Menard, 1996). For the "normal" child, the influence of peers and negative peer networks is also age-specific and gradually begins to diminish as children mature through the teenage years and into early adulthood. Peer networks eventually lose importance in favor of other stage salient issues such as employment, intimate relationships, and children thereby decreasing their involvement in delinquency (Gottfredson & Hirschi, 1990).

There are several useful theoretical frameworks for conceptualizing the relationship between age, peer networks, and delinquency. Social control theory and social learning theories are two common frameworks for understanding the age-delinquency relationship. From the perspective of social control theory (Hirschi, 1969), delinquency is likely to increase for juveniles with poorly developed attachments to traditional control mechanisms such as parents and other family members. For young juveniles, control is primarily exercised through interactions with parents and family members. Children internalize parental value systems that serve as a foundation for judgments of the acceptability of future behavior. Young children with strong pro-social attachments to their parents are less likely to get into situations in which delinquency is possible because they spend most of their free time in their presence, but also because of

value systems instilled in children through regular interactions with parents and other caregivers.

During the maturation process, juveniles tend to stray away from the strict control of their parents. The extent of their movement beyond acceptable behavioral limits is influenced both by features of local environments and the extent to which attachment to parents is maintained, but for some delinquency gains a favorable status. Temporally, involvement in delinquency precedes extensive association with delinquent peer networks (Elliott & Menard, 1996; Thornberry, Lizotte, Krohn, Farnworth, & Jang, 1994). Delinquents seek to establish such networks as a movement to surround themselves with individuals with similar value systems. As juveniles with weak family attachments or delinquent internalized value systems begin to experiment with delinquency they increase their association with peers who share similar delinquent values.

In contrast, social learning theories such as differential association assume delinquency is learned through interactions with other delinquents. Association with delinquent peers is proposed to precede delinquency. Involvement in delinquency increases through a "learning process" where individuals learn the techniques of delinquency as well as the cognitive justifications that diminish the moral culpability for participating in such activities. Increased contact with peers with attitudes favorable to delinquency but who are also involved in delinquency accelerates the learning process. Juveniles are expected to continue their involvement in delinquency as they maintain contact with other delinquents. Though not exhaustive explanations, control and differential association theories are useful for understanding the age-delinquency

relationship. Issues of temporal ordering aside, there are important transitions that occur between early childhood, adolescence, early adulthood, and adulthood that alter the nature of social interactions. Transitions between various stages of life change the nature of family dynamics, peer relationships, employment, and intimate relationships. It is these features that are important mediators in the production of delinquency (Gottfredson & Hirschi, 1990).

Gender

Gender is also one of the strongest predictors of delinquency in criminological research. Males are more likely to demonstrate an earlier age of onset of delinquency (Loeber & Dishion, 1983; Wolfgang et al., 1972), involvement in serious and violent offending (Huizinga & Jakob-Chien, 1998; Loeber, Farrington, & Washbush, 1998), and persistent offending (Blumstein et al., 1985; Wolfgang, Thornberry, & Figlio, 1987). In self-reported surveys, Hindelang, Hirschi, and Weis (1981: 140) reported that males were responsible for 3.6 times more thefts ($50 or more) and assaults than females, 3.4 times more auto thefts, and almost 3 times more robberies. In a sample of adolescents from the National Youth Survey, Mears, Ploeger, and Warr (1998) reported males to be significantly more likely to participate in minor delinquency such as cheating on tests and stealing items under $5 to serious delinquency such as burglary and theft over $50. In addition, males were significantly more likely to report drunkenness and alcohol and marijuana use.

The relationship between gender and delinquency is traditionally explained by differences in opportunities to commit crime. Opportunity theorists do not attempt to explain the motivation for crime because they assume there will always be people

motivated to commit crime. Instead it is suggested that it is more important to explain the situations and circumstances in which motivated offenders find suitable victims (McCarthy & Hagan, 2001; Vold et al., 1998). Situational theories such as opportunity theory propose delinquency is a function of the co-occurrence of a motivated offender, a potential victim (including vulnerable property), and a suitable location for the event (Birkbeck & LaFree, 1993). For a crime to occur, these three things must co-occur in the same time and space.

One of the traditional explanations for the disparities in the male/female rates of involvement in delinquency is that females simply have fewer opportunities to commit crime because they are under the watchful eyes of capable guardians (Felson & Gottfredson, 1984). Assuming most people to be likely motivated offenders, females are differentiated from males primarily in levels of supervision. This assumption serves as the basis for the argument that women would develop offending patterns consistent to men as they entered the work force in greater number (Nettler, 1984), a reality which has yet to be realized. There is evidence, however, to support the argument that juvenile males are given more freedom by their parents. Data from the National Youth Survey indicate males spend more of their free time with peers during weekday afternoons and weekday evenings than females (Mears et al., 1998).

McCarthy and Hagan (2001) argued the study of "criminogenic situations" has been unjustly disregarded during recent years in favor of developmental perspectives. The "General Theory of Crime" discredits "opportunity" as the discriminating difference between male and female offending patterns and instead suggests that girls have more self-control restraining them from crime than boys because parents are more stringent in

their recognition and punishment of early non-conforming behavior (Gottfredson and Hirschi, 1990). Males are also socialized to be more aggressive than females and tend to respond to stressful situations with externalized behavior (aggression) whereas females respond with internalized behavior (depression) (Leadbeater, Blatt, & Quinlan, 1995). It is more likely that there is an interaction between gender and childrearing practices. Although males are exposed to delinquent peers (e.g., differential association theory) at a rate greater than females, females report less delinquency than males when exposed to similar levels of delinquent friends (Mears et al., 1998). This suggests while "the number of delinquent peers an adolescent has is the strongest known predictor of delinquent behavior," Mears et al. (1998) speculate "the moral judgments of females are apparently sufficient to reduce and even eliminate the impact of delinquent peers."

Race/Ethnicity

At nearly every aspect of the criminal justice system, minority youth and adults are over-represented among criminal offenders. The black-to-white ratio for officially recorded delinquency show that minority youth are arrested at a ratio nearly 2 times more than those of non-minority youth (Wolfgang et al., 1972), have almost twice as many police contacts (Hirschi, 1969), are 3-6 times more likely to have an arrest record, and experience a homicide commission rate over 10 times that of non-minorities (Cook & Laub, 1998). Moreover, African American and Latino youth are also more likely to experience risk factors associated with delinquency including school dropout (National Research Council, 2001), a factor positively associated with later delinquency (Thomas & Bishop, 1984).

Racial differences in offending patterns have been primarily explained with a subcultural perspective. The subculture of violence thesis suggests the deprivation of African Americans leads to the development of value systems that condones the use of violence. Criminality is not a rational response to "need" but a manifestation of the internalization of delinquent norms. For example, Anderson's (1999) qualitative analysis of urban "ghetto" life in Philadelphia depicts a community so devastated and plagued by poverty that street values such as "respect" and "manhood" circumvent many mainstream values. Cohen (1955) argued that in the face of continued exposure to delinquent norms, values, and behaviors, people become desensitized to the negative consequences of delinquent behavior. Comments detailed from an interview reported by Thrasher (1936: 28) offer an interesting account of this mentality:

> "We did all kinds of dirty tricks for fun. We'd see a sign, 'Please keep the streets clean,' but we'd tear it down and say, 'We don't fee like keeping it clean.' That would make us laugh and feel good, to have so many jokes".

There is also evidence that not all ethnic groups respond the same when faced with similar stressors. In a test of the applicability of traditional strain theory to Latinos, African Americans, and Whites, McCluskey (2002) reported an important interaction between socio-economic status and ethnicity in the production of delinquent behavior. Regardless of race/ethnicity, individuals who are economically disadvantaged (receiving public aid) experience blocked opportunity and strain similarly. However, for those not receiving public aid, both Latinos and African Americans reported higher levels of strain than their White counterparts. One of McCluskey's (2002) most important findings is that Latino males are less likely than African Americans and Whites to respond to strain with delinquency, a relationship hypothesized to be mediated by extensive family

networks and tighter family structures that help Latino youth deal more positively with economic disadvantage.

Attitudes Toward Delinquency

Some researchers have suggested participation in delinquency is contingent on attitudes favorable toward delinquency. In his extensive analysis of drug dealing in New York "barrios," Bourgois (1995) provided extensive evidence of a subculture of drug dealing and violence where criminal activity was accepted as a norm of everyday life. In one account, Bourgois (1995) articulates his inability to reconcile the almost blasé attitudes of individuals he befriended during his research as they recounted the story of a gang rape they participated in with a sense of glee. Similarly, Elijah Anderson (1999) explains how attitudes favorable toward delinquency have been internalized in some urban communities to the point where the search for "respect" encourages the use of violence. Anderson (1999: 91-92) explains:

> "For many young men, the operating assumption is that a man, especially a 'real' man, knows what other men know – the code of the street. And if one is not a real man, one is diminished as a person. Moreover, the code is seen as possessing a certain justice, since everyone supposedly has the opportunity to learn it, and thus can be held responsible for being familiar with it. If a victim of a mugging, for example, does not know the code and thus responds 'wrong,' the perpetrator may feel justified in killing him and may not experience or show remorse. He may think, 'Too bad, but it's his fault. He should have known better.'"

Elliot (1994) reported a positive relationship between deviant attitudes at age 11-17 and self-reported violence during adolescence and adulthood. In a sample of 732 males and females, violent attitudes at age 14 was a significant predictor of self-reported violence at age 18 (Maguin et al., 1995). Using a slightly different measure such as "hostility to police" at age 14-16, Farrington (1989) found a significant positive

relationship with self-reported violence at age 16-18. In this case, individuals hostile to police early in life were 2.5 times more likely to self-report violence later.

There are reasons to believe attitudes toward delinquency may have both direct and indirect effects on delinquency. Through the conceptual framework of differential association theory, delinquent peer networks serve as one of the primary influences on delinquency. Delinquent peer networks would precede delinquent behavior and increase delinquency through an environment of learning where the "tricks of the trade" are taught through interaction with individuals with more expertise and skill. However, differential association theory also hypothesizes delinquent peer networks affect delinquency through the reinforcement of delinquent values and beliefs. Delinquents not only learn the trade of delinquency, but also internalize peers' delinquent value systems (Sutherland & Cressey, 1978). The causal relationship between attitudes and delinquency remains unclear. It is possible that delinquents express attitudes favorable to delinquency as a neutralization technique that enables them to engage in behavior they believe is wrong in most situations (Costello, 2000; Sykes & Matza, 1957).

Self-Esteem

Self-esteem is a complex concept that includes multiple aspects of personal perception including self-acceptance, self-respect, and feelings of self-worth. It is comprised of four aspects including reflected appraisals, social comparison, self-attribution, and psychological centrality, and is an important concept in personal development because it indicates how individuals navigate their external world. *Reflected approaches* are those implied by Cooley's (1912) "looking glass self." From this perspective, peoples' self image is based heavily on what others think of them,

especially those that play an important role in our lives. *Social comparisons* imply people develop their self-identify by drawing comparisons between themselves and others. That is, they judge their relative strengths, weakness, and relative "worth" by comparing themselves to others. *Self-attribution* suggests individuals judge themselves independent of others by observing and evaluating their own behavior.

In most cases, self-esteem is expected to have a simple direct negative effect on delinquency (Kaplan & Damphousse, 1997). Others suggest more complex relationships where self-esteem and delinquency interact or where delinquent peers mediates the relationship between self-esteem and delinquency (Jang, 1998). At the point of initial delinquency, a negative relationship would be expected where low self-esteem leads to increased levels of delinquency. However, involvement in delinquency is then expected to increase the level of self-esteem and reinforce the value of delinquent behavior. This feedback loop subsequently increases the likelihood of additional deviant behavior (Jang, 1998). Empirical findings about the relationship between self-esteem and delinquency remain unclear. While Ellickson and McGuigan (2000) reported a statistically significant relationship between low self-esteem at the 7th grade and both relational and predatory violence at age 18, Jang and Thornberry (1998) found little support for relationships between low-self esteem and delinquent associations or delinquent behavior.

Self-esteem is not a unidimensional construct but can be differentiated based on a sense of global versus specific self-esteem (Rosenberg, Schooler, & Schoenbach, 1989), and part of the reason self-esteem has failed as a consistent predictor of delinquent peers or delinquent behavior is due to poor theoretical and methodological specifications of the

construct. Global self-esteem is more relevant to psychological well-being while specific self-esteem is a better predictor of behavior (e.g., delinquency and school performance).

Alcohol and Drug Abuse

Delinquency and the use of both drugs and alcohol are some of the most persistent problems facing many societies today. Like much that has already been discussed, it is difficult to determine the exact causal relationships between substance abuse and delinquency. One of the first challenging aspects in the relationship is that in many cases the two concepts are highly correlated because they are often used as measures of one another. The confounding issue in the debate is alcohol and drug abuse can be conceived of as examples of delinquency and not necessarily distinct concepts. If considered conceptually distinct, there is a general consensus that delinquency causes substance abuse and not vice versa (Brooks, Cohen, Whiteman, & Gordon, 1992; Huizinga, Loeber, & Thornberry, 1994).[8] More specifically, early childhood antisocial behavior is a strong predictor of adolescent substance abuse. While delinquency often precedes substance abuse, delinquency is neither a necessary nor sufficient predictor of problem substance abuse.

Dembo and colleagues (1987) reported 33 percent of juveniles entering a detention facility in Florida tested positive for the use of a single drug with marijuana (26 percent) the most common. Moreover, 6 percent tested positive for the use of two drugs with the combination of marijuana/hashish the most common (3.5 percent). Interviews with a sample of 125 inner-city males aged 16-25 identified drug and alcohol use as the most common type of social/recreational activity for young males (Fagan & Wilkinson,

[8] *See also* Stice, Myers, and Brown (1998).

1998). Lipsey and Derzon's (1998) meta-analysis of predictors of violent and serious delinquency showed consistently strong relationships between early substance use and delinquency. Additional research also demonstrates that juveniles who experiment with illegal substances between ages 6-11 are over 8 times more likely to be characterized as serious or violent delinquents by age 15-25. The significance of substance use as a predictor of involvement in delinquency is so substantial, Lipsey and Derzon (1998) reported it second only to influences of early criminality and gender.

Social Risk Factors

Risk factors for delinquency are not limited to individual characteristics such as age, gender, and race but also include influences outside the direct control of individuals themselves. Delinquency research has identified several features of social settings that affect the onset and trajectory of delinquency: peer groups, school settings, family environments, and stressful life events.

Peer Influences

Delinquency is predominantly a group phenomenon[9] (Zimring, 1981, 1998) among both boys and girls (Erickson & Jensen, 1977). In a sense, the term "gang" symbolizes the group dynamic of youth crime and the extent to which peer networks influence delinquency. Classic works on youth gangs have clearly documented the connections between peer networks and participation in gang activity (Spergel, 1964; Spergel & Curry, 1990; Sullivan, 1989; Thrasher, 1936). The group dynamic is,

[9] Elliot and Menard (1996: 31) suggest this argument is overstated. The group dynamics of delinquency also vary by age, race, and gender (Reiss, 1986).

however, stronger for certain crimes such as alcohol use and vandalism and less so for other crimes such as theft and shoplifting (Erickson & Jensen, 1977).

As indicated earlier, males are involved in more delinquency than females. Although suggested this may be partly explained by increased opportunities for adolescent boys caused by greater freedom, it may also be because males are more likely than females to have delinquent peers. In an analysis of data from Wave III of the National Youth Survey[10], males reported significantly larger percentages of friends involved in serious property crime (18.5 percent reported having friends involved in burglary compared to 7.3 percent for females), violence (54.5 percent of males reported friends involved in assaults compared to 32 percent for females), and the sale of hard drugs (12.2 percent compared to 8.6 percent for females). Males were also slightly more likely to report friends that use alcohol (males 77.7 percent; females 72.7 percent) yet both reported statistically similar percentages of friends that use marijuana (males 58.5 percent; females 54.7 percent, n.s.) (Mears et al., 1998: 258). Maguin, Hawkins, Catalano, Hill, Abbot, and Herrenkol (1995) reported that individuals with negative peer associations at ages 14 and 16 are significantly more likely to self-report violence at age 18.

Peer networks can be differentiated into five distinct groups (Elliott & Menard, 1996). *Saints* are individuals that report having at least two friends but none involved in delinquency. Those in the *prosocial* group report very low exposure to delinquency. Respondents in *mixed* groups report exposure to delinquency where several friends are involved in more than one type of delinquency. Individuals in the *delinquent* peer group report extensive exposure to delinquency. In this case, most friends were involved in

[10] Collected in 1978, N=1,626.

more than one type of delinquency. In contrast to the above classifications, *isolates* report low levels of exposure to delinquency via peers, yet this is often a function of minimal ties to peers.

As also discussed in the section on age-related factors that influence delinquency, the temporal relationship between delinquency and exposure to delinquent peers is unclear. Elliott and Menard (1996) tested the relative efficacy of both control and learning theories in explaining the relationship between delinquency and peer networks. They specifically tested the merits of both control and learning theories to determine if delinquency precedes exposure to delinquent peers (control theory) or if exposure to delinquent peers precedes onset of delinquency (social learning theory). Their analysis provides initial evidence for social learning theory as the authors generally conclude exposure to delinquent peers precedes involvement in delinquency for both younger and older offenders. Among individuals involved in index offending (burglary, theft of over $50, motor vehicle theft, strong-arm robbery, sexual assault, aggravated assault, and gang fighting), 91 percent of individuals between 11-17 reported exposure to delinquent peers before involvement in delinquency (Elliott & Menard, 1996: 41). Only 2 percent of respondents reported delinquency prior to exposure to delinquent peers. This relationship remains true, albeit to a lesser extent, for individuals reporting involvement in minor nondrug offending and general offending. For those reporting involvement in minor nondrug offending (excludes index offenses but includes status offenses such as runaway and sexual intercourse, larceny less than $50, receiving stolen goods, prostitution, selling marijuana or hard drugs, simple assault, joyriding, and disorderly conduct), 52 percent reported exposure prior to delinquency and 17 percent delinquency before exposure. This

was nearly identical for individuals reporting involvement in general offending (minor delinquency plus index offending plus marijuana and hard drug use).

School Influences

Schools have been linked to delinquency through several different features of personal achievement including academic failure (Denno, 1990; Farrington, 1989; Maguin et al., 1995), low school bonding (Gottfredson, 2001; Maguin et al., 1995), and truancy/school dropout (Farrington, 1989; Thornberry, Moore, & Christenson, 1991). Both males and females with poor academic achievement at ages 7 and 13-14 were experienced more arrests for violent crime between ages 10-17 (Denno, 1990). Males that experienced academic failure at age 11 also reported significantly more self-reported violence at ages 16-18 and age 32 (Farrington, 1989).

Students with low levels of school bonding are report involvement in more violence later on in life; nonetheless the affects of school bonding appear to be more important at different ages (Ellickson & McGuigan, 2000). Students experiencing early (grade 7) problems with school bonding, something evidenced by poor grades and transitions between schools, report significantly more involvement in violent crime at age 18. Students with poor grades at the 7^{th} grade reported 32 percent more relational violence and 49 percent more predatory violence at age 18 (Ibid). Although low school bonding is an important predictor of self-reported violence at age 18, the strength of association is strongest for students age compared to age 10 and 16 (Maguin et al., 1995). Thus, school bonding appears to be particularly important during certain developmental phases of adolescence. Research indicates males with truancy records between ages 12-14 were over twice as likely to self-report violence between ages 16-18 and at age 32 and

almost 4 times more likely to have a conviction for a violent crime between ages 10-32. Similarly, males that drop out of school before age 15 were 3.5 times more likely to self-report violence between 16-18 (Farrington, 1989).

Labeling and strain theories are the two explanations for how school factors influence delinquency. The relationship between school failure and delinquency was first identified by Tannenbaum (1938) in his classical delinquency research. The early stages of delinquency are related to how parents, teachers, and other adult authorities react to children who for some good reason do not like school (Tannenbaum, 1938). The child that does not like school generally do not do well, then are further punished by continued forced attendance. Those that continue to function poorly are then caught in a cycle where the their continued lack of success discourages them from attending school, a dynamic that increases their involvement in truancy (Gottfredson & Hirschi, 1990). During the early 1900s, mandatory education was implemented as one of the many initiatives proposed by early delinquency reformers based on the "progressive" argument that all children, not just wealthy aristocratic youth, were entitled to education (Platt, 1977).

Not all children experience equal levels of success in the school environment. For a variety of reasons some children simply do not like school and do not "succeed" as measured by traditional evaluation criteria (e.g., good grades). School processes such as the creation of academic tracks and continual evaluation procedures can actually function to accentuate differences in the academic abilities of students (Kelly, 1982). Built into such a system is the notion that some students will do well and other students will fail, in a sense "creating failure" and perpetuating the poor academic attainment and sense of

failure among the most at risk students. Children "labeled" as failures operate in a way that reinforces the negative label already applied by important authority figures. The inescapable and central conclusion to labeling theory is:

> "The attribution of stigmatizing labels, particularly when that attribution process involves formal agents of social control, initiates a social process that results in altered self-conceptions, a reduction in the availability of conventional opportunities, a restructuring of interpersonal relationships, and an elevated likelihood of involvement in the real or imagined conduct which stimulated initial intervention efforts" (Thomas & Bishop, 1984: 1226).

Cohen (1955) proposed strain theory as a explanation for the relationship between school-related achievement/bonding and delinquency. Cohen argued the perpetuation of the class system associated with the industrial revolution created distinct problems for the lower class. The class system in the United States presents a situation where the relative competency of individuals is not compared against an objective standard of "good/bad" but instead middle-class, values and qualities that represent a tempered version of the Protestant work ethic. Success in conventional social institutions such as schools is contingent on middle-class values such as "ambition, individual responsibility, self-denial, rationality, delay of gratification, industry, manners, control of aggression, wholesome recreation, and respect for property" (Gottfredson & Hirschi, 1990: 161), values proposed to be in short supply among the lower class. Strain is experienced when youth are presented with a situation of considerable disjuncture between definitions of success (e.g., good grades and good behavior) and available means (e.g., appropriate middle-class values). In the face of a disjuncture, criminal acts are committed as a means of attaining "status" goals.

Family Influences

The Child-Saving Movement identified the family environment as the primary breeding ground for delinquent activity and relegated most delinquents to institutionalized settings to separate them from delinquent influences. Exposure to criminal influences is an important predictor of delinquency. Children that live in households with who have histories of criminality, for example, experience 2 to 3 times more delinquency than those with noncriminal parents (Glueck & Glueck, 1950), and fathers' criminality significantly increases violence by age 18-23 (Baker & Mednick, 1984). Farrington (1989) similarly found male children whose parents experience an arrest before age 10 are more than twice as likely to self-report violence between ages 16-18 and 3 times as likely to have an arrest for a violent crime before age 32.

More recently, Rowe and Farrington (1997) used both path analysis and regression techniques to test the relationships between family criminality (convictions) and child criminality (convictions). Testing the extent to which aspects of family environment (family size, parental supervision, and parental childrearing style) mediated the hypothesized direct positive relationship, the results supported the conclusion that parental criminality has a direct and positive effect on child criminality even when controlling for dynamics of the family environment. The findings also suggest "transmission" lines may be gender specific whereby the fathers' criminality is a better predictor of the criminality of male children and mothers' for female children.

In addition to parental criminality, family management style is also an important predictor of delinquency (Farrington, 1989; Wells & Rankin, 1988). Children that experience poor childrearing practices at age 8 (males) are more than twice as likely to

report violent crime victimizations at age 32 (Farrington, 1989). Moreover, children growing up in a household with high levels of parental strictness and parental punitiveness are significantly more likely to participate in violence throughout adolescence (Wells & Rankin, 1988). Data from the Chicago Youth Development Study suggests early family neglect is correlated with later covert (e.g., property crime) and overt (e.g., aggression and violent crime) delinquent behavior, and early family conflict consistently demonstrates a positive correlation with authority conflict (authority avoidance) and both covert and overt delinquency (Gorman-Smith, Tolan, Loeber, & Henry, 1998).

In their analysis of dynamics of urban families from several areas of Philadelphia, Furstenberg et al. (1999) attribute much of the relative success of youth to characteristics of the family management style. Although the authors argue families exist in a larger community context that have different degrees of adult control, cohesiveness, opportunity structures, dangers, and internal networks, aspects of the family history, family culture, and family organization have direct and substantial impacts on the long term success of children. Family processes such as positive family climate, discipline effectiveness, and support for autonomy were significantly associated with academic competence, psychological adjustment, self-competence, and negatively associated with problem behavior. Similar relationships were evidenced for family management strategies including institutional connections and social networks.

While Furstenberg et al. (1999) argued the effectiveness of family processes were mediated by community characteristics that limit institutional connections, other family processes such as support for autonomy and consistent, clear, and fair discipline remained

important regardless of resource issues. Substantial levels of within community variation indicate families or individuals were not necessarily much better off in communities characterized by greater social cohesion or better institutional resources, but instead there is a strong connection between family management practices and community resources (Chase-Lansdale, Gordon, Brooks-Gunn, & Klebanov, 1997; Furstenberg Jr. et al., 1999; Furstenberg Jr. & Hughes, 1997; Halpern-Felsher et al., 1997). Acknowledging the complexity of the problem, Furstenberg et al. (1999: 214) concluded: "To be sure, the family is a powerful and essential influence in setting children on a successful course, but parenting practices are only part of the ingredients that provide successful development in early adolescence."

Stressful Life Events

Recent emphasis of criminological research has identified the impact of life transitions and turning points in the life course on delinquency. Life transitions such as marriage may result in desistance from crime (Farrington, 1995) where other features such as chronic unemployment increase involvement in delinquent behavior (Crutchfield & Pitchford, 1997; Farrington, 1995). Developmental criminology presupposes that stressful events in the lives' of children increase involvement in delinquency (Elliot, Huizinga, & Ageton, 1985). Elliot (1994) found no association between stress in the home during childhood (e.g., serious illness, unemployment, divorce or separation, or serious accident during the past year) and self-reported violence during adolescence and adulthood.

The impact of stressful life events is related to the cumulative number of stressful life events during a certain time period. In a more comprehensive study, Hoffman and

Cerbone (1999) found a statistically significant relationship between stressful life events (similar to those just mentioned) and delinquency in a nonrandom sample of 651 adolescents age 11-14. After controlling for the effects of age-related influences, stressful life events remain associated with significant increases in delinquent behavior. Furthermore, stressful life events are not mediated by demographic characteristics such as gender or socio-economic status. Contrary to the hypotheses of the researchers, the relationship between stressful life events and delinquency was also not mediated by other personality characteristics such as self-esteem. The relationship is particularly strong among individuals reporting higher cumulative levels of events (Hoffman & Cerbone, 1999).

The theoretical relationships between stressful life events and delinquency relate to Agnew's (1992) general strain theory. Adolescence is a time when young people expand their social worlds, experience more occurrence of poor treatment by others, and are generally faced with stressful situations. They also experience increased responsibility over their own worlds at home and school present. These new experiences are often more challenging in both reality and in perception because juveniles have not yet developed effective strategies for handling these situations. "Due to developing cognitive capacities, adolescents' perceptions of their social world are often self-directed and introspective. Stresses and strains tend to be magnified by adolescent eyes" (Hoffman & Cerbone, 1999: 345). In the face of real and magnified challenges faced by adolescents, they lack the capacity to deal with adversity and the ability to effectively handle difficult situations (Agnew, 1992). Thus, juveniles who experience multiple stressful life events are expected to respond with delinquency.

Ecological Risk Factors

Shaw and McKay (1942; 1969) propelled the study of the structures of urban communities into the forefront of criminological research during the 1940s. The study of delinquency and urban structure was based on several observations, namely that "among areas in the city there are wide differences in the rates of truants, of delinquents, and of adult criminals, as well as in disease and mortality rates and other indexes of well-being" (Shaw & McKay, 1969: 17). The social disorganization perspective supports the argument that these urban characteristics are not random, but are directly related to employment, housing, and immigration patterns. More specifically, Shaw and McKay (1942; 1969) argue the structure and social organization of communities are adversely affected by structural factors such as poverty, ethnic heterogeneity, and residential mobility.

Social disorganization theory does not imply direct relationships between macro-level influences such as mobility and ethnic heterogeneity and rates of delinquency but instead hypothesize indirect relationships (Bursik Jr., 1988; Cattarello, 2000; Sampson & Groves, 1989; Veysey & Messner, 1999; Welsh, Greene, & Jenkins, 1999; Welsh, Stokes, & Greene, 2000). Residential mobility, ethnic heterogeneity, and poverty make it difficult to establish quality social institutions (Kornhauser, 1978) such as schools (Welsh et al., 2000), but they also reduce the development of informal social control structures such as watchful neighbors (*see* discussion of role of "old heads" in urban communities by Anderson, 1999; Berry & Kasarda, 1977; Sampson & Groves, 1989; Veysey & Messner, 1999). Some features of communities increase levels of unsupervised youth in communities and reduce levels of participation in neighborhood groups, and these

features of communities ultimately increase levels of personal violence victimization (Sampson & Groves, 1989). Levels of community poverty and community stability, for example, are among the strongest predictors of both community crime and also school violence in situations where schools were previously considered unstable (Welsh et al., 2000).

Social disorganization has implications not only to macro-level characteristics of communities but also to the study of variation in the behavior of individuals. For example, nonchronic and chronic violent juvenile offenders from the Rochester Youth Development Study were significantly more likely to come from neighborhoods with high crime rates (Thornberry, Huizinga, & Loeber, 1995). Cross-national research has also found youth that live in poverty experience significantly more court referrals and significantly more self-reported delinquency. Economic hardships (low socio-economic status, low family income, family on welfare, or poor housing) between ages 8-10 increase delinquency later in life, and youth living in bad neighborhoods are reported to experience twice as many court referrals and twice as many delinquent episodes than their counterparts living in better communities (Farrington, 1998). Gottfredson, McNeil and Gottfredson (1991) reported community disorganization increased self-reported interpersonal aggression in a sample of urban school students, a relationship that is even stronger for females.

Defining community disorganization based on respondents' perceptions of crime levels, drug selling, presence of gangs, and poor housing, Maguin et al. (1995) indicate youth living in disorganized communities between ages 14-16 report a greater variety of criminal acts at age 18. Similarly, youth report increased levels of delinquency if they

live in neighborhoods with high availability of drugs, high exposure to delinquency (Maguin et al., 1995), and higher levels of adults involved in crime (Maguin et al., 1995; Thornberry et al., 1995). Thus, it is generally expected that ecological factors such as poverty, family instability, and residential mobility increase the prevalence of delinquency, chronic delinquency, and serious violent delinquency.

Research during the past century has identified a comprehensive set of characteristics that are positively associated with features of delinquent careers that relate to individual, social, and ecological risk factors. Attention to different subsets of these features has vacillated depending on the dominant paradigm accepted during a particular timeframe. For example, research primarily focused on ecological influences on crime during the 1940s as Shaw and McKay's research dominated criminological thought. Similarly, theoretical and empirical work shifted to aspects of strain theory during parts of the 1960s and 1970s as academics and policymakers were influenced with the argument that aspects of unequal socio-economic relationships and commensurate opportunities increased criminal propensity (*see* Cloward & Ohlin, 1960). In many cases researchers operating within certain theoretical paradigms have attempted to discredit the efficacy of one school of thought in favor of their own, an attempt to establish the relative merits of one over the others. Theories such as the developmental perspective have integrated several different paradigms of thought into unified dynamic models that are advanced models that represent a better picture of the onset and trajectories of delinquent careers.

The Developmental Perspective

Human development has commanded the attention of scholars and philosophers for centuries and is concerned with the readily identifiable stages in growth that move individuals through the life cycle from birth to death (Strom, Bernard, & Strom, 1987). Several methodological techniques have been utilized to study human develop including biographical studies[11], questionnaire studies, cross-sectional studies, longitudinal investigations, experimental methods, and clinical studies. The study of human development has waned between constitutional explanations that attribute developmental characteristics to basic differences between individuals (e.g., heredity), behavioral conditioning and social interactions (e.g., social learning theory). Behavioral conditioning explanations propose behavior is coded through processes of responses to stimulus that reward or punishment certain behavior. Developmental criminology integrates many of these frameworks into unified conceptual models that elucidate the interplay between individual constitution, social, and environmental influences in the sequencing of "normal" versus "abnormal" developmental patterns.

Developmental criminology captures the interaction between delinquency risk factors and normal developmental sequencing. Childhood is a time of unprecedented physical, cognitive, psychological, and social development. Each age-related stage in childhood is important to the development of a healthy and "normal" child, that is, a child that is likely to be a well-functioning member of society. Developmental perspectives identify stage-specific developmental sequencing, age-appropriate behavior, how

[11] Pestalozzi (1746-1827) initiated the process of writing detailed biographies of children as a way of adequately describing problem behavior. This method was not without problems, most pronounced of which was the ability of the author to maintain objectivity when describing behavior of interest (Strom et al., 1987).

developmental deficiencies or advances affect later development, and how the interactions of multiple "risk" or "protective" factors at different stages influence current or future behavior. Among the many normative events[12] that are experienced, several can be distinguished in terms of their significance including marriage, parenthood, and employment. "Each of these events brings a change in the role status that alters the general patterns and character of a person's social relationships, creates a distinctive set of role expectations, and requires persons to undergo experiences of role socialization" (Adams, 1997: 328). Behavior can only be defined as "abnormal" when compared to a standard of normative or normal behavior. The categorization of behavior as normal or abnormal is not only contingent on the behavior itself, but on a characterization of particular behavior as age or stage appropriate.

> "For example, no one can say whether it is abnormal for a child to cry when asked to separate from parents unless they know where the separation is taking place and, more importantly, the child's age. Most three-year olds are expected to show some signs of discomfort on being separated from their parents in a clinic waiting room. A thirteen-year-old girl, however, would not normally cry and hang on to her parents in these circumstances" (Yule, 1981: 6).

There are "stage-salient" issues at multiple developmental points in early childhood that are, from the point of view of normal development, important developmental milestones. As stage-salient issues emerge, they are construed to be continually important throughout the life course because they remain critical to the child's continual adaptation.

> "As new [developmental] tasks emerge, old issues may decrease in relative salience [yet they remain important]. Consequently, each issue represents a life-span developmental task that requires ongoing coordination and integration in the individual's adaptation to the

[12] The terms "normal" and normative events are used synonymously in this case.

environment and to the stage-salient developmental issue of the period" (Cicchetti, Toth, & Bush, 1988: 8).

Development Theory and Criminology

Human development theory posits that the life span is characterized by behavioral regularities that can be predicated with some level of certainty. Increased understanding of regularities of human developmental has lent itself to the application of developmental theories to the study of crime and delinquency. More specifically, to the growing body of research that has clarified the relationships between developmental patterns and the onset[13], trajectory, and persistence of deviant behavior. Developmental theories have the capacity for conceptualizing changing patterns of criminality associated with age and how changes in personality, peer relations, family interactions, and life circumstances correspond to changes in criminality (Adams, 1997). Several consistent observations in criminological research clarify the inherent associations between developmental theories and delinquency:

- "Criminal behavior is relatively uncommon during childhood, even though many youngsters exhibit precursor behaviors during this developmental stage (*see* Keenan, Shaw, Delliquadri, Giovannelli, & Walsh, 1998).
- The onset of actual delinquent and criminal behavior increases rapidly during late childhood and early adolescence, roughly from the ages of ten through fourteen.

[13] *Onset* or *age of onset* refers to the age at which a child is first recorded as participating in delinquent activities and has consistently been identified as an important characteristic of delinquency (Adams, 1997; Blumstein, Cohen, Roth, & Visher, 1986; Blumstein et al., 1985; Catalano & Hawkins, 1996; Farrington, 1985; Farrington & Tarling, 1985; Glueck & Guleck, 1930, 1970; Loeber & Dishion, 1983; Loeber & Snyder, 1990; Piquero, Paternoster, Mazerolle, Brame, & Dean, 1999). In some cases it refers to the first official contact with the police (*see* Wolfgang et al., 1972) and in other instances it refers to first occurrence of self-reported delinquency (*see* Elliot, Huizinga, & Menard, 1989). Researchers have questioned the value of concepts such as age of onset and temporal ordering of behaviors (*see* Blumstein et al., 1986) but research has generally found substantial support (Elliot et al., 1989; Elliott, 1994; Elliott & Menard, 1996; Greenberg, 1985; Grobsmith, 1989; Mazerolle, Brame, Paternoster, Piquero, & Dean, 2000; Nagin & Farrington, 1992; Piquero et al., 1999; Sampson & Laub, 1997; Thornberry, 1997a).

- The prevalence of criminal involvement reaches a peak during middle to late adolescence, at about ages sixteen and seventeen.
- Following the peak, there is a rapid decline in offending, with criminal behavior tapering off by the early twenties for most offenders" (Thornberry, 1997a: 1).

Developmental theories have several advantages over traditional etiological theories of crime. First, they have the potential for offering better descriptions about how developmental risk factors interact with characteristics of delinquent careers such as age of onset, length of criminal careers, extent of specialization in certain types of crimes, and desistence from delinquent or criminal behavior. Another important advantage of developmental theories is that they have the potential for creating typologies of offenders by disaggregating "pathways to delinquency" (Loeber & Stouthamer-Loeber, 1996). For example, there may be substantive reasons to believe juveniles that initiate drug use at age 7 are qualitatively different from those that initiate at ages 12 or 17.

Most serious delinquents demonstrate early risk factors but not all individuals with early risk factors become delinquents (Farrington, 1985, 1992; Huizinga & Jakob-Chien, 1998; Huizinga, Loeber, Thornberry, & Cothern, 2000; Loeber & Stouthamer-Loeber, 1996). This being the case, it is meaningful to understand the combination of risk factors that result in future criminality, and conversely, how risk and protective factors interact to effectively shield at-risk individuals from delinquency (Le Blanc & Loeber, 1998). Finally, developmental perspectives offer the advantage of explaining how developmental changes during the life course explain changing patterns of delinquent behavior (Thornberry, 1997a). The developmental approach differs from the others because the focus on is on *within individual* variation compared to research that focuses on changes between individuals.

Developmental Pathways

The study of "pathways to delinquency" has made a major impact on the field of criminology and serves as a prime example of the application of developmental theory to the study of delinquency. Delinquency often follows predictable patterns that involve characteristics of age of onset, involvement with specific types of delinquent behavior, and a sequencing of behavior from minor to more serious forms of delinquency (Loeber et al., 1993). Developmental pathways are typologies of delinquency "careers" that are useful for understanding the progression from early noncriminal delinquent behavior to more serious forms of criminal behavior. Dynamic classification schemes that use a mix of post problem behaviors rather than a single act provide greater opportunity to understand developmental factors and predict future behavior (Loeber, 1996).

Loeber et al. (1993) proposes that delinquency follows one of three developmental pathways: (1) the overt pathway; (2) the covert pathway; and (3) the authority conflict pathway. The *overt pathway* is represented by an escalation from minor aggression such as bullying and behavior intended to annoy others, to more serious delinquency such as physical fighting. A certain subset of individuals will progress from physical fighting into more serious forms of overt delinquency such as violence. In contrast to the overt pathway where individuals tend to be involved in delinquency to a great extent, individuals in the *covert pathway* escalate from minor covert behavior such as shoplifting and frequent lying to more serious property crime like vandalism, arson, and destruction of property. For delinquents that "mature" into the next stage of the pathway, serious covert behavior generally centers on more harmful property crime such as burglary, serious theft, and fraud. Finally, children involved in the *authority conflict*

pathway initiate delinquency earlier than the other two and escalate from stubborn behavior that is manifest before age 12. Stubborn behavior leads to defiance and disobedience and to a more serious involvement in status offenses such as truancy, running away from home, and curfew violations. Adolescents in the authority conflict pathway strongly reject the role of parents and other authority figures in controlling their behavior. Some adolescents that initiated delinquency in the authority conflict pathway either stayed in this pathway or made the transition into either the overt or covert pathways.

Delinquents follow predictable transitions from minor to serious forms of delinquency as they mature through the adolescent years. With each progressive step toward more serious crime, the number of individuals participating in such acts gets smaller. Loeber et al. (1993) reported strong integrity to developmental pathways. The majority of delinquents maintain "specialization" in one of the three developmental pathways, although a sizable proportion of can be classified as fitting into more than one delinquent path. Moreover, youth in the overt and covert pathways experience significantly more delinquency than those in the authority conflict path.

For the developmental perspective to be empirically valid, we would expect offenders that recidivate to primarily concentrate their delinquent activities in certain types of behaviors and, for those that consistently recidivate, escalate offending in a reasonably predictable manner. Wolfgang et al. (1972) provide initial support for this conclusion. Analysis of transitional probabilities indicated juvenile recidivists were most likely to commit a delinquent act similar to the current delinquent act. For example, the probability that juveniles arrested for the first time and for a nonindex offense would

recidivate with another nonindex offense was .33. The next closest probability was for .04 for an injury offense[14] (Wolfgang et al., 1972: 176). Similar probabilities were experienced across types of delinquency such as injury, theft, damage, and a combination of offenses but also as offenders continued to recidivate through the eighth offense. The probability of desistance also decreases substantially with each subsequent rearrest (Loeber, 1988; Wolfgang et al., 1972). Thus, Wolfgang's research provides baseline evidence for the developmental perspective.

There is also a close relationship between substance abuse and delinquency where the early use of illegal substances predicts future delinquency. Among juveniles who self-report both delinquency and substance use, involvement in delinquency usually precedes substance abuse (Elliot & Huizinga, 1984). The developmental sequencing of substance use starts with the use of beer or wine and escalates to cigarettes or hard liquor, marijuana, and then other illicit drugs (Kandall, 1982). Similarly, the developmental sequencing of disruptive child behavior begins with stubborn behavior followed by covert delinquency (e.g., lying and shoplifting), defiant behavior (e.g., doing things own way or refusing to do things requested), aggressive behavior (e.g., annoying others or bullying), property damage, moderate delinquency (e.g., joyriding, pickpocketing, stealing from car, and illegal use of checks or credit cards), serious delinquency (e.g., stealing a car, selling drugs, and breaking and entering), authority avoidance (e.g., staying out late, truant, and running away), fighting, and violence (Loeber et al., 1993). When both behaviors co-occur, involvement in minor forms of delinquency usually precedes

[14] The probability of desisting after the first offense was .51.

substance abuse. The basic premise, then, is that concurrent behavior is predictive of future behavior.[15]

Age of Onset

Age of onset is one of the most important characteristics of developmental criminology. Wolfgang et al. (1972) reported several general findings about the relationship between age of onset and delinquency. Using police reports (official records) as measures of delinquency, the authors reported that individuals who began their delinquency at age 13 committed more offenses from onset years through age 17 than did others. The data also reveal that individuals with first arrests at an older age present more of a danger to the community. Taking into account seriousness of the offense, the weighted offender rate increases steadily from age 7 (313.52) until age 16 (7,453) where it begins to decline by age 17 (6,151) (Wolfgang et al., 1972: Table 8.3).

Using data from 1963, 1964, and 1965 birth cohorts, Elliot, Huizinga, and Menard (1989) reported nearly all of delinquency, including school suspension, was initiated before age 17. Among the various indicators of delinquency, the largest percentage of initiation past age 17 was for multi-drug use (11 percent). Age of onset is not only related to the prevalence of delinquent behavior, but also connected to the types of problematic behavior in which individuals are involved. Stubborn behavior, for example, has an earlier onset than more serious behavior such as defiance and authority avoidance (Loeber et al., 1993: 116). The age of onset for minor delinquency, alcohol and cigarette

[15] Developmental continuity in delinquent behavior should not be wholly unexpected based on research by developmental psychologists. There is, for example, evidence of continuity in problem behaviors for young children. Difficult temperament at 12 months is predictive of difficult temperament at 18 months, non-compliant behavior at 24 months, and clinically diagnosed internalizing behavior at 36 months. Similarly, noncompliant behavior at 24 months is predictive of clinically diagnosed internalizing and externalizing behavior at 36 months (Keenan et al., 1998).

use, and moderate and serious delinquency is between ages nine and fifteen while the age of onset for marijuana use and hard drugs is usually between ages thirteen and eighteen (Loeber, Van Kammen, Stouthamer-Loeber, & Farrington, 1996). Maxwell and Maxwell (2000: 795-796) reported the mean age of onset into prostitution among females to be in the early 20's, similar to onset into drug sales (age=22) and first use of crack cocaine (age=20-25). In general, the delinquency age-curve is evident for aggressive behavior, fighting, and other forms of violence (Loeber & Hay, 1997).

It is possible to predict the average age of onset for particular forms of delinquency. For property offenses, less serious property offense such as theft at home has the lowest average age of onset ($\bar{x}$ =10.1, s.d. = .14) followed by shoplifting ($\bar{x}$ =10.7, s.d. = 1.40), cheating/theft of school property ($\bar{x}$ = 11.1, s.d. = 1.07), theft from peers ($\bar{x}$ = 11.4, s.d. = 11.4), theft by trespass ($\bar{x}$ = 11.7, s.d. = .69), and vehicle theft/break and enter ($\bar{x}$ = 12.7, s.d. = .63) (Loeber, 1988: 79). There are basic differences between individuals that get involved in delinquency earlier rather than later. Early starters are likely to experience additional risk factors such as problematic parenting (Hawkins, Catalano, & Miller, 1992; Lipsey & Derzon, 1998; Loeber, 1990; Loeber & Dishion, 1983; Simons, Wu, Conger, & Lorenz, 1994). Simons, Wu, Cogner, and Lorenz (1994) reported poor parenting predicted development of antisocial behavior such as oppositional/defiant disorder, a relationship that does not exist for late starters. For late starters, poor parenting was positively associated with deviant peers. In this case, the presence of oppositional/defiant disorder had no significant effect on the development of delinquent peers or in the involvement in delinquent behavior.

Juveniles who initiate offending early in life are at risk for developing into life-persistent offenders and being more diversified in the types of delinquency they are involved. In comparison, adolescent-limited offenders initiate delinquency later and remain more specialized in offending patterns (Moffitt, 1994). Juvenile offenders who eventually develop into serious and chronic offenders begin their criminal careers between ages 12-20, and more than half will initiate violence between ages 14 and 17. The highest rate of onset is found for African Americans at age 5 and at age 16 for Whites (Elliott, 1994). Violent delinquents generally initiate delinquency much earlier than serious nonviolent and nonserious nonviolent delinquents, and serious nonviolent delinquents also initiate their careers significantly earlier than nonserious nonviolent delinquents (Tolan & Gorman-Smith, 1998). Controlling for other important predictors of future criminality such as IQ, parental criminality and behavior, risk-taking, and parental divorce, the authors found age of onset a significant and substantial predictor of future convictions. Nagin and Farrington (1992: 513-514) reported the probability of conviction at t_5 as .036 for individuals with no convictions prior to age 18, .227 for individuals with first conviction at age 16, and .318 for individuals with first conviction at age 10.

Integrative Theory: Interactional Theory and Similar Models

Thornberry proposed interactional theory, an extension of developmental theory, as a way of providing more dynamic explanations for delinquent behavior (Thornberry, 1987). Interactional theory is similar to other developmental theories in that it presupposes there are important temporal and causal sequences among the predictors of

delinquency described above that traditional theory has not effectively conceptualized. Interactional theory is more dynamic in two important ways:

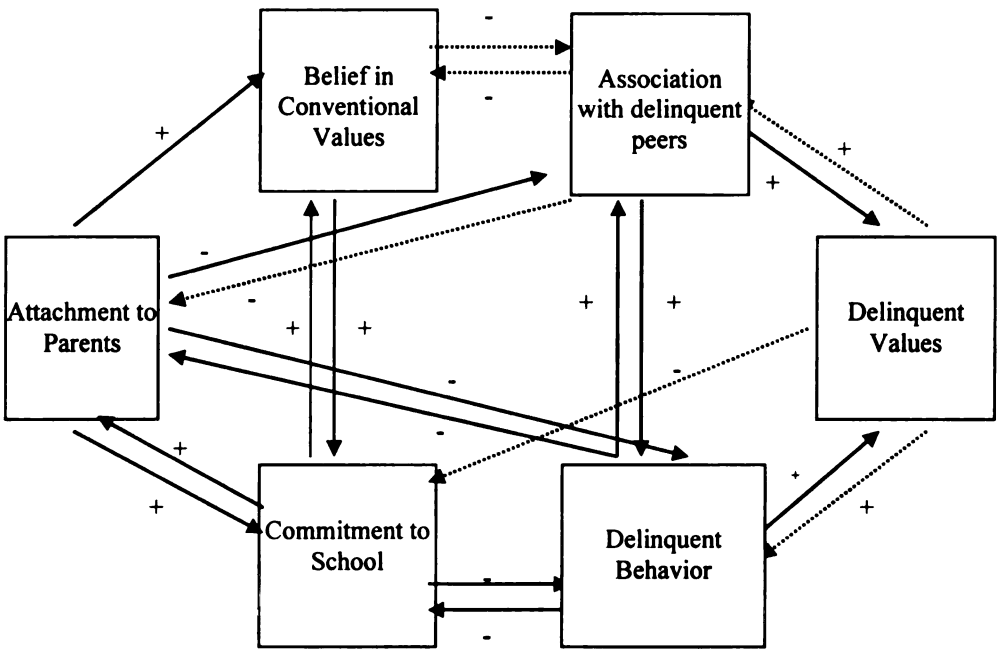
> "(1) It explicitly recognizes the importance of developmental change in accounting for delinquency, and (2) it views human behavior, including delinquent behavior, as a result of interactive and reciprocal causal influences that develop over time" (Thornberry, 1996: 199).

As a "complete theory of delinquency" (Thornberry, 1987, 1996), interactional theory is better able to explain why some individuals initiate delinquent conduct while others do not, why some offenders sustain involvement in delinquency over long periods of time while others do not, and why some offenders desist delinquency early while others continue (Thornberry, 1996).

Although recognizing the importance of the risk factors identified earlier, interactional theory stipulates the impact of these factors is not equal at all developmental periods. Interactional theory also hypothesizes the impact of many risk factors are in fact amplified when they exist concurrently with others. Thornberry (1996: 201), for example, suggests it is plausible that the reason authors interpret their results as suggesting parental influences are relatively weak (Elliot et al., 1985) is that data may be drawn from too late a developmental phase to accurately reflect the causal impact of the family.

Figure 1 depicts Thornberry's (1987) interactional theory that hypothesizes reciprocal relationships between many of the constructs. There are several important features to this model that make it distinct from other conceptual models. First, the model is integrative in that it incorporates important concepts that other theories and research have confirmed are important precursors and predictors of delinquency. It incorporates social control variables such as attachment to parents and commitment to

Figure 1. Reciprocal model of delinquency.



Source: Figure 2, Thornberry 1987: 871.
* Dotted lines are indicators of weaker relationships.

school, but also includes characteristics of differential association theory such as association with delinquent peers. The most important implication to Figure 1 is that human behavior, including delinquency, is dynamic and develops over time through interaction among many different causal influences.

Other authors have proposed conceptually similar interactional models. Furstenberg et al. (1999) conceptualized child outcomes (e.g., delinquency) as being directly impacted by characteristics of family history, family culture, and family organization. These features interact in a way to produce an overall family management style (individualistic v. collective; protective v. promotive) that affects the general outlook children have of the world. The authors also appropriately argue that while family management style is important, families exist in a broader community context that

exerts influences on both the behaviors and choices of families and individuals within families.

The relationship between community and family structure make intuitive sense because community context provides varying opportunity structures (e.g., access to jobs and quality schools), degree of adult control (e.g., extent to which other adults supervise neighborhood youth), community cohesiveness, community resources, internal networks, and dangers. Families, especially families with financial resources, have a greater ability to directly alter the affects of community structures by making conscious decisions about where to reside based on these considerations, but children at the greatest risk for delinquency often live in families with relatively fewer options. For example, although geographic mobility is a primary family management strategy for parents who perceive their neighborhoods to be too dangerous or without adequate resources, many are prevented from "escaping" due to limited economic resources (Furstenberg Jr. et al., 1999: 25).

Vuchinich et al. (1992) also noted important inactions family characteristics and other predictors of delinquency. The authors reported antisocial behaviors of children by age 11-12 have an adverse impact on effective disciplinary practices by parents even after controlling for the behavior of the parents from 2 years prior. The more antisocial behavior demonstrated the more the quality of the parenting itself suffered, something that increased the probability of increased antisocial behavior. There is also evidence that juveniles raised in families where parents use tobacco will associate with friends who use tobacco (association with delinquent peers) (Melby, Conger, Conger, & Lorenz, 1993). Moreover, Conger and Rueter (1996) reported parental alcohol use as predictive of

adolescent alcohol usage (drug and alcohol use). Thus, the cumulative evidence suggests interaction effects where one set of delinquency risk factors influences the others.

In synthesizing the above information, the most likely conclusion is that the onset, persistence, and trajectories of delinquency are correlated with and caused by risk factors associated with, among other things, demographics (age, gender, race/ethnicity), attitudes toward delinquency, self-esteem, and extent of substance abuse. Moreover, delinquency is a product of social influences such as negative peer influences, lack of bonding with social institutions such as schools, poor family functioning, stressful life events, and ecological factors relating to social disorganization (e.g., poverty, ethnic heterogeneity, and population turnover).

Although some authors simplify the growing body of research and attribute delinquency to a single construct like low self-control (Gottfredson & Hirschi, 1990), the research detailed above suggests criminal propensity results from the co-occurrence and interaction of multiple risk factors. Developmental theory has furthered criminological inquiry by conceptualizing dynamic models of delinquency where many risk factors are integrated into models that specify causal relationships that vary in both direction and intensity depending on the stage of development. For example, poor family management style or parental divorce will exert greater influences during early childhood then when a child is in late adolescence. Conversely, associating with seriously delinquent peers will also likely exert greater influence during early adolescence compared to peer delinquency in late adolescence (Thornberry, 1987). Similarly, youth from impoverished backgrounds have a greater probability of staying out of trouble if they have a strong family environment that encourages personal development, autonomy, and problem-

solving regardless of the extent to which they are exposed to criminal opportunities (Furstenberg Jr. et al., 1999; Furstenberg Jr. & Hughes, 1997).

The Need for Theory-Based Interventions

A search for the "causes and correlates" of delinquency has been profoundly influenced by the continual increase in juvenile crime since the early 1900s. Developmental models are valuable advances in this search because they integrate previous theories into conceptual models that elaborate the etiology and development of delinquency through the life course. Developmental and other integrative models have advanced the field not only from the perspective of theory testing but also by encompassing direct implications for the structuring of interventions. Efforts to implement comprehensive interventions have expanded since the early 1990s. Since then, policymakers and researchers have demonstrated reinvigorated efforts to identify potentially serious offenders early on and to implement comprehensive intervention efforts (Wilson & Howell, 1993).

The notion of early and comprehensive intervention efforts represents a departure from the momentum after some policymakers concluded rehabilitation efforts were generally ineffective. Lipton et al.'s (1975) analysis of methodologically sound program evaluations found limited effectiveness in reducing recidivism or reducing risk factors associated with delinquency. The authors concluded that although rehabilitative efforts have the potential to work with certain populations under limited circumstances, there is little reason to expect consistent large-scale positive outcomes from rehabilitation programs.

The rhetoric of the 1980s was that rehabilitative efforts are fundamentally flawed and that there is little hope of making major positive changes in the life-course of delinquents (Lipton et al., 1975; Wilson, 1983; Wilson & Herrnstein, 1985). Some argued rehabilitation lacks merit because criminal propensity is stable throughout the life-course (Gottfredson & Hirschi, 1990). However, it is just as likely the failure of the rehabilitation agenda is at least partly related to poorly designed intervention models that either failed to adequately conceptualize the causal mechanisms in the process of "becoming" delinquent or limited intervention efforts to a limited set of risk factors.

To construct effective interventions, programs must have a conceptual understanding of the problem based on theory and research. Yet implementation staff are often left with questions like: "When in the planning process do I use theory to guide my decisions? How do I know what theory to use? How do I make use of the experience of others and results of other program evaluations? How do I decide what intervention methods to use?" (Bartholomew, Parcel, & Kok, 1998). Bartholomew et al. (1998) proposed the concept of "intervention mapping" to delineate the appropriate steps for applying theory to a problem. Delivering an effective intervention is a difficult task that involves conducting a needs assessment, developing and implementing a program, and evaluating the program's effectiveness, a process known as "intervention mapping" (Bartholomew et al., 1998). A crucial task in intervention mapping is making decisions about how to use theory during the developmental and implementation stages.

Like other problem-solving frameworks, Bartholomew et al. (1998) propose an iterative process that starts with identifying the at-risk population along with a assessment of their relative "needs." Subsequent steps involve distinguishing the individual, social,

and environmental causes of the behavior (integration of theory), identifying the key predictors of the behavior, and analyzing the resources that already exist in the community. This process provides a comprehensive understanding of the problem and its causes and is intended to lead to the specification of program goals that serve as a foundation from which to begin intervention development.

In the early 1990s the Office of Juvenile Justice and Delinquency Prevention (OJJDP) launched a national initiative to fund the development and implementation of comprehensive intervention strategies for serious and violent juvenile offenders. This initiative was influenced by rising juvenile crime rates and the recognition that comprehensive strategies were needed (*see* Wilson & Howell, 1993). Past efforts have been criticized for:

> "...their narrow scope, focusing on only one or two of society's institutions that have responsibility for the social development of children. Most programs have targeted either the school arena *or* the family (*emphasis added*). Successful ...strategies must be positive in their orientation and comprehensive in their scope" (Wilson & Howell, 1995: 39).

Based on the cumulative evidence about the causes of delinquency, OJJDP's "Comprehensive Approach" initiative recognized the need for intensive efforts that integrate efforts directed at individual characteristics, family influences, school experiences, peer group influences, and neighborhood and community characteristics. For example, the balanced and restorative justice approach supports the core objectives of accountability, competency development, and community protection in an effort to reform juvenile delinquents and make them productive and responsible citizens (McGarrell, 2001; Wilson & Howell, 1995). Since a small percentage of juvenile offenders are responsible for a large percentage of all crimes (Office of Juvenile Justice

and Delinquency Prevention, 2001; Wolfgang et al., 1972) it is highly beneficial to direct efforts to a population designated as demonstrating sufficient need. Successful prevention and intervention efforts are those that target and "fix" the risk factors for delinquency.

Current Research

The data for the current research were collected as part of a multiyear community based intervention program designed for youth who, absent the program, would have been adjudicated to non-secure residential placement programs. The program, referred to here as the Youth and Family Studies Program (YFS), took place in a large urban County in a Midwestern State. This program was developed in response to substantial increases in the number of youth under jurisdiction of the juvenile justice system, especially youth institutionalized in out-of-home placement programs. In many cases, these were non-secure institutions. Prior to the institution of the community-based program there were few alternatives to residential care specifically targeted for youth newly committed to State custody.

As an alternative to resident treatment, the purpose of the program was to provide a community-based day treatment program that was successful in rehabilitating juvenile offenders. In this case, rehabilitation is defined as reduced probability of future criminal offending and a reduction in the risk factors associated with delinquency. In the course of this analysis, four research questions will be answered:

Q_1: How do initial risk factors relate to recidivism?

Q_2: How do treatment effects relate to recidivism?

Q_3: How do treatment effects relate to change in risk factors?

Q_4: How does change in risk factors relate to recidivism?

The Youth and Family Services program established a formal placement mechanism to evaluate the eligibility of each juvenile to participate in the program activities. The structured decision making model considered two important factors: (1) the type of the commitment offense, and (2) risk score as determined by the Department of Social Services' Initial Delinquency Risk Assessment Scale (see Appendix A). The risk assessment scale considered a variety of important background variables such as age at first adjudication, number of prior arrests, and characteristics of peer relationships that research has consistently identified as important predictors of future delinquency. Juveniles were initially screened as "eligible" if they were committed for all but the most serious offenses (e.g., homicide, attempted murder, very serious assaults, armed robbery, and serious instances of criminal sexual conduct). The risk assessment instrument constructed by the Department of Social Services was also utilized to ensure program participants did not have background problems so severe as to negate the likelihood of effective nonresidential, community-based treatment. Finally, information regarding the commitment offense and risk assessment were integrated into a security matrix. Individuals scoring "low risk (0-8 points)" on the assessment who were adjudicated for a crime other than the most serious should then have been eligible for participation in the community-based program (see Appendix A).

The first goal of the decision making model was to ensure the program participants were similar in regards to the type of adjudicated offenses and background variables. As argued by Lipsey and Wilson (1998) a problem with most programs is that they have attempted to provide these services to target populations that are extremely diverse. Programs are often intended to target youth with a variety of commitment

offenses, everything from serious felonies to status offenses. In addition, intervention programs also tend to include participants with a variety of contextual problems such as varying degrees of mental health, substance abuse, and academic problems.

There are several advantages of directing intervention services at defined target populations. First, programs with narrowly defined target populations can be structured in a way that optimizes return per unit of investment. In contrast, those that include mixed clients such as those classified both as low-risk and high-risk clients, or clients with extensive needs and those with few needs, run the risk of either exposing individuals to too few or too many intervention services. Having a target population that is consistent in regards "needs" reduces the likelihood of too little services to those individuals requiring intensity and too much intensity to those individuals presenting less levels of need. This is an important consideration because program resources are often limited.

Programs with highly mixed client populations can suffer because individuals with more problems are likely to use more resources in regards to both personnel time and monetary investments thereby risking the relative likelihood of success for other clients. Directing intervention services to a clearly identified population allows for more accurate conclusions about the effectiveness of specific types of interventions for specific types of offenders thereby increasingly the likelihood of developing successful intervention models. Finally, intervention programs, especially non-residential community-based intervention may also exclude high-risk offenders because of concern they may pose a safety hazard to the general community and because of concern that

exposure of less-serious delinquents to high-risk juveniles may actually increase likelihood of further delinquency.

Program Treatment Model

The YFS program was intended to be a comprehensive treatment program that would serve as an alternative to residential placement. Juvenile justice professionals in the County strongly supported the development of community-based alternative programs because there were few other options besides residential placement prior to the implementation of this program. The service delivery functions were contracted to two service providers, and although there were some minor differences in the type of services that were to be provided to clients in each program, the programs were similar enough to allow for them to be considered as one program.

The model for the YFS program stipulated the development of treatment services in the areas of education, family functioning, career services, individual/group counseling, community service/reintegration, and intensive supervision. The main goals of the program were to focus on improving the youth's behavior, academic performance, and improve family functioning. The programs were to engage juveniles in intensive and comprehensive services that mediated the underlying causes of delinquent behavior. Using a day treatment model, the programs were designed to be 12 months long and included 6 months of intensive program participation followed by 6 months of aftercare.

Educational Component

Both programs included strong educational components. Educational problems have consistently demonstrated to be important predictors of delinquency (Farrington,

1998; Voelkl, Welte, & Wieczorek, 1999). Research has reported that the likelihood of delinquency is negatively related to academic achievement. Thus, the purpose of the educational component was to increase the educational achievement of the program participants. Increased educational achievement is expected to reduce stress in the school environment and increase attachment to school, thereby resulting in a decrease in recidivism.

Educational assessments were to be performed within two weeks from entry into the program. The purpose of the testing was to assess each youth's level of academic proficiency with the explicit intent of tailoring the delivery and content of educational material to fit the proficiency level of each individual. Educational services were delivered in a modified school setting where individuals attended on a daily basis. Students were to receive instruction in the areas of math, social sciences, science, history and language arts. In addition, individuals were to be given pre-vocational English skills and health education.

Accredited educational staff and "youth specialists" were responsible for the delivery of the instructional material. The youth specialists assisted the teachers in providing more individualized attention to each individual. There was a high staff-to-client ratio with approximately 3 students per staff. The high staff-to-student ratio allowed staff to have regular and substantive interaction with students during the school day. Staff assisted students with the completion of their work assignments, regularly reviewed class material throughout the school day, and provided regular feedback about progress through course material. Feedback of regular evaluation efforts was an

important component because it established a mechanism to continually modify work expectations based on the performance of each individual.

Counseling/Peer Counseling Component

Both programs in the YFS also developed counseling components. The purpose of the counseling component was to provide a safe setting for youth to discuss important issues that affect their lives. The counseling sessions were in a peer group format that was facilitated by a group leader who was a member of the program staff. Group sessions were held on regular basis, usually every day, to discuss important issues in the lives of the participants. Counseling services do not serve as a "fix" for problems, but increase general capacities that help individuals address them in a positive manner by increasing levels of personal insight, empathy, moral reasoning, and anger management. It is important for juveniles to have an opportunity to communicate about stressful life events and to develop the capacity to problem-solve.

Family Component

Research has also consistently demonstrated that serious and/or chronic juvenile offenders are more likely to experience family problems. Results from the Seattle Development Project reported family problems, in conjunction with neighborhood, school, and peer problems, to be a significant predictor of gang membership (Hill, Howell, Hawkins, & Battin-Pearson, 1999). Lewis (1989) reported the interaction of abusive family environments and neuropsychiatric vulnerabilities has substantial predictive power of adult criminality. Moffitt (1997) similarly argued chronic delinquency is rooted in faulty parental interaction. The majority of intervention research

suggests effective strategies must recognize the family as an important social unit and direct attention at the nature and quality of family interactions.

The family component was identified as one of the most important facets of the problem during the implementation process. Family counselors, youth, and members of their family were to meet every week to identify important areas where services were needed. Family counselors were responsible for linking families with the necessary resources in the community. Families were also tied into substance abuse/drug treatment services where needed.

Family counselors also were to work directly with families to develop transition plans for the clients once they were released from the intensive program treatment in Phase 1 to the aftercare program in Phase 2. Transition plans were agreements between the juveniles and their parents about behavioral expectations, plans for increasing levels of educational achievement, and "ground rules" for family interaction. During the aftercare program, monthly meetings would be continued to ensure compliance with transition plans.

Vocational Component

Program participants were offered vocational training in one of the following areas: teaching assistant trainee, administrative assistant trainee, and food service trainee. Participation in this program was limited to individuals that consistently demonstrated a commitment to abide by program rules. Eligibility was based on a predetermined number of tokens individuals would accumulate through the token economy (to be discussed later). The vocational training was supplemented by actual work experience at the

various program locations. During Phase II, individuals were also required to obtain and maintain employment.

Recreational Component

Recreational activities were also an important aspect of the YFS program model. The Office of Juvenile Justice and Delinquency Prevention reported a majority of juvenile crime occurs between the hours of 3 p.m. and 8 p.m. (Snyder, 1997). Juvenile arrests seem to be highest during that time period because it is when juveniles tend to have an optimal period of unsupervised time. Research by Houston (1996) indicated self-identified gang members perceive adequate recreational opportunities as important components of gang prevention strategies for at risk youth. Structured recreational time is also important because it provides the opportunity for juveniles to develop pro-social activities. Clients regularly participated in general recreational programs including basketball, baseball, track, aerobics, and calisthenics. Recreational activities were conducted within the gymnasium that was located on site by one service provider where the other service provider used a local YMCA for the delivery of this component of their program.

Tracking Component

Accountability was an important philosophical underpinning to the program. Supervision of youth during time spent both in programs and outside of programs is one core aspect of accountability. The Department of Justice's Office of Juvenile Justice and Delinquency Prevention argue a "requisite element for an effective juvenile justice system" is one that includes "intermediate sanctions that are centered on intensive

community-based supervision of juvenile offenders" (Danegger, Cohen, Hayes, & Holden, 1999: 12).

Accountability measures were established by implementing intensive supervision of clients, especially during non-program hours. Staff was hired to "track" individuals 24 hours a day, 7 days a week while on probation. While not participating in structured activities at the day treatment centers, youth were to have at least one face-to-face contact per day with a tracker and two or more face-to-face contacts each weekend day. In addition, phone contact was to be made with each youth at least once nightly. The idea was to keep close contact with individuals to detect deviance from behavioral expectations and to reinforce the idea that their behavior was being monitored.

Petersilia and Turner (1990) evaluated the effectiveness of three experimental probation programs for high-risk drug offenders[16] in California. The programs, which were located in Contra Coasta, Ventura, and Los Angeles Counties, randomly assigned probationers to intensive supervision programs. They reported intensive programs were actually more effective in providing increased levels of supervision, a finding that stands in contrast to previous research. Petersilia and Turner's (1990) research was a step forward in the intervention literature because it made an important step in quantifying to some extent the level of intervention services programs provided on average to their clients. This strategy served as an attempt to address assumption 1 detailed above; namely to determine the extent to which the actual implementation of treatment programs mirror models identified in program designs thereby determining important similarities and differences in the nature and intensity of treatment across programs.

[16] Offenders convicted of felony and misdemeanor drug dealing, drug use, and nonviolent, drug-related offenses.

Summary

Developmental models are by no means universally accepted as meaningful or important to the study of crime and delinquency. Gottfredson and Hirschi (1990) generally discredit the need for frameworks that include multiple risk factors into complex causal models. The authors attribute criminal propensity to levels of self-control. One of the primary justifications offered by Gottfredson and Hirschi (1990) in support of their general theory of crime is that previous research has failed to consistently demonstrate a relationship between delinquency and other risk factors. Using lack of consistent support as a means of discrediting the substantive role of other types of individual, social, and environmental influences on delinquency, they argued delinquency is reducible to this one construct that is both historically and cross culturally consistent.

This research extends the previous research by further questioning the extent to which comprehensive and intensive community-based intervention programs actually provide "intensive" efforts. In addition, the current research will also analyze the direct and indirect relationships between the "quantity" of program treatment, the underlying constructs the treatment programs are intended to affect, and outcome measures such as self-reported and official delinquency.

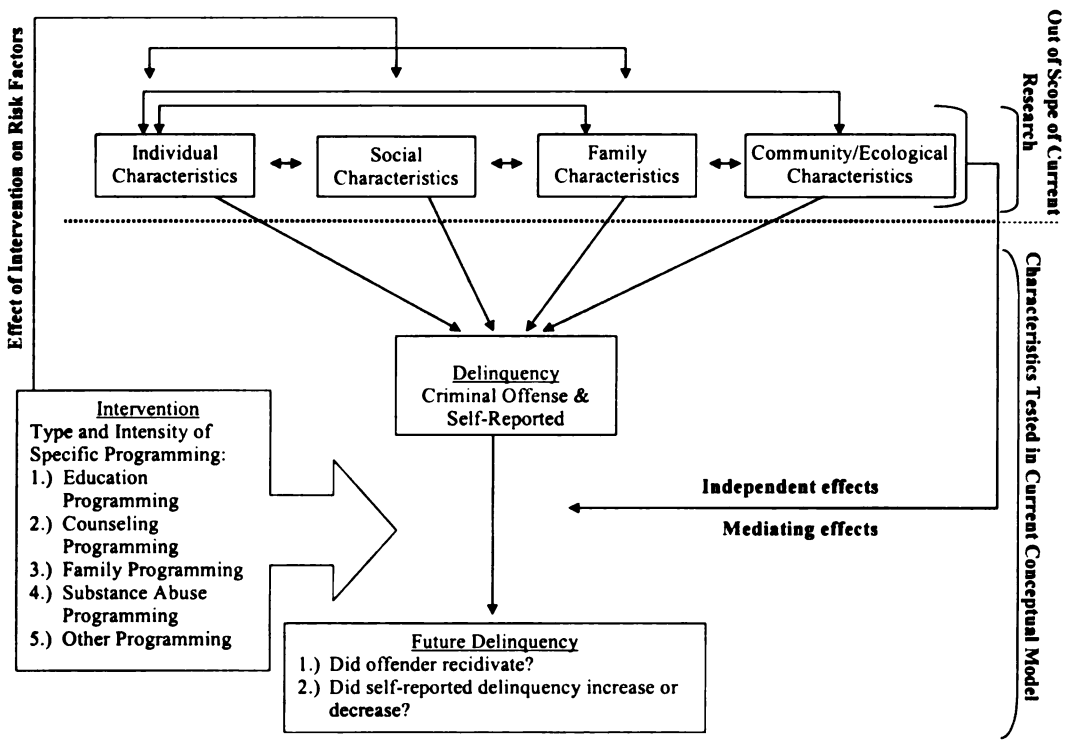
CHAPTER THREE

METHODOLOGY

The current research proposes social developmental theory as an appropriate framework for conceptualizing how intervention programs should be structured to provide the necessary resources to curb future delinquency in a sample of adjudicated youth in a large Midwestern County. As indicated in Figure 2, the current research will *not* address issues pertaining to the etiology of delinquent behavior or prediction of why certain individuals display delinquent tendencies while others do not. Since the sample includes only adjudicated youth there is no ability to compare delinquents with nondelinquents. Moreover, this research does not address why or how initial risk factors develop but how risk and change in risk relates to recidivism. Instead, the purpose of this research is to determine the effectiveness of community-based intervention in creating positive change in the risk factors prior research has indicated are responsible for the onset and trajectory of delinquent careers. Three research questions will be addressed: (1) Do these delinquents share the same basic risk factors?; (2) Does risk and change in risk mediate recidivism; and (3) Does treatment mediate recidivism.

This research represents an important addition to the existing body of literature by investigating the relationship between intervention efforts, risk factors for delinquency, and measures of recidivism. It is important to consider these relationships because prior research on the effectiveness of intervention programs has generally made three broad assumptions: (1) intervention programming is delivered in a consistent manner across individuals and across time, (2) individuals receive the *dose* that is detailed in the program design, and (3) the intervention relates to actual change in the areas or domains

Figure 2. Conceptual Model.



that are believed to underlie delinquency (e.g., educational problems, family functioning, and peer relationships).

This research also extends the previous by further questioning the extent to which comprehensive and intensive community-based intervention programs actually provide "intensive" efforts. This research will analyze the direct and indirect relationships between the "quantity" of program treatment, the underlying constructs the treatment programs are intended to affect, and outcome measures such as self-reported and official delinquency.

The Data

Data were obtained from 4 primary data sources that include structured interviews collected over an 18-month timeframe, court disposition information, court intake data, and census data. Research staff scheduled meetings with the youth and their guardians to administer the interviews. Interviews were primarily conducted in the homes, but alternative sites were also made available where necessary especially in the case where juveniles were in short-term placement. Juveniles were interviewed at four different time periods: initial commitment, 6 months, 12 months, and 18 months. Multiple measurement points over an 18-month time period provides a detailed account of incremental change in the constructs of interest, especially how they relate to program participation. The structured interviews assessed a variety of personality, family, and community characteristics such as extent of family involvement, school attitudes and behavior, community involvement, attitudes and exposure to delinquency, self-perceptions/self-esteem, attitudes toward deviance, stressful life events, neighborhood problems, and self-reported delinquency including drug use. In most cases, multiple indicators of each construct are then combined into factor scales.

This analysis also includes criminal history data provided by the County Juvenile Court that details each juvenile's referrals to the juvenile court for Court wardship, neglect/abuse, truancy, and general violations of local or state criminal codes. Criminal history data will be useful to both compare individuals in regard to prior official contact with the criminal justice system before the individuals participated in the intervention program and track the extent of recidivism after the commencement of program involvement.

Criminal history ascertained from court referral data will be the source for one of the major dependent variables, recidivism. Court referral is an indicator that reflects multiple decision points in the juvenile justice system. First, police must discover an apparent violation of the law. Second, police must recognize the behavior as sufficiently serious to warrant official action and necessitate an arrest. Third, additional actors in the local police agency (e.g., detectives, juvenile bureau) must also perceive the act sufficiently serious and substantiated with available evidence to justify referral to the County court system for further processing. Referral may be biased because they can be influenced by police policy, victim cooperation, and the age and demeanor of the perpetrator (Bittner, 1976; Wilson, 1968).

While the importance of these warnings is recognized, the occurrence of a referral and the characteristics of a referral (e.g., type of crime) will be used an indicator of recidivism. All criminal history data sources are potentially biased to some extent or another by decision points that influence the characteristics of the population. For example, court conviction data can be influenced by courtroom-specific working relationships that affect the likelihood of conviction depending on available jail space, extent of community-crime problems, and political agendas (Cole & Smith, 2001).

Finally, census data will be used to quantify ecological characteristics of the neighborhoods in which individuals reside at the time of referral from instant offense. Sociological characteristics have been long assumed to be important indicators of criminality. Wikström and Loeber (2000) argue there is reason to believe criminality stems from a combination of individual characteristics and community factors. They suggest a need to center analysis on the "person-context interaction." Census data are

publicly available and aggregate indicators of socio-economic status to units of analysis referred to as census block groups. In addition to socio-economic variables, census data also include other measures of community disorganization.

Sample

The sample populations consist of juvenile offenders referred to "State" Department of Social Services (DSS) by the local county juvenile court system. During the mid-1990s the county juvenile court had the option of referring juveniles directly to the DSS for treatment if they determined the necessary treatment services were not available through the local court system. This was generally reserved for the more serious offenders such as younger offenders referred for serious offenses or older offenders with several less serious prior offenses.

The intervention program (experimental group) was directed at male juveniles, and the most serious offenders were excluded from the program. At the time of the project, DSS utilized a four tier system that classified offenders to one of four security level assignments: community-based, low, medium, or high that represented the nature of intervention services to be provided to each youth (see Appendix A). Using a combination of current offense(s) and calculated risk score, each level represents an increasingly restrictive form of intervention with community-based representing the least restrictive option. The "community-based" classification was the level that identified placement in the YFS intervention program.

The most serious felonies such as attempted murder, first-degree rape, and armed robbery were excluded because these offenders were, as would be expected, adjudicated to secure placements due to the seriousness of the offenses. Eligible offenses did include

several felony violent, weapon, and property offense categories such as assault with a dangerous weapon, break and enter with intent to commit to crime, and carrying concealed weapon. In addition, the eligible offenses charges include less serious crimes such as larceny, incorrigibility, truancy, and status offenses (see Appendix A for eligible charges).

The YFS program established a formal placement mechanism to evaluate the eligibility of each to participate in the program activities. The structured decision making model considered two factors: (1) the type of the commitment offense, and (2) risk score as determined by the Department of Social Services' Initial Delinquency Risk Assessment Scale" (see Appendix A). The risk assessment scale considered a variety of important background variables such as age at first adjudication, number of prior arrests, and characteristics of peer relationships that research has consistently identified as important predictors of future delinquency. Juveniles were initially screened as "eligible" if they were committed for all but the most serious offenses (e.g., homicide, attempted murder, very serious assaults, armed robbery, and serious instances of criminal sexual conduct). The risk assessment instrument constructed by the "State" Department of Social Services and the National Council on Crime and Delinquency was also utilized to ensure program participants did not have background problems so severe as to negate the likelihood of effective nonresidential, community-based treatment. Finally, information regarding the commitment offense and risk assessment were integrated into a security matrix. Individuals scoring "low risk (0-8 points)" on the assessment who were adjudicated for a crime other than the most serious should then have been eligible for participation in the community-based program.

The sample for the present study includes an *experimental group*, a *concurrent control group*, and a *historical control group*. The *experimental* group (n=135) includes all youthful male offenders that were adjudicated between July 1, 1995 and June 30, 1996 to participate in a community-based intervention program in the County. Youth in the community-based treatment program received 6 months of intensive program services in a modified school setting and 6 months of aftercare treatment. The *concurrent control group* (n=109) is a sample of similarly situated youth also adjudicated between July 1995 and July 1996 to traditional disposition such as residential placement. Individuals in the concurrent control group were exposed to the same structured interviews as the experimental group, yet were adjudicated to traditional probation services. Finally, the *historical control group* (n=132) were adjudicated to traditional probation services one year prior to the YFS program (July 1994 to June 1995).

Hypotheses

The literature review presented in Chapter 2 suggests that delinquency is a product of the interaction of multiple domains of problem areas that are considered the "risk factors" for delinquency. The identification of a sufficiently comprehensive model that details the interrelationships between these problem areas provides the ability to devise intervention efforts that make major strides in reducing future involvement in delinquent activity. The literature presented leads us to expect the following outcomes if the intervention efforts delivery the appropriate services in the necessary quantity:

H1: Members of the concurrent control group will exhibit more risk for delinquency;

H2: T_1 risk factors will predict recidivism and T_3 self-reported delinquency;

H3: Decrease in risk factors will reduce recidivism and self-reported delinquency;

H4: Increased treatment will reduce recidivism and self-reported delinquency.

Specification Of Variables Of Interest

Dependent Variables

The primary outcome measures are both official recidivism 18 months after referral for the instant offense and self-reported delinquency 12 months after referral. Traditionally, criminological research has used official contacts with police or court referrals as measures of crime and delinquency. The Uniform Crime Report is an example of the aggregation of police data and represents official statistics collected by police departments that indicate levels of crime in communities by reporting raw numbers of police incidents (crimes) and arrests. Both aggregate police data and individual arrest or court histories have been regularly used test a variety of theoretical propositions about the relationships between individual, group, or societal processes and criminality. Wolfgang, Figlio, and Sellin's (1972) classic study of delinquency, for example, used official court referrals as indicators of delinquent activity.

Official Delinquency

In this instance, officially recorded authorized petitions as indicated in Court records will be the first measure of recidivism. Court referral data do not necessarily reflect every instance where an individual was officially detained by the police and subsequently referred to juvenile court, but those occasions where an arrest and referral were made and the Court substantiated the arrest to the point where charges were filed against the individual. First, official delinquency will be operationalized as a binary

variable where the value 1 indicates the presence of a subsequent authorized petition and 0 indicates the lack of a subsequent referral within 18 months of the intake date.

Self-Report Delinquency

During the 1960s and 1970s criticism was leveled against the validity and reliability of official statistics as measures of criminality. Hindelang (1974: 2) identified seven problems associated with official statistics. Among the most notable characteristics is the "dark figure of crime"[17] (Sellin & Wolfgang, 1969). Additionally, official police statistics can be biased because in some cases authorities fail to record all crime reports made and definitions of crime vary from time to time.

Self-reported delinquency, a technique thought to be immune from the problems of official statistics, was introduced during the 1950s and integrated into delinquency research by Short and Nye (1957) and has since become an important methodological tool for delinquency researchers (Hindelang et al., 1981; Weis, 1988). The National Crime Victimization Survey presents an example of efforts to move beyond traditional measures of crime and victimization by using self-report measures. A series of self-reported delinquency indicators were constructed that cover a range of reasonably serious behaviors such as robbery and serious property crimes. The following indicators were combined into a global measure of self-reported delinquency that weights[18] each based on different levels of seriousness:

1) Hit someone in anger *(3);*
2) Robbed someone *(4);*

[17] The "dark figure of crime" refers to the large percentage of crimes that are never reported, thus indicating official crime statistics greatly underestimate the actual level of crime. For example, the Bureau of Justice Statistics indicated of 1,000 serious crimes only 500 are ever reported to the police (U.S. Department of Justice: Bureau of Justice Statistics, 1999).

[18] There is no inherent "distance" between these various indicators. The weights proposed in this coding scheme are not proportional where the distance between 1 and 2, 2 and 3 have major substantive meaning. They are used as a crude indication certain types of crimes are considered more serious than others.

Table 1. Scale Reliability Coefficients for Dependent Variable.

Scale	Number of Items	Time 3
Self-Reported Delinquency	5	.609

3) Stole something over $100 *(3)* ;
4) Stole something between $10 and $100 *(2);*
5) Damaged property that wasn't yours *(2);*

Table 1 details the reliability alpha coefficients for the self-reported delinquency scale. Reliability analysis measures the degree to which an indicator measures the construct it is proposed to measure. The alpha value represents the amount of variance shared among the indicators (Carmines & Zeller, 1979). Since only T_3 self-reported delinquency is considered as a dependent variable, Table 1 includes reliability diagnostics for this time period only. The scales' standardized item alpha is .609 at T_3 which indicates the scales are internally consistent and reliable.

Another aspect of this analysis will consider the risk factors defined below as dependent variables. Intervention theory is based on the assumption that the treatment will have a positive effect on the risk factors related to the onset of delinquent behavior. Brewer et al. (1995: 61) argue "risk and protective factors predict increased or decreased probability of developing problem behaviors...." In this situation, background variables pertaining to the individual characteristics such as perceptions and behaviors, and social characteristics such as exposure to delinquent peers will be considered as outcomes.

Independent Variables

The proposed study examines the effectiveness of a comprehensive community-based intervention program in creating positive change in the life course of individuals

and thereby reducing the likelihood of future self-reported and official delinquency. Research has demonstrated multiple risk factors to delinquency that exists at the individual, family, and community levels. The structured interviews were constructed to measure the link between these risk factors, program treatment modalities, and measurements of recidivism. The dimensions and related items are presented below.

Measures of Program Services

Intervention mapping (Bartholomew et al., 1998) is a process of structuring responses to problems (interventions) based on the theoretical understanding of the causal mechanisms underlying the issue. Social development theory is proposed as a theoretical framework for understanding juvenile delinquency and implicitly suggests interventions should be developmentally specific and address problems such as education, family functioning, positive peer interactions, and life skills. In response, the YFS program was designed to deliver education, job skills, counseling, and family functioning services to program youth.

Youth in the experimental group and concurrent control group[19] were asked to identify three programs they participated in for at least 15 days during the T_2, T_3, and T_4 interviews. After they identified the programs, the youth were asked the following questions that were intended to quantify the extent to which they received certain types of program services: "As part of the program, how often did you:

1.) Attend group meetings;
2.) Learn job skills (i.e., how to get a job, do the job, etc.);
3.) Have recreation time (i.e., play games, sports, etc);
4.) Attend academic classes (i.e., math, science, reading);
5.) Attend other classes (health, art, sex ed., law);

[19] Although youth in the concurrent control group received "traditional probation services," in many cases they also received similar services to the community-based experimental group.

6.) Attend special classes (social living skills, art);
7.) Work at the program for money;
8.) Attend individual counseling sessions;
9.) Attend family counseling sessions;
10.) Do volunteer work in the community;
11.) Receive drug/substance abuse counseling."

The respondents were asked to record how often they participated in these programs, and were provided with the following options and companion values: never (1), once or twice a year (2), once every 2-3 months (3), once a month 9 (4), once every 2-3 weeks (5), once a week (6), 2-3 times a week (7), once a day (8), and 2-3 times a day (9). "Never" was recoded to reflect a value of zero, and the others were left in present coding scheme. The items from the T_3 interview were summed across programs, and then grouped into the following four type of services: counseling (items 1, 8, 9, and 11), educational (items 4, 5, and 6), job skills (items 2, 7, and 10), and recreational (item 3). It is hypothesized that individuals that receive greater amounts of treatment services will experience the largest reductions in delinquency risk factors and also commit fewer crimes in the future.

Intake Placement Variables

Initial intake and placement variables are coded during the intake process by personnel from the Family Independence Agency (see "INITIAL DELINQUENCY RISK ASSESSMENT SCALE" in Appendix A).[20] The placement instrument reflects issues relating to age at first adjudication, number of prior arrests, current school status, history of drug use, nature of current offense, prior probation commitments, number of out-of-home placements, number of runaways from prior placements, last grade completed, nature of parent/caretaker control, and nature of peer relationships. Juveniles in the experimental and historical and concurrent control groups will be compared based on

[20] Formerly the "State" Department of Social Services.

Table 2. Scale Reliability Coefficients for Independent Placement Intake Variables.

Scale	Number of Items	Time
		Intake
Intake Placement	12	.568

these individual intake factors and also on their total intake score. Total intake score is hypothesized to be positively associated with recidivism. That is, juveniles with higher risk scores are hypothesized to experience more instances of recidivism.

The reliability alpha scale score for Intake Placement Variables is presented in Table 2. This data is only measured at intake and is used to compare background characteristics of the experimental and two control groups. The alpha value of .568 is slightly less than the value of .6 that is generally used as a standard cutoff (Carmines & Zeller, 1979). However, many of the intake variables have limited variability in their responses, an issue that may limit its ability to maximize the explanation of variance.

Delinquency Risk Factors

Negative Attitude Toward School. "Negative attitude toward school" is a construct that reflects a lack of a sense of belongingness to their school and their perceptions about levels of support from teachers and other concerned school personnel. The construct is comprised of the indicators: (1) I can learn things at school; (2) I can't be successful in school; (3) I almost never expect to do well in the classes the school makes me take; (4) The teachers and principals don't want me in their school; (5) I get the feeling that the school thinks I'm no good; (6) This school treats me like I'm dumb; (7) I'm satisfied with the way I did in school; (8) I like my teachers. The scale was summarized by computing the average scale score, a process that involved dividing the total sum of the scale by the number of items.

The responses are coded with a 7 item scale and in a manner that reflects negative attitudes toward school. A value of 1 indicated they perceived the statement to be "completely false" and 7 indicated the statement was "completely true." Where necessary (items 1, 7, and 8), responses were reverse coded so that they were conceptually consistent with the other indicators. Attitude toward school is hypothesized to be positively associated with recidivism. Meaning, juveniles with more negative attitudes toward school will exhibit more recidivism. It is also expected that increased program services will decrease negative attitudes toward school. Table 3 indicates that the reliability measures are highly reliable at both T_1 (.710) and T_3 (.795).

Negative School Behavior. The construct "negative school behavior" is an indicator of the extent to which individuals participate in certain negative behaviors while at school. The construct is comprised of the following indicators: Do something on purpose that you knew would make a teacher angry or annoyed or interrupted class; Smoke in or around school when you weren't supposed to or in a place where smoking wasn't allowed; Cheat on a test; Leave the school grounds without permissions when you weren't supposed to; Cut class without permission; Get into a serious fight with a student at school; Skip a day of school without a real excuse; Damage or messed up school property; Get suspended from school; Get sent to the principal's office; Get expelled from school; Get required to bring your parent(s) to school. The items were coded on a 9 item scale that included never[21] (1), once or twice a year (2), once every 2-3 months (3), once a month 9(4), once every 2-3 weeks (5), once a week (6), 2-3 times a week (7), once a day (8), and 2-3 times a day (9). Individuals reporting higher levels of negative school behavior are hypothesized to be more likely to recidivate than their counterparts. There

[21] Never was recorded to value of zero.

is also a hypothesized negative relationship program participation and negative school behavior. Average scale scores were computed by dividing the total scale sum by the number of items.

The 12 items that comprise this construct are highly reliable across time periods (Table 3). The T_3 alpha value (.902) is substantially higher than that of T_1 (.782) suggesting more internal consistency in the indicators of the former.

Favorable Attitude Toward Delinquency. The construct "favorable attitude toward delinquency" measures "how wrong" they perceive a series of acts to be for someone their age. The scale includes the following indicators: Cheat on school tests; Purposely damage or destroy property that did not belong to them; Use marijuana or hashish; Steal something worth less than $5; Hit or threaten to hit someone without any reason; Use alcohol; Break into a vehicle or building to steal something; Sell hard drugs such as heroin, cocaine, and LSD; Steal something worth more than $50. Available responses included very wrong (1), wrong (2), a little bit wrong (3), and not at all wrong (4). It is hypothesized those that perceive delinquent acts to be acceptable would participate in more delinquent acts. Thus, there is a hypothesized negative relationship between attitudes toward delinquency and recidivism. Moreover, a positive relationship is hypothesized between measures of program participation and attitudes favorable to delinquency. That is, individuals exposed to more treatment services will perceive the identified actions unfavorably. Average scale score were computed by dividing the total scale sum by the number of items.

The reliability analyses for the nine items that represent attitude toward delinquency also indicate the measures are highly reliable. Alpha values for the scales at

T_1 (.765) and T_3 (.851) suggest the indicators are internally consistent and represent good measures of the same underlying construct.

Self-esteem. The "self-esteem" construct operationalized in this research is more analogous to the global measure suggested by Rosenberg et al. (1989). It reflects individuals' perceptions of themselves and their level of personal acceptability. The indicators include: "I accept myself the way I am," "I am proud of the qualities I have," "I am an irresponsible person," "I feel useless at times," and "On the whole, I am satisfied with myself." Respondents were asked to indicate their level of agreement with the questions with one of the following responses: (1), disagree (2), agree (3), and strongly agree (4). The construct is coded in a manner that indicates positive self-esteem. Items 2 and 4 were subsequently reverse coded to be consistent with this coding scheme.

Self-esteem is hypothesized to be negatively associated with recidivism. That is, higher values of self-esteem are expected to result in lower measures of recidivism. It is also hypothesized that levels of program services received will be positively associated with self-esteem. The reliability analysis presented in Table 3 suggests the items are internally consistent across T_1 (.692) and T_3 (.607).

Pro-social Values. The construct "pro-social values" reflects the extent to which individuals ascribe to conventional values such as the value of hard work and showing respect to adults. Respondents were asked to respond to several items with the following responses: strongly disagree (1), disagree (2), agree (3), and strongly agree (4). The scale included the following four items: "Hard work is the only way to get ahead," "It is important to help people who are in trouble," "You should always show respect to your parents," "It is wrong to deliberately hurt someone else." Higher values indicate stronger

agreement with conventional, positive value systems. Pro-social values is hypothesized to be negatively associated with measures of recidivism. It is also hypothesized that measures of program participation are positively associated with pro-social values.

Reliability analysis for the four items detailed in Table 3 indicate higher internal consistently at T_3 (.658) compared to T_1 (.587). Although the value of .587 is slightly lower than the conventional cutoff of .6, it will be maintained in the analyses because it is only slightly lower than expected.

Exposure to Delinquent Peers. The construct "exposure to delinquent peers" measures the perceptions of the respondents as to how many of their close friends participated in a series of delinquent acts during the previous 6 months. The indicators included: cheated on school tests; purposely damaged or destroyed property that did not belong to them; used marijuana or hashish; stolen something worth less than $5; hit or threatened to hit someone without any reason; used alcohol; broken into a vehicle or building to steal something; sold hard drugs such as heroin, cocaine, and LSD; stolen something worth more than $50; suggested you do something that was against the law; beat someone up; carried a gun; shot at someone; participated in gang activities; carried a knife; stabbed someone. Responses were measured on a 5 item scale that included: none of them (1), very few of them (2), some of them (3), most of them (4), and all of them (5). Higher values indicate greater exposure to delinquent peers. Exposure to delinquent peers is hypothesized to be positive associated with recidivism. A negative relationship is hypothesized between measures of program participation and exposure to delinquent peers. Average scale score were computed by dividing the total scale sum by the number of items.

The reliability alpha values for exposure to delinquent peers is unusually high for both T_1 (.917) and T_3 (.940). While the high values suggest the measures share a substantial of amount of variance, the high values are also indicative of a scale that might lack sufficient variation in indicators to represent the true complexity of the construct of interest. An alpha value of 1, for example, would suggest the indicators are exact duplicates of one another and do not represent multi-dimensional construct. However, visual inspection of the measures suggests they do in fact cover a wide range of behaviors from violent and property crime to the sale and use of illegal drugs.

Positive Family Involvement. "Family involvement" indicates the extent to which individuals participated in positive activities with members of their family or other caregivers. Items asked how often during the past six months the respondents spent time with family members or other care givers engaged in the following activities: "How often did you spend time doing things with your family/caregiver?," "How often did you spend time with sisters or brothers?," "How often did you spend time with other relatives?," "How often did you spend evenings at home?," "How often did your family/caregiver know what you were doing with your time?," "How often did your family/caregiver talk with you about school or work?," and "How often did your family/caregiver and you do fun things together?" Respondents answered with one of the following: never (1), once or twice a year (2), once every 2-3 months (3), once a month 9(4), once every 2-3 weeks (5), once a week (6), 2-3 times a week (7), once a day (8), and 2-3 times a day (9). The value for "never" was subsequently recoded to zero.

Higher values on this scale are taken as indications of more opportunity to be involved in positive activities with family members or other caregivers. It is

hypothesized that "positive family involvement" is negatively associated with measures of recidivism. Moreover, aggregate amount of program services is expected to be positively associated with this construct. The scale is reliability across T_1 (.745) and T_3 (.838) suggesting the items are internally consistent and share substantial amounts of explained variance.

Alcohol and Drug Use. The construct "alcohol and drug use" summaries the frequency of use of illegal substances. The items for this scale includes: alcoholic beverages (beer, wine, hard liquor); marijuana/hashish ("grass", "pot", "hash"); hallucinogens (LSD); amphetamines (speed); cocaine (crack). The items were coded on a 9 item scale that included never (1), once or twice a year (2), once every 2-3 months (3), once a month 9(4), once every 2-3 weeks (5), once a week (6), 2-3 times a week (7), once a day (8), and 2-3 times a day (9). Alcohol and drug use is hypothesized to be positively correlated with recidivism. Average scale score were computed by dividing the total scale sum by the number of items.

Stressful Life Events. "Stressful life events" represent situations in the life course of individuals that have the potential to cause significant levels of trauma and subsequently relate to the escalation of delinquency. Hoffman and Cerbone (1999) reported stressful life events were responsible for a significant intra-individual "growth" in delinquency that is independent of age effects. The indicators are binary measures with 1 indicating the respondent experienced the stressful life event during the previous 6 months and 0 that the event was not experienced. Measures include: friends getting into gangs; family members getting on drugs; teachers hassling you; getting picked up by police; friends getting on drugs; family having money problems; other students talking

Table 3. Scale Reliability Coefficients for Independent Variables.

Scale	Number of Items	Time 1	Time 3
Attitude Toward School	9	.710	.795
School Behavior	12	.782	.902
Attitude Toward Delinquency	9	.795	.851
Self-esteem	5	.692	.607
Pro-social Values	4	.587	.658
Exposure to Delinquent Peers	16	.917	.940
Positive Family Involvement	8	.745	.838
Drug/Alcohol Use	5	.597	.525
Stressful Life Events	31	.782	.900
Community Integration/Attachment	8	.623	.746

junk; police pointing guns at you; friends getting someone pregnant or getting pregnant; family members getting killed; doing tests in school; going to court; friends getting locked up; arguing among family members; being bored in school; getting locked up; friends getting killed; family member not accepting your friends; following school rules; getting caught in drug raids; a parent dying; brother or sister dying; close friend dying; parents getting divorced or separated; failing one or more subjects in school; being arrested by the police; flunking a grade in school; family member having trouble with alcohol; getting into drugs; getting into alcohol; parent or relative in your family getting very sick. A positive relationship between exposure to stressful life events and recidivism is hypothesized. Average scale scores were computed by dividing the total scale sum by the number of items. Table 3 suggests the scale that includes 31 indicators of stressful life events was also highly reliable at both T_1 (.782) and T_3 (.900).

Community Involvement. The construct "community involvement" is a measure of participation in positive community activities. The term "community" is used loosely to refer to home, school, and neighborhood environments. Participation in community activities was captured by asking respondents to indicate how often during a normal week

they participate in the following activities: "looking for work," "doing chores," "attending classes," "doing homework," "organizing athletics at school, "organizing other athletic activities," "attending church or church related activities," and "clubs or groups away from school (boys/girls club). Available responses were: never (1), once or twice a year (2), once every 2-3 months (3), once a month 9(4), once every 2-3 weeks (5), once a week (6), 2-3 times a week (7), once a day (8), and 2-3 times a day (9). The value for "never" was recoded to zero. The reliability analysis in Table 3 indicates the items are internally consistent across both T_1 (.623) and T_3 (.734).

Social Disorganization. Measures of "social disorganization" are taken from 1995 Tiger census block group files provided by the U.S. Department of Census. The measure is available only for the experimental and concurrent control groups because "home address" was not provided with the intake data for the historical control group. The first step of this process included mapping each individuals' home address that was recorded at time of intake. After locating each individual in a particular census block group, the following data elements were used as measures of social disorganization: percent vacant housing; percent renter occupied housing, and percent of homes built before 1940. It is hypothesized that individuals residing in highly disorganized communities will exhibit more delinquent tendencies and will be less likely to respond positively to treatment.

Measures of neighborhood social disorganization were only measured at time of intake and are not hypothesized to have changed as a result of intervention efforts. The purpose of this measure is to compare the three different groups of individuals based on background characteristics, but it also serves as a control for outcome measures. The

Table 4. Scale Reliability Coefficients for Neighborhood-Level Independent Variables.

Scale	Number of Items	Time Intake
Social Disorganization	3	.640
Socio-economic Status	4	.743

alpha value of .640 detailed in Table 4 indicate the 3 measures are reliable measures of the same construct.

The items were combined using principle components factor analysis. All three indicators were hypothesized to measure the same underlying factor, social disorganization. The principle components analysis revealed only 1 factor as hypothesized, and all three items loaded consistently high on that factor. Table 5 presents the factor loadings, eigenvalue, and percent explained variance for the analysis. The data indicate the combined items explain nearly 60 percent of the variance in the social disorganization construct.

Socio-economic Status of Neighborhood. Similar to measures of social disorganization, neighborhood socio-economic status will also be taken from the 1995 Tiger file provided by the U.S. Department of Census. Similar to the measures of social disorganization, the measures of socio-economic status are available only for the experimental and concurrent control group because "home address" was not made available for the historical control group. Measures of socio-economic status include percent nonwhite residents, percent female headed household, percent low income, percent unemployment, and average home value. It is also hypothesized that individuals residing in more impoverished neighborhoods will experience more recidivism. Similar to the social disorganization scale, neighborhood socio-economic status is used as an

Table 5. Exploratory Factor Analysis for Social Disorganization.

Item	Factor 1
Percent vacant housing	.764
Percent of residents renters	.750
Percent of housing built before 1940	.790
Eigenvalue	1.770
Percent of variance	59.00

explanatory variable and is not expected to change as a result of intervention efforts. Table 4 suggests the 4 items included in the scale are highly reliable with an alpha value of .743.

Indicators of socio-economic status were combined using principle components factor analysis. All three indicators were hypothesized to measure the same underlying factor, socio-economic status. The principle components analysis revealed only 1 factor as hypothesized, and all three items loaded consistently high on that factor. Table 5 presents the factor loadings, eigenvalue, and percent explained variance for the analysis. The data indicate the combined items explain nearly 60 percent of the variance in the socio-economic status construct.

Expected Relationships

Direct Effects Of Intervention Treatment On Risk Factors

The YFS community-based intervention program was designed to reduce risk factors associated with delinquency and simultaneously increase the presence of protective factors. The conceptual model depicted in Figure 2 (see page 77) indicates the impact of intervention treatment is hypothesized to have both a direct and indirect effect on recidivism with indirect effects operating through risk and protective factors. This

Table 6. Exploratory Factor Analysis for Socio-economic status.

Item	Factor 1
Percent of residents nonwhite	.816
Percent of residents female headed household	.912
Percent of residents low income	.872
Percent of residents unemployed	.864
Eigenvalue	3.003
Percent of variance	75.08

will be analyzed with paired samples t-tests. Since the YFS program was designed to provide intervention treatment services in the areas of educational achievement, family functioning, peer association, and community attachment, the first stage of the analysis will assess if the treatment had any affect on these intended outcomes.

Direct Effects Of Intervention Treatment On Characteristics And Extent Of Recidivism

The present research attempts to separate the direct and indirect effects of intervention treatments on recidivism. More specifically, this research will measure if individuals have records of additional court petitions for all types of crimes on an aggregate basis, but also for specific types of crimes such as status offenses, property offenses, and violent offenses. This is an important consideration because the juvenile justice system has grown increasingly concerned about juvenile involvement in serious crime, especially serious violent crime. As indicated in the introduction to this study, the perception that juveniles have been increasingly involved in serious and violent crime was responsible for the growth in "get tough" legislation directed at juvenile offenders. This analysis will include not only official measures of delinquency as dependent variables but also self-reported delinquency. A direct negative relationship is expected between aggregate indicators of program participation and measures of official and self-

reported recidivism. The experimental group will be compared with both the concurrent and historical control groups for measures of official delinquency and the concurrent control group only for measures of self-reported delinquency.

Indirect Effects Of Intervention Treatment On Recidivism Through Changes In Risk Factors

This research will also test if the background variables previously identified in this manuscript mediate the effectiveness of community-based intervention treatment services. Although the theory underlying intervention research suggests individuals are generally better treated in the community as opposed to institutional treatment, there is evidence treatment may be more or less successful depending on characteristics of the offender. As discussed above, it is expected that the treatment effects will create positive change in the domains general found to be underlying delinquent behavior. These domains can be considered "risk factors" for delinquency. The treatment is expected to reduce risk factors and increase protective factors. The hypothesis is that the treatment effect will only reduce the characteristics and extent of recidivism of delinquency in as much as it reduces the presence of risk factors and increases the presence of protective factors. Similar relationships will be tested as in the section titled "Direct Effects Of Intervention Treatment On Characteristics And Extent Of Recidivism." In this case, however, the analysis will determine how treatment effects influence the relationships between risk factors and outcome measures.

Scaling Procedures

Three scaling procedures were used to construct factor scores for the measures of self-reported delinquency and delinquency risk factors (attitude toward school, school behavior, attitude toward delinquency, self-esteem, pro-social values, exposure to

delinquent peers, positive family functioning, alcohol and drug use, stressful life events, community integration/attachment, social disorganization, and socio-economic status). The self-reported delinquency scale was determined by using the coding scheme identified on page 86. Respondents were asked how many times during the previous 12 months they participated in a series of delinquent acts that included measures of violent, property, and drug crimes. Each of the indicators was assigned a weight that indicates a level of seriousness. Although the values assigned with the weighting scheme do not create proportional distance between measures based on objective criteria, it makes a step in creating a seriousness hierarchy among the indicators. Each indicator weight was then multiplied by the value provided by the respondents with regards to the number of times they participated in the actions over the previous 12 months. A cumulative scale score was computed by summing the values. The original distribution was negatively skewed so the log of the cumulative scale score was be computed to normalize the measure. The summary value was computed for T_1 and T_3 measures.

Except for measures of social disorganization and socio-economic status, scale scores for the delinquency risk factors were computed by dividing the sum of the items in the scale and dividing by the total number of items. Finally, principle components factor analysis was used to compute the factor score for the measures of social disorganization and socio-economic status.

Analysis Plan

Respondents were interviewed by trained staff that administered the same series of instruments to each respondent at initial intake, and after 6 months, 12 months, and 18 months. The instrument includes theoretical variables that are both important to the onset

of delinquency and also important to the occurrence of recidivism. Scales were constructed that operationalize constructs such as attitude toward school, self-esteem, and problem behavior at school in ways that are consistent with previous research.

Comparing Measures of Central Tendency

The first step in the analysis plan will involve descriptive analysis that compares important characteristics of the experimental group, concurrent control group, and historical control group. The groups will be compared to determine how similar they are in regards to basic demographic characteristics such as age, race, ethnicity, and neighborhood characteristics. Neighborhood characteristics are limited to measures of neighborhood social disorganization and socio-economic status. The descriptive analyses will involve contingency table analyses and measures of association. In most cases, the one-way analysis of variance (ANOVA) test will be used to compare the means of the three groups. Similar to significance tests comparing two groups (e.g., t-test), ANOVA uses the *F* distribution for detecting differences among means in situations where there are more than two groups (Agresti & Finlay, 1997).

The experimental group, concurrent control group, and historical control group will also be compared on their total score recorded on the "State" Department of Social Services' risk assessment classification scheme (Appendix A). Referring to section titled "Initial Delinquency Risk Assessment Scale" compiles a total risk score based on issues such as age at first adjudication, number of prior offenses, current school status, and history of drug use. Individuals scoring between 0-8 are classified as "low risk," 9-11 as "moderate risk," and those 12-19 as "high risk." This information is used in conjunction with the severity of the most serious offense for which the individual were adjudicated to

determine the overall security level assignment (see section titled "Initial Security Matrix"). Security level assignments fall on a continuum that includes "high," "medium," "low," and "community based." Those classified as "community based" were eligible for participation in the YFS program.

Descriptive analysis will also be used to compare characteristics of the risk factors and self-reported delinquency reported in the structured interviews for the experimental and concurrent control group. The purpose of this research is to determine if comprehensive community-based alternatives represent more effective intervention strategies for serious adjudicated youth, and if so, why. One of the first steps then is to determine how similar they are based on aspects research and experience indicate are important to program success.

The experimental and concurrent control groups will also be compared in regards to the amount of services received during the program year. The extent of program services will be added across the possible three different programs identified by the respondents and will be grouped into the following categories: education, job skills, counseling, and family functioning services. These comparisons will be made using t-test procedures.

Finally, the experimental and concurrent control groups will be compared based on changes in between T_1 and T_3 delinquency risk factors. Change scores will be computed by subtracting T_3 measures from T_1. For negative attitudes toward school, negative school behavior, favorable attitude toward delinquency, exposure to delinquent peers, alcohol/drug use, and stressful life events decreases from T_1 to T_3 represent a decrease in risk, changes considered favorable. Similarly, increases in self-esteem,

prosocial values, positive family involvement, and community involvement are also considered favorable and indicate increases in protective factors. T-tests will be used to measure the significance of the change scores for the two groups.

Logistic Regression

Logistic regression is the appropriate model to use in cases where the variance in the dependent variable is limited to dichotomous, binary values (0/1). In this case, the value of the dependent variable is no longer of intrinsic interest but the "odds" or probability that one or the other category of the dependent variable can be predicted based on combined effects of the independent variables (Menard, 1995). In contrast to the OLS parameter estimation used in linear regression, logistic regression utilizes the maximum likelihood technique to maximize the value of a function. Evaluation of the logistic regression model typically involves answering the questions: First, Can the combination of variables used to predict the dependent variable do so in a manner above and beyond what would be expected by chance alone? Second, if the model works, how important are each independent variable? Third, does the form of the model appear to be correct? (Menard, 1995: 17).

Logistic regression will be used to test the effects of demographic and delinquency risk factors on recidivism for any criminal offense with 18 months of intake. Several different logistic regression models will be presented. The first analysis will combine all three samples (experimental, concurrent control, and historical control groups) in a single model and will include demographic characteristics, age at arrest for instant offense, instant offense, and placement variables as independent or explanatory variables. A dummy variable will be created to denote group membership. In this case,

"experimental" will be coded with a value of 1 and the concurrent and historical control groups with a value of 0. The historical and concurrent control groups will be combined because there is no substantive reason to hypothesize members of the group should respond any differently to traditional probation services. Inclusion of the historical control group provides the added value of increasing the sample size for greater explanatory power. Three binary dummy variables will also be constructed for instant offense that reflect if the offense was for a violent crime, property crime, or other type of offense.

The second analysis will use data from the experimental and concurrent control groups only. This model will include the same variables indicated above in a stepwise fashion, and will also incorporate T_1 delinquent risk factors from the structured interviews.[22] Change scores for the delinquency risk factors will be stepped into the regression model after the T_1 risk factors are entered.

Within Subjects Change

It is hypothesized that a comprehensive community-based program design based on social development theory will be more effective in reducing delinquency risk factors than traditional probation services. If the YFS program better conceptualizes the mechanisms that "produce" delinquency and delivers the appropriate intervention services to offset these processes, it is expected juveniles adjudicated to the YFS program will experience greater decreases in delinquency risk factors compared to those given traditional probation services.

[22] The historical control group is excluded from this analysis because they were not subject to the structured interviews.

The within subjects repeated measures design is the traditional statistical method used for determining the extent to which subjects changed as a result of a particular intervention. This method is commonly used, for example, in the situation where two or more groups (e.g., experimental group and control group) are exposed to a treatment condition (e.g., new drug versus placebo). In this scenario, subjects would be tested and then retested on certain characteristics (e.g., presence of a particular disease condition) to determine if the drug had an effect on the characteristic of interest.

A modified form of a within subjects repeated measures was used in this research. The primary concern was to determine if change in risk factors effect likelihood of recidivism and levels of self-reported delinquency at T_3. Instead of considering "change" as a dependent variable as is usually the case in repeated measures design, delinquency risk factor change scores were independent variables. The formula used to calculate the extent of change was: $XiT3\text{-}X_{iT1}$ where "X" represents individual respondents, "i" represents each delinquency risk factor, and T_1 and T_3 represent the time periods of interest (T_1=initial risk; T_3=12 months). Thus, change will be assessed between the structured interviews administered at intake and after the 12 month follow up. A 12 month follow-up period was used to allow for adequate time to have passed for the intervention effects to take hold but not so much time that the intervention effects dissipated. Higher values would be considered increases in risk and decreases as reductions in risk.

While useful for the current analysis, the within subjects designs, repeated measures or otherwise, are not without potential disadvantages. The principal problems are with systematic changes caused by *practice effects* and *differential carryover effects*

(Keppel, 1991: 334-343). Practice effects are systematic changes that result from the process of taking the test (in this case, structured interview) itself. For example, the repeated process of delivering the same structured interview itself might sensitize respondents to certain answers. While there is always a concern with the lack of truthfulness during structured interviews, especially when asked about sensitive subjects such as self-reported delinquency, practice effects are not perceived to be a serious problem in the current situation. First, the interviews are delivered in 6 months intervals thereby reducing practice effects that might exist if given tests in close temporal proximity. Second, the nature of the questions are not such as to suggest a "right" or "wrong" answers that would be evident from taking the same "test" on multiple occasions.

Differential carryover effects also present a situation where a subject's participation in the administration of an earlier treatment influences the subject's performance in the current treatment. In this case, the concern is that subjects might have been provided earlier intervention services by the Court system or "State" Family Independence Agency (FIA) that may systematically predispose them to differential outcomes. Although a potentially serious problem, there is little ability to control for it in the current analyses since data on prior family involvement with FIA or other related agencies is not available. "Number of prior arrests" can be used as a conservative proxy for differential carryover effects since it would suggest some level of court involvement in the past. It is assumed that prior court involvement is indicative of some level of official intervention. However, this measure is less than perfect for several reasons. The

most glaring is that it excludes prior services delivered other non-court agencies such as FIA.

CHAPTER FOUR: FINDINGS

The purpose of this research was to assess the efficacy of community-based intervention services for adjudicated juvenile offenders. Using a quasi-experimental design, the proposed research questions test the extent to which community-based programs were more effective in creating positive change in delinquency risk factors and reducing recidivism than traditional probation services. The research design compared a sample of 135 experimental youth assigned to a community-based intervention program between July 1, 1995 and June 30, 1996, a concurrent control sample of 109 juveniles assigned traditional residential probation services during the same period, and an historical sample of 132 youth processed through the same Court during the previous year (July 31, 1994-June 30, 1995). There were a total of 376 individuals in the three groups.

The three study populations were compared on several dimensions including demographic characteristics[23] such as race, age at instant offense, and offense type for instant offense. The three sample populations were also compared on placement variables coding as part of the initial placement risk assessment (see Appendix A). Following comparisons of background characteristics for the three sample populations, logistic regression analysis was used to make an initial assessment of the relative merits of community-based versus residential treatment programs when controlling for demographic and placement variables. After baseline assessments were made about the relative merits of each treatment modality, a series of statistical models will be presented that compare characteristics of the experimental and concurrent control groups. These

[23] Gender is excluded from the analysis because the sample population was restricted to male offenders.

Table 7. Descriptive Information by Study Sample Groups (n=376).

	Experi-mental		Concurrent		Historical		Total		x^2	df	Sig.
	n	%	n	%	n	%	n	%			
Race											
Black	88	65%	77	71%	97	74%	262	70%	2.243	2	.326
Non-black	47	35%	32	29%	35	27%	114	30%			
Total	135	100%	109	100%	132	100%	376	100%			
Offense[*,a]											
Personal	29	22%	31	29%	30	23%	90	24%	10.790	4	.029
Property	63	48%	62	58%	72	55%	197	53%			
Other	39	30%	13	12%	30	23%	82	22%			
Total	131	100%	106	100%	132	100%	369	100%			

[*] Significant at $p \leq .05$.

[a] Intake placement data missing for 7 individuals.

two were subject to the same series of structured interviews that will establish a framework for drawing comparisons on the initial delinquent risk factors (T_1), changes in risk factors during the intervention period, and how both relate to recidivism measures. Theoretically, it is expected that juveniles who are at greater "risk" for delinquency as indicated with the T_1 risk scores will experience higher levels of recidivism. Similarly, juveniles reporting positive changes in delinquency risk factors during the intervention period are also expected to experience less recidivism.

Sample Characteristics

The sample population is comprised primarily of minority youth. Race was dichotomized into the categories "black" and "non-black."[24] Although it would have been useful to break down racial characteristics into more discrete categories, the small numbers in other categories required the data to be combined (see Table 7). Approximately two-thirds of the entire population (n = 262) were African American. The

[24] Disaggregated racial characteristics for entire sample population: Black (n=262), White (106), Hispanic (5), and Other (3).

Table 8. Mean Intake Age by Group Membership (n = 369).[a]

	Experimental	Concurrent	Historical	Total	d.f.	Mean Sq	F	Sig.
Age								
Mean	15.39	15.22	15.28	15.29	1	1.561	1.424	.233
Std. Dev	1.096	1.087	1.00	1.048				
Range	13-17	13-17	13-17	13-17				

[a] Intake placement data missing for 7 individuals.

experimental group included the largest percentage of non-black participants (35 %) yet the mean differences between the populations were not significant.[25]

Table 7 also presents characteristics of the referral intake offense. Intake offense was categorized into three groups and represents the criminal charge for which individuals were referred to the Court for the instant offense. In the case where multiple charges were filed against an individual, the instant offense was the most serious substantiated charge.[26] "Personal crimes" were assaultive crimes such as murder, rape, robbery, and assault. "Property crimes" included among others, burglary, larceny, receiving and concealing stolen property, and malicious destruction of property. The group "weapons, status offense, other" was a very broad category that included crime types that did not fall into the previous.[27] Fifty three percent (n=197) of the population were referred for property offenses, 24% (n=90) for personal crimes, and 22% for other

[25] The breakdowns for the "non-black" categories are as follows for each sample population: Experimental group (White: n=44, 30 percent; Hispanic: n=1, 1 percent, Other: n=2, 2 percent), Concurrent control group (White: n=29, 27 percent; Hispanic: n=3, 3 percent; Other: n=0), and Historical control group (White: n=33, 25 percent; Hispanic: n=1, 1 percent; Other: n=1, 1 percent).

[26] See Table B-1 in Appendix B for more specific details of intake offense categories.

[27] See Hindelang, Hirschi, and Weis (1991) for concerns with scales that include wide continuums of behaviors. "The trivial items in self-report scales swamp more serious items when, as is common, global simple sum scales are used. To the extent that the correlates of serious items differ from the correlates of trivial items, global scales will reflect the correlates of trivial delinquency. Similarly, to the extent that the correlates of certain types of delinquency differ, global scales will match these differences" (Hindelang et al., 1991: 90). Although these comments refer specially to self-reported delinquency scales, the sentiments expressed are directly applicable to official delinquency scales. However, since recidivism in a juvenile population is a rare occurrence in the short term, this type of method will be used.

offenses. Approximately 44% (n=66) of the "other" category consists of weapon offenses such as carrying concealed weapon and 33% (n=51) for status offenses such as truancy, runaway, and incorrigibility. The remaining 24 percent (n=37) represents a wide range of less serious criminal offenses.

The experimental, concurrent, and historical control groups did not differ significantly in regards to mean age at referral for instant offense. The mean age for the entire population was 15.33, a value that was similar for all three populations (Table 8). Intake placement data were missing for seven individuals who were subsequently excluded from relevant analyses.

The relationship between age at intake for instant offense and offense type for the full sample (n=369) is presented in Table 9. A larger percentage of juveniles age 13 (33 percent) were referred for violent crime compared to juveniles age 17 (21 percent). Conversely, a smaller percentage of older offenders were referred for crimes in the "other category" keeping in mind that the category "other" is composed primarily of weapon related offenses such as carrying a concealed weapon and status offenses such as truancy and curfew violations. It was expected that younger offenders might be more likely to be referred for more serious offenses since they were referred to the Department of Social Services precisely because they were considered more serious offenders.

Referring to the column percentages in Table 9, it is also evident that there is not a substantial level of variation in the age composition for the separate crime types. For example, only eleven percent of all individuals referred for personal crimes were juveniles age 13, a figure nearly identical for juveniles referred for "other" offenses. Although the percentage of juveniles age 13 for property offenses was slightly smaller at

Table 9. Age At Intake for Instant Offense and Offense Type (n=369)[a].

Age		Personal	Property	Weapon/ Status/Other	Total
13	Count	10	9	11	30
	Row %	33%	30%	37%	100%
	Col %	11%	5%	13%	8%
14	Count	13	35	10	58
	Row %	22%	60%	17%	100%
	Col %	14%	18%	12%	16%
15	Count	21	36	23	80
	Row %	26%	45%	29%	100%
	Col %	23%	18%	28%	22%
16	Count	37	92	30	159
	Row %	23%	58%	19%	100%
	Col %	41%	47%	37%	43%
17	Count	9	25	8	42
	Row %	21%	60%	19%	100%
	Col %	10%	13%	10%	11%
Total	Count	90	197	82	369
	Row %	24%	53%	22%	100%
	Col %	100%	100%	100%	100%
Model Statistics					
	x^2	12.963			
	df	8			
	Sig.	.113			

[a] Seven excluded due to missing data.

5 percent, the differences among the three figures amounts to very little. The model statistics indicated no significant differences in the mean percentages across the measures.

Table 10 presents similar data yet disaggregates the information by population group type. There are a few differences evident in this analysis. As indicated by previous analyses, offenders in the experimental group are generally less serious offenders. The most important differences between the experimental and control groups is among younger offenders. Younger offenders in the experimental group are

Table 10. Age At Intake for Instant Offense and Offense Type (n=369)a by Sample Group.

		Experimental				Historical				Concurrent			
Age		**Personal**	**Prop.**	**Weapon/ Status/ Other**	**Total**	**Personal**	**Prop.**	**Weapon/ Status/ Other**	**Total**	**Personal**	**Prop.**	**Weapon/ Status/ Other**	**Total**
13	Count	2	2	4	8	5	4	6	15	3	3	1	7
	Row %	25%	25%	50%	100%	33%	27%	40%	100%	43%	43%	14%	100%
	Col %	7%	3%	10%	6%	17%	6%	20%	11%	10%	5%	8%	7%
14	Count	3	12	6	21	4	10	0	14	6	13	4	23
	Row %	14%	57%	29%	100%	29%	71%	0%	100%	26%	57%	17%	100%
	Col %	10%	19%	15%	16%	13%	14%	0%	11%	19%	21%	31%	22%
15	Count	8	9	10	27	6	13	9	28	7	14	4	25
	Row %	30%	33%	37%	100%	21%	46%	32%	100%	28%	56%	16%	100%
	Col %	28%	14%	26%	21%	20%	18%	30%	21%	23%	23%	31%	24%
16	Count	14	31	15	60	11	35	11	57	12	26	4	42
	Row %	23%	52%	25%	100%	19%	61%	19%	100%	29%	62%	10%	100%
	Col %	48%	49%	38%	46%	37%	49%	37%	43%	39%	42%	31%	40%
17	Count	2	9	4	15	4	10	4	18	3	6	0	9
	Row %	13%	60%	27%	100%	22%	56%	22%	100%	33%	67%	0%	100%
	Col %	7%	14%	10%	11%	13%	14%	13%	14%	10%	10%	0%	8%
Total	Count	29	63	39	131	30	72	30	132	31	62	13	106
	Row %	22%	48%	30%	100%	23%	55%	23%	100%	29%	58%	12%	100%
	Col %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 11. Comparison of Neighborhood Characteristics (n=178).[a]

	X	Std. Dev.	Std. Error	Min	Max	Mean Square	F	Sig.
Social Disorganization						3.370	4.529	0.035
Concurrent	0.467	0.867	0.098	-1.237	2.871			
Experimental	0.190	0.859	0.086	-1.343	2.885			
Total	0.313	0.871	0.065	-1.343	2.885			
Socio-economic Status						2.598	3.367	0.068
Concurrent	0.635	0.960	0.108	-1.228	2.380			
Experimental	0.392	0.808	0.081	-1.224	2.303			
Total	0.500	0.884	0.066	-1.228	2.380			

[a] Analysis restricted to experimental (n=99) and concurrent control groups (n=79).

substantially less serious offenders than those in the control. For example, only 25% (n=2) of juveniles age 13 and 14% of those age 14 in the experimental group were referred for a personal. This is substantially lower than both the historical control group (33% and 29% respectively) and concurrent control group (43% and 26% respectively). Moreover, 29% of those age 13 in the experimental group were referred for a crime in the "other" category, a category dominated heavily by status and other low level offenses, yet this compares to 17% for the concurrent control group and none for the historical control group. Thus, regardless of factors associated with age at referral, those in the experimental group continue to appear to be less serious offenders.

The experimental and concurrent control groups were also compared on neighborhood characteristics such as levels of social disorganization and socio-economic status.[28] It is difficult to establish effective institutions in areas characterized by high levels of social disorganization and poverty (Kornhauser, 1978). This is particularly the case for important institutions such as schools (Welsh et al., 2000). Not only are chronic juvenile offenders more likely to come from high crime communities (Thornberry et al.,

[28] This analysis was restricted to the experimental and concurrent control groups because "home address at arrest" was available for these individuals only.

1995), but children living in high poverty communities are reported to experience more court referrals (Farrington, 1995).

Neighborhood characteristics were operationalized from 1990 census tract data provided by the United States Census Bureau. The construct "social disorganization" was operationalized by percent vacant housing, percent renter occupied housing, and percent of housing built before 1940. Similarly, "socio-economic status" is an index variable comprised of percent of population nonwhite, percent female headed households, percent of persons low income, percent of population unemployed, and average home value. Higher values on both scales indicate greater risks associated with living in such neighborhoods. The values for both indicators were computed using varimax rotated exploratory factor analysis. According to Table 11, the social disorganization group mean for the concurrent control group was significantly higher than the experimental group. The concurrent control group also experienced a larger group mean on the socioeconomic status measure. Although not statistically significant, the concurrent control group seems to come from more highly disorganized neighborhoods and neighborhoods characterized by higher levels of poverty.

Comparisons of Placement Intake Data

Placement data were collected as part of the Court intake procedures for juvenile offenders and was coded by case workers employed by the Department of Social Services.[29] Placement data were intended to capture important aspects of individuals' background as a means of determining placement categories. At that time, the placement data were used as a strategy for determining placement levels. Except where overrides were made, individuals who scored a total of 8 or less were assigned to the Youth and

[29] See Appendix A for a duplication of the Intake Placement information.

Family Study community-based intervention program. The remainder of the individuals classified as "low" were considered the concurrent control group for this analysis.

Tables 12a and 12b present the descriptive findings for each placement variable (n=369). The tables present the mean scores and other aspects of central tendency measures for all three samples. The variables were categorical without any inherent sense of distance between the measures. In many cases, the variables are truncated to only two available options and the limited operational definitions can make it difficult to determine actual between-group differences.

Age at first adjudication was an ordinal variable that denotes the age range when the individual was first referred for a criminal violation.[30] The variable ranges from 0-3 with higher values reflecting younger ages. Juveniles first involved in the juvenile justice system at younger ages were considered more serious because such behavior is developmentally out of place (*see* Steffensmeier et al., 1989). Delinquency, even moderately serious delinquency, is considered "normal" among slightly older adolescents (Hindelang et al., 1981; Lipsey & Derzon, 1998). The concurrent control group scored the highest value ($\bar{x} = 1.45$) and the historical the lowest ($\bar{x} = 1.22$). The three group means were not significantly different (d.f.=2, F=2.524, p.>.05). There were also no significant differences for "seriousness of current offense," "probation at time of offense," "prior FIA placement," and "level of parental commitment."

Group means were significantly different for "prior arrest history," "school status," "drug use," "prior placement," "runaway," "last grade completed," and nature of "peer relations." Prior arrest history is an ordinal variable that assigns a value of "0" if an individual had no prior, "1" if there were 1-2 priors and "2 if there were more than 2 prior

[30] See "Variable Coding Table" in Appendix D for further details on dependent and independent variables.

Table 12a. Descriptive Characteristics of Placement Intake Variables (n=369)[a].

Placement Variables	$\bar{X}$	Std. Dev.	Std. Error	Min	Max	d.f.	Mean Sq.	F	Sig
Age 1st Adjudication						2	1.827	2.524	0.082
Hist	1.220	0.868	0.076	0	3				
Concurr	1.453	0.806	0.078	0	3				
Exper	1.250	0.868	0.076	0	3				
Total	1.297	0.854	0.044	0	3				
Prior Arrest						2	2.239	4.196	0.016
Hist	0.970	0.741	0.064	0	2				
Concurr	1.245	0.715	0.069	0	2				
Exper	1.083	0.731	0.064	0	2				
Total	1.089	0.736	0.038	0	2				
School History						2	5.229	8.572	0.000
Hist	1.318	0.894	0.078	0	2				
Concurr	1.736	0.652	0.063	0	2				
Exper	1.553	0.755	0.066	0	2				
Total	1.522	0.797	0.041	0	2				
Drug Use									
Hist	0.273	0.464	0.040	0	2	2	1.331	5.772	0.003
Concurr	0.481	0.502	0.049	0	1				
Exper	0.333	0.473	0.041	0	1				
Total	0.354	0.485	0.025	0	2				
Offense Seriousness						2	1.383	1.685	0.187
Hist	1.477	0.878	0.076	0	2				
Concurr	1.491	0.876	0.085	0	2				
Exper	1.303	0.957	0.083	0	2				
Total	1.419	0.908	0.047	0	2				
Prob at Time of Arrest						2	0.290	1.185	0.307
Hist	0.379	0.487	0.042	0	1				
Concurr	0.477	0.502	0.048	0	1				
Exper	0.430	0.497	0.043	0	1				
Total	0.426	0.495	0.026	0	1				
Prior Placement						2	0.553	2.543	0.080
Hist	0.303	0.478	0.042	0	2				
Concurr	0.387	0.489	0.048	0	1				
Exper	0.250	0.435	0.038	0	1				
Total	0.308	0.468	0.024	0	2				
Runaway						2	0.289	3.288	0.038
Hist	0.083	0.304	0.026	0	2				
Concurr	0.151	0.360	0.035	0	1				
Exper	0.053	0.225	0.020	0	1				
Total	0.092	0.298	0.016	0	2				

[a] Seven cases excluded due to missing data.

Table 12b. Descriptive Characteristics of Placement Intake Variables (n=369)[a].

Placement Variables	$\bar{X}$	Std. Dev	Std. Error	Min	Max	d.f.	Mean Sq.	F	Sig
Last Grade Completed						2	1.144	3.372	0.035
Hist	1.568	0.644	0.056	0	2				
Concurr	1.764	0.526	0.051	0	2				
Exper	1.674	0.559	0.049	0	2				
Total	1.662	0.586	0.030	0	2				
Parental Commitment						2	0.309	2.193	0.113
Hist	0.115	0.320	0.028	0	1				
Concurr	0.217	0.437	0.042	0	2				
Exper	0.167	0.374	0.033	0	1				
Total	0.163	0.377	0.020	0	2				
Peer Relations						2	3.858	5.546	0.004
Hist	2.290	0.873	0.076	0	3				
Concurr	2.557	0.731	0.071	0	3				
Exper	2.205	0.871	0.076	0	3				
Total	2.336	0.844	0.044	0	3				
Total Risk Score						2	128.629	21.263	0.000
Hist	9.992	2.567	0.223	0	16				
Concurr	11.972	2.573	0.250	4	17				
Exper	10.311	2.248	0.196	4	16				
Total	10.673	2.591	0.135	0	17				

[a] Seven cases excluded due to missing data.

arrests. Although the mean value for the historical control and experimental groups were similar, the concurrent control group was significantly higher (d.f.=2, F=2.236, p.<.05) on prior arrest history, a relationship driven by the substantially higher value for the concurrent control group. "Current school status" measures the extent to which the individual regularly attended school. A value of "0" was assigned for individuals who regularly attended, "1" for those who dropped out, and "2" for those individuals who were expelled or were chronically truant. The three groups were significantly different (d.f.=2, F=8.572, p<.05) with the highest value reported for concurrent control group ($\bar{x} = 1.74$) and the lowest for the historical control group ($\bar{x} = 1.132$).

The groups were also significantly (d.f.=2, F=1.321, p<.05) different on the indicators of drug use. "Drug use" is a binary variable where a value of "0" indicates either no use or only experimental use and a value of "1" indicates regular use of illegal substances. The highest value was reported for the concurrent control group ($\bar{x} = .481$) and the lowest for the experimental group ($\bar{x} = .333$). "Runaway" is also a binary coded variable with a value of "0" indicative of no prior runaways from FIA placement and "1" reflecting one or more occasions of running away. Similar to previous findings, the highest value was reported for the concurrent control group ($\bar{x} = .151$) and the lowest for the experimental group ($\bar{x} = .053$). "Last grade completed" is coded where higher values represent a lower grade last completed. Individuals were assigned a value of "0" if they last completed tenth grade, "1" for ninth grade, and "2" for eighth grade. The coding was based on research findings that low school achievement is a risk factor for current and future delinquency (Denno, 1990; Farrington, 1989; Maguin et al., 1995). The concurrent control group was significantly (d.f.=2, F=1.14, p<.05) higher than both the historical control ($\bar{x} = 1.568$) or experimental groups ($\bar{x} = 1.674$). "Peer relations" characterizes the nature of relationships between offenders and their peers. Higher values were assigned to individuals with delinquents among their close associates. For example, the value "3" was assigned when the evidence suggested the majority of close associates were gang members or involved in other forms of delinquency. The experimental and control groups were significantly different (d.f. = 2, F=5.55, sig. <.05) on this measure. Finally, the variable "total risk score" reflects the cumulative placement score as determined by the values of the previous 11 indicators. The study populations were significantly different (d.f.=2, F=128.63, p<.05) with the highest mean value for the

concurrent control group ($\bar{x} = 11.972$) and the lowest for the historical control group ($\bar{x} = 9.992$).

These placement variables were used to differentiate criminal offenders on characteristics that theory and practice indicate are important to delinquency careers. In a sense, review of the entire scale is consistent with the theories of delinquency identified earlier. Social development theory, for example, stipulates that delinquency is a product of the co-occurrence of multiple delinquency risk factors such as drug use, poor family functioning, negative peer relations, and academic problems. The overall conclusion reached was that in many ways the historical and experimental groups "looked" similar. Moreover, the concurrent control group included slightly more serious offenders yet these differences were not unexpected. The historical control group was defined based on the classification of "community-based." Since the determination of "community-based" was contingent on the total placement risk score it was expected that these individuals would be similar to the experimental group which were also, by definition, community-based. It was expected that the concurrent control group would also be considered to be more serious than the other two groups because, again by definition, these were offenders too serious to qualify for community-based intervention services. While these data revealed some important differences between the groups, the expectations were that the differences between the concurrent control group and the experimental and historical control group would actually be greater. Regardless, the availability of these data was important because it provides the opportunity to control for these basic differences and to determine if they are important factors in the production of recidivism.

Table 13a. Correlation Matrix: Placement Variables (n = 369).

	X1	X2	X3	X4
Age 1st Adjudication (X1)				
Prior Arrest(X2)	0.179*			
School Status(X3)	-0.039	0.085*		
Drug Use(X4)	-0.146**	0.037	0.163*	
Offense Seriousness(X5)	0.011	0.165*	0.160**	0.121**
Prob. Time of Offense(X6)	0.204**	0.339**	0.000	-0.168**
Prior Placement(X7)	-0.032	0.155**	-0.039	-0.031
Runaway Status(X8)	0.017	0.089*	0.026	0.142**
Last Grade(X9)	0.342**	0.033	0.170**	-0.055
Parental Commitment(X10)	-0.037	0.022	0.052	-0.012
Peer Relations(X11)	-0.025	0.153**	0.278**	0.211**
Total Risk Score(X12)	0.400**	0.539**	0.476**	0.246**

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

Tables 13a and 13b present correlation matrices of the 11 variables that comprise the cumulative total placement score and the total placement score itself.[31] As expected, the total placement score was significantly correlated with all of its component measures. The bivariate correlations were highest between total risk score and for prior arrest record (r=.539), and total risk score and offense seriousness (r=.557). Although significant ($p<.05$), the smallest bivariate correlations for total placement score were between itself and drug use (r=.246) and parental commitment (r=.236).

There were substantial levels of inter-item correlations between several of the individual indicators that comprise total placement score. In addition to the correlations between total placement score and other indicators, the largest significant bivariate correlations were between "last grade completed" and "age at first adjudication" (r=.342), and "probation at time of instant offense" and "prior arrest history" (r=.339). Except for "prior placement," "parental commitment" was not significantly correlated with other placement characteristics. The relationship between prior social service placement and

[31] A full correlation matrix of all variables included in various models Appendix C.

Table 13b. Correlation Matrix: Placement Variables (n=369).

	X5	X6	X7	X8	X9	X10	X11	X12
X1								
X2								
X3								
X4								
X5								
X6	0.200*							
X7	0.044	0.128**						
X8	0.036	0.030	0.258**					
X9	0.104**	0.073*	-0.037	-0.049				
X10	0.017	-0.005	0.107*	0.103**	0.026			
X11	0.162**	0.021	0.003	0.068	0.032	0.098**		
X12	0.557**	0.404**	0.259**	0.253**	0.386**	0.236**	0.503**	

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

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

parental commitment was not surprising considering social service placement is often a result of problems associated with families, especially parental problems.

There were numerous instances of negative correlations between the placement variables. "Age at first adjudication" was negatively correlated with school status (r=-.039), drug use (r=-.146), prior placement (r=-.032), and peer relations (r=-.250). Age at first adjudication should be expected to be negatively correlated with the other indicators. The variable was coded to assign higher values for younger offenders, and characteristic that reflects greater presumed risk.

Intake placement characteristics indicated the historical and concurrent control groups were slightly more seriousness offenders when compared to the experimental group. The differences were most pronounced for age at first adjudication, prior placements, offense seriousness, and peer relations. Delinquency theory has generally reported characteristics identified in the initial risk classification scheme differentiate delinquents from nondelinquents and serious delinquents from less serious delinquents.

Table 14. Recidivism for Study Groups – Binary Coding Scheme (n=376).

Study Group		None	1+	Total
Historical	Count	89	43	132
	Row %	67%	33%	100%
Concurrent	Count	81	28	109
	Row %	74%	26%	100%
Experimental	Count	83	52	135
	Row %	62%	39%	100%
Total	Count	253	123	376
	Row %	69%	31%	100%

Model Statistics	
x^2	4.512
d.f.	2
Sig.	.105

Initial Recidivism Measures

The first measures of recidivism are provided for all three sample populations. This first section analyses the relationship between study group membership, court identified delinquency risk factors, and recidivism. It was hypothesized that individuals assigned to the community-based intensive intervention program (experimental) would experience less recidivism than those assigned to traditional program services. The hypothesis was based on the understanding that delinquency is caused by the interaction of multiple delinquency risk-factors, but also because the experimental and historical control groups exhibit fewer delinquency risk factors. In order to make positive change in "delinquent careers," intervention services must be directed at the antecedent factors that underlie the problem (Howell, 2001).

Recidivism is a global measure of at least one arrest within eighteen months of the referral date for the instant offense.[32] This type of global measure is not the most

[32] In this case "recidivism" is restricted to new criminal violations and does not reflect court petitions for administrative action.

Table 15. Recidivism for Study Groups (n=376).

Study Group		None	1-2 Times	3+ Times	Total
Historical	Count	89	40	3	132
	Row %	67%	30%	2%	100%
Concurrent	Count	81	21	7	109
	Row %	74%	19%	6%	100%
Experimental	Count	83	45	7	135
	Row %	62%	33%	5%	100%
Total	Count	253	106	17	376
	Row %	67%	28%	5%	100%

Model Statistics	
x^2	8.510
d.f.	4
Sig.	.075

preferred method for operationalizing recidivism. It would be valuable to create operational definitions for different types of recidivism such as rearrests for serious personal crime, less serious personal crime, serious property crime, less serious property crime, status offense, and other violations. This would create the ability to understand not only if one program method is more effective for preventing recidivism, but more effective for preventing crimes that cause greater harm to society. However, only 123 of the original 376 individuals included in the analysis recidivated. When disaggregated by group membership and offense type, it could be difficult to establish a measure with substantial enough variation and numbers for inferential statistical analysis. More importantly, serious crime was a rare exception for this population. As such, the global measure will be used in this instance.

The recidivism measure coded in Table 14 was a binary coding scheme where a value of "1" indicated at least one court referral for a new criminal offense after referral for the instant offense. A larger proportion of juveniles adjudicated to the community-

based program (experimental group) experienced one or more authorized court referrals after program intake. For example, 39% (n=52) of the members of the experimental group had one or more referrals compared to approximately 27% for the historical control group and 33% for the concurrent control group. Although these differences do not reach statistical significance (x^2=4.512, d.f.=2, p.>.05), the differences served as an initial indication that individuals adjudicated to traditional, residential probation services recidivate less than those in community-based alternatives. This appears to be the case even though the previous review of the placement characteristics suggested those in the concurrent control group were more serious offenders than the others. It was originally hypothesized that community-based treatment would be a more effective form of intervention services since it would likely deliver more comprehensive services in a community setting.[33]

Table 15 further specified the bivariate relationship between group membership and recidivism by decomposing the number of future crimes into "none," "1-2," and "3+." The purpose of this analysis was to determine if there were differences in proportion of offenders who not only recidivated, but who were considered among the chronic recidivists, with chronic referring to those arrested and referred on three or more occasions.

A similar proportion of both the experimental and concurrent control groups were considered chronic recidivists (5% and 6% respectively), while the historical control

[33] An additional analysis was considered that operationalized recidivism in a manner that excluded arrests for status offenses. The concern was that members in the community-based treatment program might have been more likely to be arrested for minor offenses while they were on probation in the community. The analysis revealed similar findings that, regardless of whether status offenses were included or excluded, individuals in the experimental group recorded proportionately more instances of recidivism than either the historical or concurrent control groups.

group recorded proportionately fewer (2%). The group means were not significantly different (x^2=8.510, d.f.=4, p.>.05) but did approach statistical significance. It is likely larger cell sizes may have revealed statistically significant differences. This finding suggests there may be a cohort effect where offenders referred during one time period, in this case July 1, 1995 to June 30, 1996, were referred more than offenders in a previous cohort. This may be indicative of increased levels of criminality among a new cohort of juvenile offenders or of policy changes among the police or court personnel that increased the likelihood of arrest and referral.[34]

Table 16 provides more detailed recidivism information for different types of crimes. The purpose of this analysis was to provide an overview of differences among the three populations in type of future offending. Separate bivariate significance tests were computed for personal crime, property crime, and other offenses. The three outcome measures were binary variables with "1" indicating the presence of at least one instance of recidivism for that type of crime. The final column "any" is the same as computed in Table 15 and was included for comparison purposes. Except for property offenses, the three groups were not significantly different. Referring to property offenses, it was evident that individuals in the experimental group exhibited a significantly greater number of property offenses than both the historical and concurrent control groups.

One of the primary outcome measures considers the relative efficacy of community-based treatment in preventing future delinquency. Table 17 presents a

[34] It unlikely the differences are a result of increased levels of criminality between the arrest cohorts since the cohorts were in such close proximity (12 months apart).

Table 16. Recidivism by Crime Type (n=376).

		Personal	Property[a]	Other	Any
Historical	Count	8	18	24	43
	Row %	6%	14%	18%	33%
Concurrent	Count	7	16	10	28
	Row %	6%	15%	9%	26%
Experimental	Count	14	33	21	52
	Row %	10%	24%	16%	39%
Total	Count	29	67	55	123
	Row %	8%	18%	15%	33%

[a] Groups significantly different (x^2=6.358, d.f.=2, p<.05).

logistic regression model predicting the onset of recidivism from a series of independent variables that include age at instant offense, offense type, and placement variables.[35] Like linear regression, the logistic regression coefficient can be interpreted as the change in the dependent variable associated with a one-unit change in the independent variable. The model differs in that the slope of the curve varies depending on the value of the dependent variable (Menard, 1995: 43). The column labeled "B" represents the standardized regression coefficient. Standardizing the regression coefficient allows the measure to be compared across different independent variables coded on varying scales. The odds ratio represents the relationships between the independent variables and the

[35] "Total placement risk score" was excluded from the analysis because of problems associated with multi-collinearity. Problems of multi-collinearity arise when independent variables are highly correlated with one another. High multi-collinearity produces large variances for the slope estimates and large standard errors (Lewis-Beck, 1980: 59). Diagnostic tests available through linear regression analysis were used to test problems of collinearity. It is appropriate to employ diagnostic tests such as tolerance levels and variance inflation factors (VIF) from linear regression because the analysis tests linear combinations of the independent variables separate from their effects on the dependent variable (Lewis-Beck, 1980). Tolerance levels as high as .9 and VIF values nearing 2.5 can be considered the upper levels of acceptability to determine collinearity not to be a problem. VIF values as high as 2.78 are indicative of correlations nearing .8, levels generally considered high (Fox, 1991: 12). Models A_1 and B_1 in Table B-1 (Appendix B) detail collinearity diagnostics for the placement variables and total risk score for models that both exclude and include consideration of treatment modality. The VIF value for total placement risk is 75.750 (Model A_1) indicating almost perfect collinearity (1.0). Similar VIF value is evident in Model B1 (76.995). Thus, it is excluded from this analysis. Models A_2 and B_2 are the same as above but exclude total risk score. There are no apparent problems with multicollinearity when total risk score is excluded.

Table 17. Multivariate Logistic Regression Model. Official Recidivism as Dependent Variable (Full Sample, n=369).[a]

	B	S.E.	Wald	d.f.	Sig.	Odds Ratio
Constant	5.140	2.224	5.341	1	0.021	170.640
Age at Instant Offense [a]	-0.456	0.132	11.914	1	0.001	0.634
Offense Type [a]	-0.000	0.120	0.000	1	0.998	1.000
Placement Characteristics [b]						
Age 1st Referral	0.759	0.831	0.834	1	0.361	2.136
Prior Arrests	1.228	0.752	2.667	1	0.102	3.413
School Status	0.947	0.717	1.744	1	0.187	2.578
Drug Use	1.109	0.868	1.635	1	0.201	3.033
Offense Seriousness	0.730	0.595	1.503	1	0.220	2.074
Probation	0.119	0.871	0.019	1	0.892	1.126
Prior Placement	0.170	0.882	0.037	1	0.847	1.186
Prior Runaway	-1.282	1.476	0.754	1	0.385	0.278
Last Grade Completed	-1.074	1.088	0.974	1	0.324	0.342
Parental Commitment	-0.954	1.119	0.726	1	0.394	0.385
Peer Relations	0.525	0.786	0.446	1	0.504	1.691
Model Summary						
Model x^2	31.491					
d.f.	13					
sig.	0.003					
R_L^2	0.114					

[a] Seven cases excluded due to missing intake placement data.
[b] Variables transformed using natural log.

"odds" of being a recidivist. A value greater than "1" indicates increased odds, and a value less than "1" decreased odds (Menard, 1995).[36]

Recidivism was coded as a binary variable with "1" indicating the occurrence of at least one instance of recidivism during the 18 month follow-up period and "0"

[36] The "odds ratio" calculation has one major disadvantage. In the case of large unstandardized regression coefficients, the estimated standard error is inflated that can result in a Type II error, or a failure to reject the null hypothesis when the null hypothesis is in fact null. This problem is minimized in this situation by using log transformed values for the independent variables.

indicating no instances of recidivism.[37] The model was for the full sample population and did not incorporate sample characteristics (experimental or control groups) features. The model summary statistics indicate the chi-square distribution for the full model was statistically significant (x^2=31.491, d.f.=13, $p<.05$). Of all of the variables included in the model, age at instant offense was the only variable significantly associated with the onset of recidivism. The relationship was negative suggesting that older offenders recidivate less and younger offenders more. Older offenders were almost 40% less likely to recidivate than younger offenders. More specifically, a one unit decrease in age at instant offense was associated with a 40% increase in recidivism. This relationship was statistically significant even after controlling for intake placement factors such as drug use, peer relations, and parental commitment. This finding was consistent with previous that indicate age at arrest is highly predictive of future delinquency (Hawkins et al., 1998). The pseudo-R^2 indicates the linear combinations of the independent variables explained only a moderate amount of variation in the dependent variable.[38]

Table 18 builds on the previous analyses by entering study group membership into the model.[39] It was hypothesized that after controls were entered for background risk characteristics (intake placement variables), individuals exposed to YFS intervention program would recidivate less than those exposed to traditional probation services. To test this hypothesis, two dummy variables were entered into the model in a stepwise fashion. The first assigns a value of "1" for members of the historical control group, and

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[37] See Appendix B for multicollinearity tests.

[38] "Although one is tempted to think of this quantity as the proportion of variance explained by the model, it is not quite correct to do so" (Demaris, 1992: 53). Instead, it can be considered a rough approximation of the predictive efficacy of the model. The pseudo-R^2 tends to underestimate the explanatory power in logistic regression, a consequence of the binary coding for the dependent variable that limits variability.

[39] See Model B in Table B-1 (Appendix B) for multicollinearity tests. The model excludes "total risk score" from the logistic regression analysis because of apparent problems with multicollinearity. Exclusion of the variable reveals no apparent problems.

Table 18. Multivariate Logistic Regression Model of Official Recidivism Controlling For Experimental Group Membership. Official Recidivism as Dependent Variable (n=369).[a]

	B	S.E.	Wald	d.f.	Sig.	Odds Ratio
Constant	5.212	2.290	5.182	1	0.023	183.498
Age at Instant Offense [b]	-0.465	0.135	11.866	1	0.001	0.628
Offense Type [b]	-0.154	0.129	1.423	1	0.233	0.857
Placement Characteristics [b]						
Age 1st Referral	1.234	0.860	2.060	1	0.151	3.437
Prior Arrests	1.036	0.782	1.755	1	0.185	2.818
School Status	1.220	0.755	2.608	1	0.106	3.386
Drug Use	1.158	0.919	1.586	1	0.208	3.182
Offense Seriousness	1.157	0.632	3.353	1	0.067	3.181
Probation	0.522	0.903	0.334	1	0.563	1.686
Prior Placement	0.750	0.914	0.674	1	0.412	2.117
Prior Runaway	-0.548	1.518	0.130	1	0.718	0.578
Last Grade Completed	-0.985	1.132	0.758	1	0.384	0.373
Parental Commitment	-0.857	1.161	0.544	1	0.461	0.425
Peer Relations	1.014	0.837	1.470	1	0.225	2.758
Historical Group	-0.552	0.290	3.618	1	0.057	0.576
Concurrent Group	-1.049	0.327	10.303	1	0.001	0.350
Model Summary						
Model x^2	41.743					
d.f.	15					
sig.	0.000					
R_L^2	0.151					

[a] Seven cases excluded due to missing intake placement data.
[b] Variables transformed using natural log.

the second a value of "1" for those in the concurrent control group. Entering both variables into the model simultaneously established "experimental" as the reference category.

The model summary statistics indicated a significant "goodness of fit" (x^2=41.743, d.f.=15, $p<.05$) among the independent and the dependent variables. Thus, the linear combination of the independent variables predicted a significant amount of variation in the dependent variable. When group membership was entered into the

model, the relationship between age at instant offense and recidivism remained significant. Regardless of treatment modality or other background characteristics, individuals arrested at a younger age were significantly more likely to recidivate.

The final preliminary recidivism measure stepped time in detention[40] into the model. Number of days in detention, a control analogous to "time at risk," an adjustment recommended (Winner, Lanza-Kaduce, Bishop, & Frazier, 1997) to account for time out of the community that reduces the ability to participate in certain type of criminal activities. The findings from Table 19 did little to clarify the relationships between background characteristics, delinquency risk factors, treatment modality, and official recidivism. With the addition of detention days, the overall model goodness of fit (see Table 19)[41] remained significant (x^2=42.734, d.f.=16, p<.05) but there was no effect on the pseudo-R^2 (.15). Referring to the independent variables, age at instant offense remained significant and the odds ratio was also unchanged. The addition of detention days had a modest effect on the significance level for prior arrests and drug use but little other practical significance. Membership in the concurrent control group remained

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[40] Days in detention refers to number of days detained in the County's juvenile detention facility. This measure, however, is problematic in that it does not account for other type of social service placements that may, and often did, occur in institutions besides the County juvenile detention facility. Thus, the measure may systematically underestimate the actual "time at risk," especially for the concurrent control group which would have experienced the most out of County placements. However, the measure does serve as a baseline control for time at risk.

Mean detention days were calculated for all three groups. As expected, the most number of days in detention was reported for the concurrent control group ($\bar{x}$ = 54 s.d.=62, std. error=5.9) followed by the historical control group ($\bar{x}$ =45, s.d.=51, std. error=4.44) and the experimental group ($\bar{x}$ = 40 s.d.=62, std. error=4.44). These group means are not statistically significant (F=1.41, p.>.05). The large standard deviations in comparison to the means suggest a potential problem with high levels of variance. To account for this problem, the variable was transformed using the natural log. Transforming the variable effectively reduced the variance in the distribution. The group mean differences of the transformed variable are significantly different (F=15.31, p<.001).

[41] The Variance Inflation Factors and Tolerance tests presented in Table B-2 (Appendix B) indicate multicollinearity is non-problematic in this model.

Table 19. Multivariate Logistic Regression Model Controlling For Experimental Group Membership, Days in Detention Included (n=369).[a]

	B	S.E.	Wald	d.f.	Sig.	Odds Ratio
Constant	5.576	2.260	6.085	1	0.014	263.907
Age at Referral [b]	-0.492	0.134	13.435	1	0.000	0.612
Offense Type [b]	-0.078	0.125	0.388	1	0.533	0.925
Placement Characteristics [b]						
Age 1st Referral	1.070	0.843	1.611	1	0.204	2.914
Prior Arrests	1.282	0.774	2.745	1	0.098	3.603
School Status	1.086	0.737	2.172	1	0.141	2.964
Drug Use	1.620	0.905	3.203	1	0.074	5.055
Offense Seriousness	1.072	0.622	2.964	1	0.085	2.920
Probation	0.299	0.900	0.110	1	0.740	1.348
Prior Placement	0.420	0.911	0.213	1	0.645	1.522
Prior Runaway	-0.840	1.518	0.306	1	0.580	0.432
Last Grade Completed	-1.086	1.108	0.960	1	0.327	0.338
Parental Commitment	-0.749	1.141	0.431	1	0.512	0.473
Peer Relations	0.838	0.818	1.049	1	0.306	2.312
Det Days [b]	0.083	0.201	0.170	1	0.680	1.087
Historical	-0.299	0.288	1.080	1	0.299	0.741
Concurrent	-1.073	0.333	10.382	1	0.001	0.342
Model Summary						
Model x^2	42.734					
d.f.	16					
sig.	0.000					
R_L^2	0.152					

[a] Seven cases excluded due to missing intake placement data.
[b] Variables transformed using natural log.

significant. Members of this group were almost 65% less likely to recidivate than the experimental group.

This initial recidivism analysis revealed mixed support for the argument that the delinquency risk factors identified by the developmental perspective were important considerations in the understanding why certain individuals recidivate more than others. The findings from Tables 18 and 19 suggested some basic support for the developmental

perspective based on the finding that individuals who offended earlier (e.g., age at instant offense) were more likely to recidivate than those who were older when referred for the instant offense. Yet, in general, the independent variables stepped into the equation and hypothesized to be important predictors of recidivism failed to do so. From the developmental perspective, it was expected that stage-salient issues such as school and peer issues would have been important factors in predicting recidivism. The mean age for all three populations was 15 so school and peer issues should manifest themselves as stage-salient issues if the theory explains delinquent behavior as posited. Except for age at referral for instant offense, none of the stage-salient issues found by previous research to be important to the onset of delinquency were predictive of recidivism for adjudicated juvenile offenders.

These findings may indicate a need to go no further in regards to understanding why some offenders recidivate and others do not. However, several questions remain unanswered in determining the efficacy of comprehensive community-based treatment programs. First, was the seeming failure of the alternative treatment program explained by delinquency risk factors that were not adequately reflected in the intake placement variables? If the intake placement assessment did not effectively operationalize the full dynamics of "risk," inclusion of these variables would not enter in the appropriate controls for background characteristics. Second, do neighborhood characteristics mediate the effectiveness of intervention programs? If individuals from extraordinarily disorganized or impoverished neighborhoods were intentionally or unintentionally over sampled to the experimental group it could be they are subject to more extensive negative neighborhood influences. Third, are some programs more effective than others because

they are better able to "fix" or change delinquency risk factors than others? Program models often posit intervention domains that are linked to theoretical frameworks stipulating specific causal mechanisms. It would be expected that individuals experiencing greater levels of positive change in delinquency risk factors would recidivate less. Finally, is "success" attributable to differences in the amount of programming received? Some have argued rehabilitation programs are not effective because they fail to deliver any meaningful rehabilitation services. If so, it could be differences in quantity of treatment that explains differences in relative success.

The questions posited above shape the current research. Evaluation research of intervention programs often fails to address these questions. The typical evaluation proposes a program model and then measures relative "success" comparing multiple groups. This research will delve into these questions by performing additional analysis on the concurrent control and experimental groups. Individuals in these two groups were subjected to a series of structured interviews that provided the opportunity to consider the potential effected of these issues.

Comparison of T_1 Delinquency Risk Factors

A series of four structured interviews were administered to the experimental and concurrent control groups. The first interview was conducted at or near intake (T_1), the second after 6 months of program participation (T_2), the third after 12 months (T_3), and the fourth 18 months (T_4) after adjudication. The interviews were assessments of delinquency risk factors, background and characteristics, and self-reported delinquency. This provided a much more comprehensive picture of each individual than was available from review of the intake placement data alone. The experimental and concurrent control

groups were compared to determine the extent to which they shared T_1 delinquency risk factors. Research reports individuals with increased delinquency risk factors demonstrate earlier onset of delinquency, chronic offending (Hawkins et al., 1992; Hawkins et al., 1998; Heilbrun et al., 2000; Loeber, 1990; Maxwell & Maxwell, 2000; Scholte, 1992; White, Loeber, Stouthamer-Loeber, & Farrington, 1999; Wilson & Howell, 1995), and also respond less favorably to treatment efforts (Davidson et al., 1990; Lipsey, 1999; Lipsey, 2000; Lipsey & Wilson, 1998). Values for the risk factors were computed for negative attitudes toward school, negative school behavior, favorable attitude toward delinquency, self-esteem, prosocial values, exposure to delinquent peers, positive family involvement, alcohol/drug use, stressful life events, and community involvement (Table 20). Index scores for each risk factor were determined by computing the mean scale score over a series of indicators.[42]

Negative attitude toward school represents the degree to which individuals believed they failed in their school environment. Lower values indicate more affirmative belief that success can be achieved in the school environment, and higher values indicate that success is less likely to be achieved. The group means were approximately 2.4 and were not statistically distinguishable ($F=.563$, $p<.05$).

Negative school behavior reflects levels of participation in problematic behaviors while on school property. The scale covers a wide-range of problematic behavior in school, everything from cheating on tests and being truant to committing acts of vandalism. Higher values on this scale indicate an individual participated in higher levels of problematic school behavior. Members of the concurrent control group reported

[42] See "Scaling Procedures" in Chapter 3.

Table 20. Descriptive Statistics for T_1 Risk Factors (n=178)[a].

T_1 Risk Factors	X	Std. Dev.	Std. Error	Min	Max	Mean Square	F	Sig.
Negative Attitude Toward School (AS_{T1})						0.549	0.563	0.454
Concurrent	2.448	0.939	0.106	1.00	5.13			
Experimental	2.336	1.024	0.103	1.00	5.00			
Total	*2.386*	*0.986*	*0.074*	*1.00*	*5.13*			
Negative School Behavior (SB_{T1})						9.655	5.63	0.019
Concurrent	3.466	1.365	0.154	1.17	6.17			
Experimental	2.997	1.264	0.127	1.00	7.00			
Total	*3.205*	*1.327*	*0.099*	*1.00*	*7.00*			
Favorable Attitude Toward Delinquency (SD_{T1})						0.039	0.169	0.681
Concurrent	3.480	0.427	0.048	2.33	4.00			
Experimental	3.510	0.518	0.052	1.22	4.00			
Total	*3.497*	*0.479*	*0.036*	*1.22*	*4.00*			
Self-esteem (SET1)						0.149	1.015	0.315
Concurrent	2.932	0.407	0.046	2.00	3.60			
Experimental	2.990	0.363	0.036	2.20	3.60			
Total	*2.964*	*0.383*	*0.029*	*2.00*	*3.60*			
Prosocial Value (PVT1)						0.004	0.021	0.884
Concurrent	3.437	0.444	0.050	2.00	4.00			
Experimental	3.428	0.386	0.039	2.50	4.00			
Total	*3.432*	*0.412*	*0.031*	*2.00*	*4.00*			
Exposure to Delinquent Peers (EP_{T1})						2.346	3.435	0.065
Concurrent	2.351	0.829	0.093	1.00	4.19			
Experimental	2.120	0.825	0.083	1.00	4.50			
Total	*2.222*	*0.832*	*0.062*	*1.00*	*4.50*			
Positive Family Involvement (FIP_{T1})						0.552	0.248	0.619
Concurrent	6.435	1.501	0.169	0.00	8.63			
Experimental	6.323	1.486	0.149	1.75	8.88			
Total	*6.373*	*1.489*	*0.112*	*0.00*	*8.88*			
Alcohol/Drug Use (DU_{T1})						13.383	7.946	0.005
Concurrent	1.952	1.424	0.160	0.00	6.00			
Experimental	1.400	1.187	0.119	0.00	5.40			
Total	*1.645*	*1.323*	*0.099*	*0.00*	*6.00*			
Stressful Life Events (SL_{T1})						0.461	22.351	0.000
Concurrent	1.361	0.132	0.015	1.10	1.74			
Experimental	1.463	0.152	0.015	1.13	1.81			
Total	*1.418*	*0.152*	*0.011*	*1.10*	*1.81*			
Community Involvement (CI_{T1})						0.437	0.739	0.391
Concurrent	2.648	0.776	0.087	0.33	4.11			
Experimental	2.748	0.763	0.077	0.78	4.78			
Total	*2.703*	*0.768*	*0.058*	*0.33*	*4.78*			

[a] Experimental (n=99), concurrent (n=79).

significantly (F=5.63, p<.05) more negative school behavior ($\bar{x}$ = 3.47) than the experimental group ($\bar{x}$ = 2.99).

The groups were not different on favorable attitudes toward delinquency, levels of self-esteem, prosocial values, exposure to delinquent peers, or positive family involvement. Higher values for attitudes toward delinquency were suggestive of attitudes approving of delinquent activity. Those with higher values for self-esteem are said to think more positively about themselves and their abilities than their counterparts. Prosocial values measure the extent to which mainstream values such as the need to work hard are shared. Positive family involvement operationalizes different levels of participation in positive activities with family members.

The groups did, however, differ significantly on measures of alcohol and drug use, and exposure to stressful life events. Members of the concurrent control group reported significantly more drug use (F=7.95, p<.05) than those in the experimental. This finding should be considered important because prior research has found substance abuse is predictive of delinquency (Dembo, Williams, Fagan, & Schmeidler, 1993; Grobsmith, 1989; Hawkins et al., 1992; Stice et al., 1998; Teplin, 2001; White et al., 1999). In contrast, members of the experimental group reported significantly more cumulative stressful life events (F=22.351, p.<.001) than those in the concurrent control group. Exposure to stressful life events increases aggression (Attar, Guerra, & Tolan, 1994; Hoffman & Cerbone, 1999), and thus was expected to effect delinquency and recidivism.

Consideration of T_1 delinquency risk factors indicates the groups were remarkably similar to one another. There were no significant differences between group means on most of the indicators except for negative school behavior, alcohol and drug use, and

stressful life events. Except for stressful life events, the data indicate members of the concurrent control group exhibit greater risk for delinquency and increased future delinquency. This finding was consistent with findings from the analysis of intake placement variables. However, members of the experimental group report exposure to significantly more stressful life events than their counterparts.

Reductions in Risk

Effective intervention programs are those that reduce the risk factors associated with delinquency (Catalano, Arthur, Hawkins, Berglund, & Olson, 1998). It was hypothesized that the Youth and Family Studies program would be less intensive than residential placement in terms of intensive monitoring of the individuals since youth would only be supervised by staff while receiving services. However, was also hypothesized the community-based program would still be a more effective intervention model because it delivered targeted, stage-salient services to problem areas commonly associated with delinquency. This systematic service delivery model was hypothesized to not only produce a greater reduction in recidivism than traditional services, but was also hypothesized to be more effective in reducing the risk factors associated with delinquency.

Data presented in Table 21 indicated changes in delinquency risk factors targeted by intervention services. The measures represent changes in the raw scores and were computed with the following formula ($T_{3k} - T_{1k}$) where "k" represents the construct of interest, and represent *changes in risk.* As discussed in Chapter 3, change scores were computed using T_1 and T_3 because it provided enough time for an intervention to take hold but not so long as to expect dissipation of the effect. Research that employs too

Table 21. Mean Change in Delinquency Risk Factors (n=178).

T_1 Risk Factors	X	Std. Dev.	Std. Error	Min	Max	Mean Square	F	Sig.
Negative Attitude Toward School (AS Change)						0.666	0.459	0.499
Concurrent	-0.386	1.169	0.131	-3.500	2.630			
Experimental	-0.263	1.231	0.124	-3.250	2.880			
Total	-0.318	1.202	0.090	-3.500	2.880			
Negative School Behavior (SB Change)						3.478	1.320	0.252
Concurrent	-1.185	1.759	0.198	-5.000	4.170			
Experimental	-0.903	1.506	0.151	-4.920	2.920			
Total	-1.028	1.625	0.122	-5.000	4.170			
Favorable Attitude Toward Delinquency (AD Change)						0.343	1.171	0.281
Concurrent	0.020	0.525	0.059	-1.330	1.440			
Experimental	-0.068	0.553	0.056	-2.110	1.440			
Total	-0.029	0.541	0.041	-2.110	1.440			
Self-esteem (SE Change)						0.421	2.188	0.141
Concurrent	-0.157	0.464	0.052	-1.400	1.400			
Experimental	-0.059	0.417	0.042	-1.200	0.800			
Total	-0.103	0.440	0.033	-1.400	1.400			
Prosocial Value (PV Change)						0.019	0.072	0.789
Concurrent	-0.027	0.519	0.058	-1.500	1.170			
Experimental	-0.007	0.506	0.051	-1.000	1.500			
Total	-0.016	0.510	0.038	-1.500	1.500			
Exposure to Delinquent Peers (EP Change)						0.074	0.087	0.768
Concurrent	-0.197	0.985	0.111	-2.940	1.600			
Experimental	-0.156	0.868	0.087	-3.250	2.130			
Total	-0.174	0.919	0.069	-3.250	2.130			
Positive Family Involvement (FIP Change)						6.290	1.493	0.223
Concurrent	0.822	2.271	0.256	-6.880	7.880			
Experimental	0.444	1.860	0.187	-4.250	5.880			
Total	0.611	2.055	0.154	-6.880	7.880			
Alcohol/Drug Use (DU Change)						20.810	8.496	0.004
Concurrent	-0.927	1.780	0.200	-5.200	2.250			
Experimental	-0.238	1.370	0.138	-5.400	2.800			
Total	-0.544	1.598	0.120	-5.400	2.800			
Stressful Life Events (SL Change)						0.342	4.824	0.029
Concurrent	0.181	0.275	0.031	-0.580	0.710			
Experimental	0.092	0.259	0.026	-0.690	0.680			
Total	0.131	0.269	0.020	-0.690	0.710			
Community Involvement (CI Change)						2.702	2.803	0.096
Concurrent	-0.183	0.972	0.109	-3.220	2.110			
Experimental	0.065	0.990	0.100	-2.670	3.890			
Total	-0.046	0.987	0.074	-3.220	3.890			

short a follow-up period runs the risk of over inflating the effect size of treatment outcomes (Lipsey & Derzon, 1998). Both the experimental and concurrent control group experienced several reductions in delinquency risk factors, or conversely, an increase in protective factors. For example, both groups experienced decreases in negative attitudes toward school, negative school behavior, exposure to delinquent peers, and decreases in drug use. Individuals in the experimental group also reported a modest decrease in favorable attitudes toward delinquency. Members of the concurrent control group reported significantly greater reductions in alcohol and drug use than experimental youth. This may be a function of less opportunity stemming from residential placement.

Both groups also reported increases in positive family involvement. While the experimental group reported a modest increase in community involvement, the concurrent control group experienced a modest decrease. The decrease makes sense since members of the concurrent control group were in residential placement programs and therefore unable to participate in community activities to the same extent as the experimental group. For unknown reasons, both groups also reported decreases in self-esteem and prosocial values. From the perspective of self-esteem, it is possible the process of being labeled delinquent is responsible for this phenomenon, something Leger (1981) has suggested as a possible outcome of formal processing in the juvenile justice system. One delinquency risk factor increased for both groups, stressful life events, and the mean increase for the concurrent control group ($\bar{x} = .18$) is significantly ($F=.342$, $p<.05$) higher than the experimental ($\bar{x} = .09$).

Notwithstanding a few notable exceptions, both groups experienced risk factor changes in the expected directions. However, it was hypothesized that the changes would

be significantly more positive for members of the experimental group. As can been seen in Table 21, the differences were only significant for reductions in alcohol and drug use and an undesired increase in stressful life events. While the significant differences in alcohol and drug use are noteworthy and important, the expectation was that the differences would be more comprehensive. It is important to try to understand *why* there are not more substantial differences in risk factor changes between the two populations. To do so, two related analyses were conducted. The first compared the experimental and concurrent control group on levels of programming they received while on probation. Next, bivariate correlation analysis detailed the relationships between varying levels of programming services and risk factor change. This step was important in deciding if the "failure" to create significantly more positive change is a result of a failure in treatment modality or a failure to effectively deliver intervention services.

Programming Services

Several research questions have been proposed that seek to determine the relationship between levels and types of programming and both changes in delinquency risk factors and recidivism outcome measures. Lipsey and Wilson (1998) argued intervention programs can be effective in reducing recidivism, but characteristics of the program itself are important considerations in determining why some programs are more effective than others.

Levels and types of programming were determined by a series of questions administered during the structured interviews. Respondents were asked to identify up to three specific programs they had participated in since they were placed on probation. A series of twenty-two questions were then asked about each program individually. For

Table 22. Comparison of Programming Totals (n=178).

Programming Services	N	$\bar{X}$	Std. Dev.	Std Error	Min	Max	Mean Square	F	Sig.
Counseling							70.204	0.392	0.532
Concurrent	79	17.6	12.4	1.4	14.8	20.3			
Experimental	99	16.3	14.2	1.4	13.5	19.1			
Total	178	16.9	13.4	1.0	14.9	18.8			
Educational							207.106	0.700	0.404
Concurrent	79	22.7	17.9	2.0	18.7	26.8			
Experimental	99	20.6	16.6	1.7	17.3	23.9			
Total	178	21.5	17.2	1.3	19.0	24.1			
Job Skills							656.091	6.978	0.009
Concurrent	79	12.2	9.7	1.1	10.1	14.4			
Experimental	99	8.4	9.7	1.0	6.4	10.3			
Total	178	10.1	9.9	0.7	8.6	11.5			
Recreational							439.234	1.489	0.224
Concurrent	79	24.1	17.5	2.0	20.1	28.0			
Experimental	99	20.9	16.9	1.7	17.5	24.3			
Total	178	22.3	17.2	1.3	19.7	24.8			

example, after providing the names of each program, respondents were asked how often they "attend group meetings," "learn job skills," and "attend academic classes" for each identified program. Programming services were grouped into counseling services, educational programs, job skills training, and recreational opportunities. Frequency was measured on a nine point scale that ranged from "never" to "2-3 times a day." Each construct (e.g., counseling) is comprised of 3 to 5 indicators that were aggregated within and then across programs.

Table 22 summarizes the program services received by members of both the experimental and concurrent control groups.[43] It was hypothesized that individuals in the community treatment program would receive more comprehensive services than those in

[43] Respondents were asked to identify up to 4 different programs they participated in over the time period covered in the interviews. They were then asked a series of questions about the specific types of services received for each program separately. The indicators were then combined to represent the following types of services: counseling services, educational services, job skills training, and recreational services. Thus, each measure represents multiple indicators across one or more programs. The distributions for all four measures were large and not normal. Future analyses used the natural log transformed figures.

traditional probation services. As a broad based intervention program that targeted family, education, and social causes of delinquency the experimental group was expected to receive more services, experience positive changes in delinquency risk factors, and ultimately recidivate less. Although similar, the mean scores indicate the concurrent control group received more average programming services in all categories. The job skills mean for the concurrent control group's ($\bar{x} = 12.23$) mean is significantly higher ($F=6.978$, $p<.05$) than the experimental ($\bar{x} = 8.36$).

If, as hypothesized, levels of programming are important predictors of changes in risk factors and recidivism, it should be expected that those receiving more services should exhibit more favorable outcomes measures. The evidence accumulated thus far provides support for this conclusion. Although both the intake placement variables and the delinquency risk factors indicated the concurrent control group exhibit increased levels of "risk" for recidivism, they experienced significantly less recidivism than their counterparts in the community-based treatment model. At this point the relationship remains speculative. Bivariate and multivariate models will follow that address this relationship in greater depth.

Risk Factor Changes and Programming Nexus

Tables 23a and 23b detail bivariate correlations between delinquency risk factor change scores and measures of intervention programming. Many of the change scores were significantly correlated and in the expected directions. Decreases in negative attitude toward school were significantly correlated with negative school behavior ($r=.308$) and indicates individuals with decreases in negative attitudes also reported decreases in negative school behavior and that increases in negative attitudes were

Table 23a. Bivariate Correlations Among Risk Factor Change Scores and Programming (n=283).

Correlations	X1	X2	X3	X4	X5
Negative Attitude Toward School(X1)					
Negative School Behavior(X2)	0.308**				
Favorable Attitude Toward Delinquency(X3)	-0.304**	-0.195**			
Self-esteem(X4)	-0.136*	-0.074	0.009		
Prosocial Values(X5)	-0.084	-0.097	0.281**	0.086	
Exp. Delinquent Peers(X6)	0.248**	0.410**	-0.149*	-0.079	-0.120*
Positive Family Involvement(X7)	-0.079	0.055	0.149*	-0.008	0.104
Drug Use(X8)	0.284**	0.559**	-0.312**	-0.193**	-0.132*
Stressful Life Events(X9)	-0.148*	-0.512**	-0.034	0.149*	0.050
Community Involvement(X10)	-0.199**	-0.171**	0.273**	0.082	0.121*
Counseling(X11)	-0.159**	-0.267**	0.092	0.092	0.087
Educational(X12)	-0.189**	-0.282**	0.081	0.055	0.076
Job Skills(X13)	-0.110	-0.241**	0.075	0.089	0.097
Recreational(X14)	-0.003	-0.116	0.029	0.136	0.070

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

correlated with increases in negative school behavior. Similarly, the drug use change score was also positively associated with negative attitudes toward school (r=.284) and negative school behavior (r=.559). A change in exposure to delinquent peers was significantly correlated with drug use (r=.335). This suggests that a decrease in exposure to delinquent peers is significantly associated with decreases in drug use. Visual inspection of the delinquency risk factor change scores does not indicate problems with multi-collinearity.

Tables 23a and 23b also present bivariate correlations between the programming levels and risk factor change scores. Aggregate measure of counseling services were significantly and negatively correlated with negative attitude toward school (r=-.159), negative school behavior (r=-.267), and drug use (r=-.255). Thus, the more counseling someone received the more they were to experience decreases in school and drug use

Table 23b. Bivariate Correlations Between Risk Factor Change Scores and Programming (n=283).

	X6	X7	X8	X9	X10	X11	X12	X13	X14
X6									
X7	-0.075								
X8	0.335**	0.056							
X9	-0.468**	-0.095	-0.424**						
X10	-0.050	0.217**	-0.299**	0.049					
X11	-0.075	-0.120*	-0.255**	0.136*	0.062				
X12	-0.076	-0.110	-0.278**	0.147*	0.071	0.972**			
X13	-0.045	-0.137*	-0.276**	0.127*	0.113	0.895**	0.88**		
X14	0.073	0.120	-0.255**	-0.016	0.251*	0.521**	0.604**	0.413**	

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

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

problems. Counseling was expected to increase positive family involvement, yet for an unknown reason the data indicate a significant negative correlation (r=-.120). Educational services affected the change scores in a similar fashion. Educational programming was negatively correlated with negative attitudes toward school (r=-.189), negative school behavior (r=-.282), and drug use (r=-.278). Both counseling and educational services had significant, positive relationships with stressful life events. Job skills training also had a significant, negative correlation with negative school behavior (r=-.241) indicating problematic school behavior decreased as individuals were exposed to job skills training. A significant, negative relationship was also evident between job skill training and drug use. Finally, recreational opportunity was significantly and negatively correlated with drug use (r=-.276) and community involvement (r=.251).

As hypothesized, there were significant correlations between characteristics of programming services delivered to the entire population and changes in delinquent risk factors. Comprehensive intervention services resulted in significant reductions in delinquency risk factors and increases in protective factors. The most consistent

reductions were reported for counseling, educational, and job skills services. Although significant reductions in delinquency risk factors were not linked to levels of recreational services in as consistent a fashion, the data support the preliminary argument that it is important to consider the operational characteristics of services and outcome measures.

Final Recidivism Measures

Recidivism analyses presented earlier suggested that, compared to the experimental group, both the historical and concurrent control groups were nearly 65% less likely to recidivate within the 18 month follow-up time frame. This relationship was apparent even when controls were established for important background characteristics such as age at arrest for instant offense, instant offense crime type, and intake placement characteristics. The initial findings indicated the treatment modality itself, independent of these important characteristics, was a significant predictor of "success." It was hypothesized, however, that the apparent failure of the Youth and Family Studies program to provide intervention services that were more effective in reducing delinquency compared to traditional services was explained by characteristics not fully conceptualized by previous models. Several hypotheses were advanced arguing relative levels of success or failure in treatment efforts is explained by consideration of "risk factors" at the time of intake, the level of programming services individuals received during programming efforts, and any apparent change in risk factors that is expected to be attributable to treatment services.

Tables 20-23 specified that there are several important differences between the experimental and concurrent control group. Similar to the earlier conclusions, the concurrent control group generally included more serious offenders. They exhibited

more significant problems with delinquency risk factors in the areas of prosocial values and alcohol/drug use. However, the concurrent control group experienced statistically significant decreases in stressful life events. Although the concurrent control group reported greater problems with delinquency risk factors, there were few significant differences in the extent of "rehabilitation" as measured by changes in the risk factors. The experimental group experienced moderate success in reducing consumption of drugs and alcohol, but also surprisingly experienced more stressful life events than their counterparts in traditional probation services. The relationships between these characteristics remain unclear at this point.

Tables 24-27 integrate the additional elements collected through the structured interviews into logistic regression models. These models allow for consideration of the complex reasons why some intervention modalities were more successful than others in rehabilitating juvenile offenders. The models will consider the impact of each grouping variables independently, and then a fully integrated model. For each model, the relationship between the predictor variables and recidivism will be considered independent of treatment modality, and then secondary models step in treatment modalities to determine how they mediate the relationships. The first model will enter neighborhood characteristics into a model similar to Table 19 to determine the extent to which neighborhood context effects recidivism. Subsequent models will then consider the independent relationships between T_1 risk factors, change in risk factors as measured by the formula $X_{iT3} - X_{iT1}$ where X_i represents each delinquency risk factor, and the effects of intervention programming. The final model then represents an integrated model that considers the effects of all simultaneously.

Table 24 is similar to the model presented on the full sample (historical control, concurrent control, and experimental groups) in Table 19, but several additional features were integrated into the prediction models that were not available for the historical control group. The two neighborhood characteristics, social disorganization and socio-economic status, were considered in this model as was the variable "total intake." Total intake is an index variable of all of the intake risk classification variables.[44]

Model A indicated that when the model was reduced to the experimental and concurrent control groups, the model failed to achieve statistical significance. Thus, the linear combination of independent variables did not explain a significant amount of variance in the dependent measure, recidivism.[45] In addition to the lack of statistical significance for the model, none of the independent variables achieved the level of statistical significance. The variable closest to achieving statistical significance (p=.054), age at instant offense, was negatively related to recidivism signifying that younger offenders recidivate more than older offenders. Model B in Table 24 was the same as the previous but entered group membership (concurrent) into the equation. "Concurrent" was a binary coded variable where the value "1" reflects membership in the concurrent control group and held the experimental group as the reference category.

Model B in Table 24 also did not achieve statistical significance, but there were a few notable changes in significance and direction of relationship for several of the independent variables. In Model B, age at referral for instant offense was significantly positive indicating those referred at younger ages were approximately 30% more likely to recidivate. Total intake score was also significant and indicated those that demonstrated

[44] The intake risk classification variables are highly correlated with the total risk score (see Tables 12a and 12b), and the use of a single measure reduces the complexity of subsequent models.
[45] Variance Inflation Factors in Table B-4 (Appendix B) indicate minor multi-collinearity problems.

Table 24. Multivariate Logistic Regression: Background Characteristics (n=178).

	Model A							Model B						
	B	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**		**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**
Age Instant	-0.307	0.159	3.698	1	0.054	0.736	Age Instant	-0.349	0.163	4.570	1	0.033	0.706
Instant Offense	0.072	0.166	0.188	1	0.664	1.075	Instant Offense	0.011	0.170	0.004	1	0.951	1.011
Total Intake	0.123	0.070	3.098	1	0.078	1.131	Total Intake	0.183	0.078	5.409	1	0.020	1.200
Soc Dis	-0.033	0.279	0.014	1	0.907	0.968	Soc Dis	-0.017	0.284	0.004	1	0.952	0.983
SES	-0.038	0.285	0.017	1	0.895	0.963	SES	-0.060	0.292	0.042	1	0.837	0.942
Det Days	-0.201	0.281	0.514	1	0.474	0.818	Det Days	-0.014	0.297	0.002	1	0.961	0.986
Concurrent	-	-	-	-	-	-	Concurrent	-0.822	0.422	3.800	1	0.051	0.440
Constant	2.534	2.568	0.974	1	0.324	12.606	Constant	2.766	2.612	1.121	1	0.290	15.887
x2	4.379						**x2**	5.687					
d.f.	5						**d.f.**	6					
Sig.	0.496						**Sig.**	0.459					
R2L	0.034						**R2L**	0.046					

greater risk via the intake instrument were 20% more likely to recidivate. The addition of group membership resulted in a slight increase in explained variance, but an increase that was of little practical importance. For both Models A and B in Table 24, the measures of neighborhood disorder and low socio-economic status were negatively associated with recidivism. This provided evidence that individuals residing in highly disorganized and impoverished communities at the time of their arrest are more likely to recidivate.

The next set of regression equations incorporates basic background variables and T_1 risk factors (Tables 25a and 25b). Background variables include age at instant offense, instant offense type, total intake placement score (index value), neighborhood characteristics, days in detention, and an index of T_1 delinquency risk factors. Although it would have been desirable to consider all T_1 delinquency risk factor independently, it was not possible due to multi-collinearity in the model. To account for problems with multi-collinearity two series of models were analyzed. In the first (Table 25a), T_1 risk was represented by an index of all risk factors that account for the combined effects of risk. In Table 25b, the analysis was restricted to include only T_1 negative school behavior, T_1 alcohol/drug use, and T_1 stressful life events. These were the only three T_1 risk factors on which the two populations differed[46] (see Table 20). For both Tables, the first model (Model A) details the relationships without entering group membership into the equation and the second (Model B) represents the complete model.

Model A did not reach statistical significance in Table 25a, and except for age at instant offense which only nears statistical significance (p=.055), the remainder of the predictor variables failed to yield significance levels close to statistical significance. Little was added by considering T1 negative school behavior, drug/alcohol use, and

[46] Collinearity diagnostics in Table B-5 (Appendix B).

Table 25a. Multivariate Logistic Regression: T1 Risk Factors (n=178).

	Model A							Model B					
	B	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**		**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**
Age Instant	-0.306	0.16	3.682	1	0.055	0.736	Age Instant	-0.348	0.163	4.550	1	0.033	0.706
Instant Offense	0.072	0.166	0.186	1	0.666	1.074	Instant Offense	0.006	0.171	0.001	1	0.974	1.006
Total Intake	0.121	0.071	2.908	1	0.088	1.128	Total Intake	0.179	0.079	5.154	1	0.023	1.197
T1 Risk	-0.031	0.177	0.031	1	0.86	0.969	T1 Risk	-0.093	0.181	0.267	1	0.605	0.911
Soc Dis	-0.033	0.279	0.014	1	0.905	0.967	Soc Dis	-0.018	0.283	0.004	1	0.949	0.982
SES	-0.033	0.286	0.013	1	0.909	0.968	SES	-0.047	0.292	0.026	1	0.872	0.954
Det Days	-0.201	0.281	0.51	1	0.475	0.818	Det Days	-0.002	0.298	0.000	1	0.994	0.998
Concurrent	-	-	-	-	-	-	Concurrent	-0.860	0.429	4.016	1	0.045	0.423
Constant	2.547	2.571	0.981	1	0.322	12.768	Constant	2.798	2.620	1.141	1	0.285	16.412
X^2	7.637						X^2	11.792					
d.f.	7						**d.f.**	8					
Sig.	0.336						**Sig.**	0.161					
R_2^L	0.043						R_2^L	0.066					

Table 25b. Multivariate Logistic Regression: T1 Risk Factors (n=178).

	Model A							Model B					
	B	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**		**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**
Age Instant	-0.304	0.164	3.419	1	0.064	0.738	Age Instant	-0.359	0.169	4.522	1	0.033	0.698
Instant Offense	0.075	0.166	0.204	1	0.651	1.078	Instant Offense	0.008	0.172	0.002	1	0.964	1.008
Total Intake	0.121	0.072	2.850	1	0.091	1.129	Total Intake	0.179	0.080	5.060	1	0.024	1.196
T1 SB	0.175	0.160	1.193	1	0.275	1.191	T1SB	0.178	0.163	1.197	1	0.274	1.195
T1 DU	-0.054	0.169	0.102	1	0.750	0.948	T1DU	-0.015	0.171	0.007	1	0.932	0.985
T1 SL	0.501	1.297	0.149	1	0.699	1.651	T1SL	-0.041	1.338	0.001	1	0.976	0.960
Soc Dis	-0.034	0.281	0.014	1	0.904	0.967	Soc Dis	-0.031	0.285	0.012	1	0.913	0.969
SES	-0.034	0.293	0.014	1	0.906	0.966	SES	-0.031	0.298	0.011	1	0.917	0.970
Det Days	-0.190	0.283	0.452	1	0.502	0.827	Det Days	-0.005	0.297	0.000	1	0.986	0.995
Concurrent	-	-	-	-	-	-	Concurrent	-0.917	0.446	4.223	1	0.040	0.400
Constant	1.300	3.308	0.154	1	0.694	3.667	Constant	2.491	3.408	0.534	1	0.465	12.070
X2	8.869						**X2**	13.256					
d.f.	9						**d.f.**	10					
Sig.	0.449						**Sig.**	0.210					
$\mathbf{R^2_L}$	0.071						$\mathbf{R^2_L}$	0.105					

stressful life events independently (Table 25b). Although the pseudo R-square increased 30-40 percent across the models, the model chi-square still failed to achieve statistical significance. None of the risk factors significantly predicted recidivism and the standardized slope for negative school behavior was in the unexpected direction.

The addition of group membership into Tables 25a and 25b (Model B in Table 25) presents a few minor clarifications to the findings above. The addition of group membership into the models added some explanatory power and total intake placement score also developed into a significant predictor of recidivism after its addition into the models. For both Tables the variable denoting group membership itself was also a significant predictor of recidivism. Members of the concurrent control group were approximately 60 percent less likely to recidivate, a finding contrary to what was expected. However, delinquency risk factors do not have significant effects on official measures of recidivism regardless of treatment modality.

The models in Tables 26a and 26b presents the relationships between background variables and changes in delinquency risk factors.[47] It is possible that positive outcomes are only expected in the situations where positive change is evident in the factors conceptualized to cause the problem, in this case the delinquency risk factors. Table 26a includes an index measure for all change scores as an independent variable, and the drug use change score is included as the only change score in Table 26b because that was the only score where the groups significantly differed (see Table 21).

Similar to Tables 25a, neither models nor any of the individual predictor variables reached statistical significance in Table 26a. The variables closest to reaching were age at instant offense (p=.055) and total placement score (p=.079). Model B considered the

[47] Change scores for each risk factor computed with formula Change = Tx_3-Tx_1.

Table 26a. Multivariate Logistic Regression: Index of Change Scores (n=178).

	Model A							Model B					
	B	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**		**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**
Age Instant	-0.306	0.159	3.693	1	0.055	0.736	Age Instant	-0.349	0.163	4.560	1	0.033	0.706
Instant Offense	0.071	0.166	0.184	1	0.668	1.074	Instant Offense	0.009	0.171	0.003	1	0.960	1.009
Total Intake	0.123	0.070	3.092	1	0.079	1.131	Total Intake	0.183	0.079	5.401	1	0.020	1.200
Risk Change	-0.005	0.137	0.001	1	0.970	0.995	Risk Change	-0.016	0.140	0.013	1	0.908	0.984
Soc Dis	-0.033	0.280	0.014	1	0.906	0.968	Soc Dis	-0.019	0.284	0.004	1	0.947	0.981
SES	-0.037	0.285	0.017	1	0.897	0.964	SES	-0.058	0.292	0.040	1	0.842	0.943
Det Days	-0.202	0.281	0.515	1	0.473	0.817	Det Days	-0.016	0.297	0.003	1	0.958	0.985
Concurrent	-	-	-	-	-	-	Concurrent	-0.824	0.422	3.812	1	0.051	0.439
Constant	2.534	2.569	0.973	1	0.324	12.603	Constant	2.766	2.614	1.120	1	0.290	15.898
X2	7.607						**X2**	11.539					
df	7						**df**	8					
Sig.	0.369						**Sig.**	0.173					
R2L	0.043						**R2L**	0.065					

Table 26b. Multivariate Logistic Regression: Drug Use Change Score (n=178).

	Model A							Model B					
	B	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**		**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**
Age Instant	-0.319	0.163	3.852	1	0.050	0.727	Age Instant	-0.373	0.168	4.955	1	0.026	0.688
Instant Offense	0.063	0.168	0.142	1	0.706	1.065	Instant Offense	-0.020	0.176	0.013	1	0.908	0.980
Total Intake	0.115	0.071	2.645	1	0.104	1.122	Total Intake	0.192	0.081	5.590	1	0.018	1.212
Change DU	-0.186	0.112	2.761	1	0.097	0.830	Change DU	-0.254	0.118	4.662	1	0.031	0.775
Soc Dis	-0.080	0.284	0.080	1	0.777	0.923	Soc Dis	-0.076	0.288	0.070	1	0.791	0.927
SES	0.088	0.297	0.088	1	0.767	1.092	SES	0.103	0.305	0.113	1	0.737	1.108
Det Days	-0.261	0.287	0.829	1	0.363	0.770	Det Days	-0.044	0.301	0.021	1	0.884	0.957
Concurrent							Concurrent	-1.057	0.446	5.615	1	0.018	0.347
Constant	2.747	2.622	1.098	1	0.295	15.602	Constant	3.022	2.689	1.263	1	0.261	20.527
X2	10.402						**X2**	16.315					
df	7						**df**	8					
Sig.	0.167						**Sig.**	0.038					
R2L	0.083						**R2L**	0.128					

same background and change variables but also simultaneously considered the impact of the treatment modality. The model remained nonsignificant yet there was a modest increase in the pseudo-R^2. The addition of treatment modality resulted in a significant relationship between the dependent variable and both age at instant offense and total intake placement score. This suggests younger individuals and those with higher placement scores recidivated more than their counterparts. Similar to the T_1 index, the change score index was not a significant predictor of recidivism, a cumulative finding that indicates risk and change in risk is not important in the production of recidivism. An interesting finding emerges in Table 26b. The change score for drug/alcohol use was the only change score on which the experimental and concurrent control groups significantly differed. Model B in Table 26b reaches statistical significance and most importantly indicates decreases in drug and alcohol use significantly reduce recidivism by almost 25 percent. In contrast to the delinquency risk factors that demonstrated no relationship with recidivism, the findings suggested changes in risk factors were important to determining if individuals recidivated. The relationship between reductions in risk and reductions in delinquency was particularly important for reductions in alcohol and drug use.

This research is also concerned with the extent to which the type and quantity of program services mediates recidivism in an adjudicated juvenile population. It was hypothesized that individuals receiving more intensive intervention services will be less likely to recidivate. In their meta-analysis of 200 intervention studies, Lipsey and Wilson (1998: Table 13.2) reported that nearly 50 percent of total explained variance in recidivism was explained by the amount of treatment and the type of treatment received.

Table 27. Multivariate Logistic Regression: Program Services (n=178).

	Model A							Model B					
	B	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**		**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Odds**
Age Instant	-0.281	0.166	2.871	1	0.090	0.755	Age Instant	-0.315	0.169	3.455	1	0.063	0.730
Instant Offense	0.055	0.170	0.105	1	0.746	1.057	Instant Offense	-0.025	0.177	0.020	1	0.888	0.975
Total Intake	0.118	0.071	2.796	1	0.095	1.125	Total Intake	0.183	0.080	5.244	1	0.022	1.201
Total Services	0.909	0.354	6.586	1	0.010	2.483	Total Services	0.959	0.363	6.960	1	0.008	2.609
Soc Dis	-0.099	0.287	0.119	1	0.730	0.906	Soc Dis	-0.074	0.290	0.065	1	0.798	0.928
SES	0.080	0.292	0.075	1	0.784	1.083	SES	0.058	0.299	0.038	1	0.845	1.060
Det Days	-0.262	0.287	0.830	1	0.362	0.770	Det Days	-0.039	0.308	0.016	1	0.900	0.962
Concurrent	-	-	-	-	-	-	Concurrent	-0.910	0.441	4.262	1	0.039	0.402
Constant	0.734	2.769	0.070	1	0.791	2.082	Constant	0.731	2.836	0.066	1	0.797	2.077
X^2	15.122						X^2	19.543					
df	7						**df**	8					
Sig.	0.034						**Sig.**	0.012					
R_2^L	0.119						R_2^L	0.151					

The most notable differences between Models A and B in Table 27 with the previous was that both reach statistical significance. In Model A, "total services" was the only variable statistically significant, yet these findings were contrary to what was originally hypothesized. For example, it was expected that individuals received more services would respond more favorably to treatment but the data show clients that received more programming services were over 2.5 times more likely to recidivate. The relationships between age at instant offense and total intake score remained in the expected directions, but the variables continue to lack statistical significance in the prediction of recidivism. Similarly, the measure of social disorganization was negatively associated with recidivism.

A few themes emerged from the combined findings across Tables 24-27. The majority of the regression models did not explain a significant amount of variance in official recidivism. Also, the addition of treatment modality generally increased the pseudo R-squares but the increases were often modest. The hypotheses that successful rehabilitation is contingent on the extent of initial risk, changes in risk, and types and quantity of treatment were not supported. Initial risk did not matter in terms of recidivism and treatment services actually appeared to increase recidivism. The only finding consistent with what has been hypothesized relates to the relationship between change in risk and recidivism. Although the risk change score index did not significantly reduce recidivism, decreases in drug use did significantly reduce recidivism when it was considered independent of other risk factor change scores.

Self-Reported Delinquency

Official crime reports are only one measure of juvenile involvement in delinquency. Self-report surveys are other measures that offer some advantages to official data. As a supplement to official data, self-report surveys can cover a wider range of behavior and are not limited to those crimes that come to the attention of the police (Osgood, O'Malley, Bachman, & Johnston, 1989). Although early comparisons of self-reported offending and official statistics concluded significant disparities between the two (Hindelang et al., 1981), subsequent studies concluded similar pictures emerged when a careful attempt was made to develop adequate measures and focused on similar behavior (Elliot & Ageton, 1980).[48]

Self-reported delinquency measures included in this analysis were reported by the respondents at T_3, or 12 months after referral. The descriptive statistics for T_3 self-reported delinquency are reported for both the experimental and concurrent control group in Table 28. The mean scores for the measures were highly distributed. The standard deviation for the experimental group was over 1.5 times the mean ($\bar{x}$ =6.928) and 3.3 times the mean ($\bar{x}$ =56.907) for the concurrent control group which was indicative of a larger distribution. T_3 self-reported delinquency was not statistically different between the experimental and concurrent control group, although the group mean for the concurrent control group was 2.5 times that of the experimental. One possible explanation for the lack of significant difference was due to the large distributions of the group means. The natural log was computed in an effort to normalize the values and reduce the distributions. Computation of the natural log did not normalize the measure, a

[48] Self-reported delinquency measures reflect data collected at T_3 and reflects indicators of reasonably serious types of behavior (see page 84 for indicators).

result of a large percentage (30 percent) of the total population reporting no self-reported delinquency at T_3. Thus, the concurrent and experimental groups did not differ significantly on levels of T_3 self-reported delinquency.

As a follow-up to the descriptive analyses, the next step involved the regression of the same series of independent variables from Tables 24-27 on T_3 self-reported delinquency. Independent of change in self-reported delinquency, it was important to understand how delinquency risk factors and treatment modality affect self-reported delinquency. The Models presented in Tables 29 are similar to Tables 24-27 except that treatment modality is not regressed into the model separately for series of independent variables.

In Model 1 of Table 29 the simultaneous effects of background variables including age at instant offense, instant offense type, total intake score, social disorganization index, socio-economic status index, days in detention, and treatment modality were considered. The relationship between age at instant offense and T_3 self-reported delinquency was negative which indicated that younger offenders reported higher levels of later delinquency. Also consistent with expectations, the relationship between total intake score and T_3 was positive and consistent with what was hypothesized. Namely those individuals with higher placement scores were more heavily involved in delinquent activity. The variable denoting concurrent control group membership was also positive. In contrast, the relationship between group membership and self-reported delinquency was not significant but the direction of the relationship offers a notable distinction with the official recidivism models. Finally, days in detention was negatively associated with self-reported recidivism and indicated those in detention

Table 28. T_3 Self-Reported Delinquency by Group Membership (n = 178).

	Experimental	Concurrent	Total	d.f.	Mean Sq	F	Sig.
Untransformed							
Mean	6.928	17.475	11.695	1	4877.081	3.073	.081
Std. Dev	15.107	56.907	40.072				
Range	0-92	0-378	0-378				
Log							
Mean	.467	.530	.496	1	.176	.480	.489
Std. Dev	.564	.652	.604				
Range	0-1.97	0-2.58	0-2.58				

longer reported less delinquent behavior. The model, however, was not significant and explained almost no variance in the dependent variable (R^2 = .033).

In Model 2, the index for T_1 delinquency risk factors was stepped into the equation. The model summary remained non-significant but the amount of explained variance increased slightly to .063. The relationships between the background variables and self-reported delinquency remained in the expected direction, but there were inconsistent relationships between the T_1 delinquency risk factors and self-reported delinquency. The negative relationship indicated those at greater risk at T_1 reported less delinquent behavior at T_3. Also, after controlling for T_1 risk, age at instant offense was now significantly predictive of T_3 self-reported delinquency. Thus, the relationship was specified by the addition of risk factors and indicates age at instant offense was important when considered in conjunction with risk.

The three T_1 risk factors on which the experimental and concurrent control group significantly differed were stepped into the regression equation in Model 3. As expected, negative school behavior at T_1 was positively and significantly related to T_3 self-reported delinquency and the standardized slope (B=.285) suggested it was comparatively more

Table 29. OLS Regression. Dependent variable T3 self-reported delinquency.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-	-	-	-	-	-
Age Instant	-.157(.042)	-.183(.043)*	-.186(.044)*	-.195(.042)*	-.175(.042)*	-.180(.044)*
Offense	.011(046)*	-.001(.046)	.007(.045)	.026(.045)	.030(.044)	.002(.046)
Total Intake	.080(.020)	.066(.020)	.071(.019)	.092(.019)	.077(.019)	.084(.020)
T1 Risk Factor	-	-.143(.048)	-	-	-	-
T1 SB	-	-	.285(.042)*	-	-	-
T1 DU	-	-	-.036(.044)	-	-	-
TI SL	-	-	.110(.348)	-	-	-
Change Scores Factor	-	-	-	.282(.036)***	-	-
Change DU	-	-	-	-	.314(.029)***	-
Soc Dis	-	-.126(.076)	-.118(.075)	-.107(.074)	-.085(.073)	-.130(.077)
SES	-	.175(.076)	.170(.077)	.137(.074)	.054(.075)	.171(.078)
Det Days	-.061(.078)	-.077(.080)	-.078(.079)	-.081(.077)	-.071(.077)	-.093(.081)
Concurrent	.018(.111)	-.008(.112)	.013(.113)	.032(.107)	.095(.108)	.017(.111)
Total Services	-	-	-	-	-	.061(.082)
Model Summary						
Mean Square:	.413	.499	.660	.967	1.039	.376
F:	1.132	1.387	1.899*	2.871*	3.121*	1.029
R Square:	.033	.063	.105	.123	.132	.048

a Standardized slopes presented (Standard Error).

* Significant at $p<.05$

*** Significant at $p<.001$

predictive of self-reported delinquency than the other independent variables. In addition to T_1 negative school behavior, age at instant offense still remained predictive of T_3 self-reported delinquency. Although not significant, stressful life events at intake were positively related to self-reported delinquency. This indicated juveniles reporting more stressful life events also reported more delinquent behavior at T_3. Contrary to expectations, T_1 drug use was negatively associated with the self-reported delinquency.

The relationship between T_1 risk factors and future levels of self-reported delinquency was, according to the above findings, less clear than hypothesized. Models 4 and 5 test the extent to which *change* in delinquency risk factors affected recidivism. Since the two populations were at similar risk as evidenced by the similarities in T_1 risk factors, recidivism may be reflective of changes in risk. Change scores were computed to reflect the difference between T_3 and T_1 risk factors that were measured by the structured interviews administered to each participant. Positive values were indicative of increases in risk and negative values reduction in risk, and it was expected that a reduction in risk would reduce T_3 self-reported delinquency. Contrary to some earlier findings, the model summary was significant ($p<.05$) and the $R^2 = .123$. Two of the independent variables were significant predictors of T_3 self-reported delinquency, age at instant offense and change score index. The positive direction of the relationship between the change score index and the dependent variable indicates those at increased levels of T_3 risk report more delinquency. This finding is consistent with the notion that reductions in negative behavior would only be expected if the risk factors causing the behavior were changed in a favorable direction.

One additional OLS regression model is analyzed where T_3 self-reported delinquency was regressed on the same background variables and the change score for drug/alcohol use. Since Model 4 suggested change in risk was an important factor in the "production" of recidivism, the purpose of Model 5 was to determine if the drug/alcohol use change score is particularly important in the production of delinquency. This specified change score as identified as particularly relevant since it was the only change score for which the experimental and concurrent control group differed significantly. The model reached statistical significance and the explained variance also increased modestly to .132. The drug/alcohol use change score was significantly predictive of T_3 self-reported delinquency which suggests that reductions in drug and alcohol use were predictive of latter decreases in self-reported delinquency. It is interesting to note this single change score results in a similar amount of predictive power as the index change score.

Finally, the index value for total program services was stepped into the model along with background characteristics (Model 6). Like the first two models, Model 6 explained very little variance in self-reported delinquency. Expected for age at instant offense which continued to be negatively associated with T_3 delinquency, none of the independent variables were significant predictors of later delinquency.

Self-reported delinquency proved to be a complex phenomenon that was explained by combinations of both where individuals start in terms of their "risk" for delinquency, but also explained by how much positive change occurs during the time they are under the jurisdiction of the Court. There were several important distinctions between measures of self-reported delinquency and measures of official recidivism. In

comparison to previous models, Table 29 indicated that while the aggregate measure of T_1 delinquency was not important to T_3 self-reported delinquency, negative school behavior was a significant predictor. Moreover, although the total services index predicted official recidivism it does little in terms of self-reported delinquency. Finally, treatment modality consistently had little predictive power of self-reported delinquency. This stands in sharp contrast to Models 24-27 where treatment modality consistently predicted recidivism.

Summary

Hypotheses were proposed throughout this analysis positing that members of the experimental group would react more favorably to intervention strategies upon adjudication to the community-based treatment compared to those youth in the historical and concurrent control groups. Contrary to what has been hypothesized throughout this research, risk factors, change in risk factors, and levels of intervention programming did not seem to be as important in the production of recidivism. Moreover, in several of the cases where a significant relationship was evident its direction was in the unexpected direction. For example, the negative slope for T_1 risk factor index in Table 25a and negative slope for T_1 drug use in Table 15b initial risk actually reduced recidivism as opposed to increasing recidivism. Similarly, Tables 26a and 26b also presented paradoxical conclusions that change scores were negatively associated with recidivism. This was considered paradoxical because negative change score values (T_3-T_1) would indicate a reduction in risk, something expected to reduce recidivism. Yet this finding suggests reductions in risk actually increase recidivism, a finding consistent when

changes in drug/alcohol use are considered independently. Again, contrary to expectations, total program services are also positively associated with later recidivism.

To add further confusion to the mix, reverse findings were evident when T_3 self-reported delinquency was considered as the outcome variable. In these situations, delinquency was reduced for individuals with lower initial risk, especially lower levels of problematic school behavior (e.g., negative school behavior). However, the unexpected effects of T_1 drug/alcohol use were consistent. Additionally to the finding that initial risk may be important considerations in later self-reported delinquency, change in risk may also be an important consideration in this situation. Individuals with more favorable change, especially favorable change in drug use, may very well have reduced levels of later problematic behavior. Finally, consistent with official recidivism models, total services was positively associated with T_3 self-reported delinquency yet the relationships are not significant.

Chapter 5: Conclusion

The United States has experienced several distinct "waves" of juvenile crime over the past 100 years. Since there is no objective standard for what constitutes a crisis of crime, a perspective on the relative seriousness of a particular crime problem is created by comparing contemporary crime figures with those of years gone by. It is generally not absolute figures that demarcate a crisis of one kind or another, but the relative extent of the problem when compared to previous periods.

In one sense defining crises or problems in the relative sense is effective because, by definition, it provides a barometer for the problem. If our society is based on the notion of continual "progress," progress can be best measured by assessments of innovations between two time periods. However, the strategy has also resulted in a near universal condemnation of each successive generation of youth as substantially "worse" than the previous and demands for social policy that effectively corrects the problems of errant youth. Commentators argue fervently for a return to the "good old days" when youth were behaved and reverent of their social responsibilities. Paradoxically, reviews of media sources from the "good old days" reveals a social climate where out of control youth were similarly identified as pressing social ills (Bernard, 1992). For example, Platt's (1991) account of the impetus behind the Child Saver's Movement of the early twentieth century provides meaningful insight into these issues.

Yet is it these relative comparisons of crime problems that drive public policy – policies intended to obtain some nostalgic sense of yesterday. This should not be a surprise because public policy usually deals with problems that communities experience "today" and not those of previous generations. Moreover, crime policies are usually also

not effective in addressing unanticipated problems of the future. The continual stream of state and federal crime legislation exemplify this reality, a reality not likely to subside any time too soon (*see* Olson-Raymer (1984) and McGarrell (1988) for further discussion on post-1960s crime legislation). Since the early twentieth century, the types of responses have vacillated to some extent or another between punishment and treatment depending on both the political ideology of the time and the "scientific" understandings of the "causes" of delinquency.

The purpose of this research has been to assess the efficacy of nonresidential, community-based intervention programs for adjudicated juvenile offenders. Non-residential, community-based alternative treatment models are often touted as some of the most promising initiatives in juvenile justice.

> "Community-based programs offer several advantages above and beyond the traditional adult treatments that are often applied to juvenile offenders. First, juvenile offenders are adolescents-they are still children-and they should be treated differently from adults. Second, these children are products of the communities in which they live and deserve to have the community care for and be responsible for them. Third, incarcerated inmates, whether child or adult, learn strategies for being a more skilled criminal. A fourth advantage to community-based approaches is that they can be more cost-effective than institutional approaches" (Stanton & Meyer, 1998: 205).

Keeping and treating children in the communities from which they come offer the possibility of reducing recidivism, limiting the "harm" done to juveniles through exposure to the horrors of institutionalization (see Miller, 1991), and building on existing connections with social institutions such as families, schools and communities. Yet Stanton and Meyer (1998) aptly warn that while there might be some intuitive advantages to community-based alternatives, there is a need to determine their effectiveness in

producing the "desired outcome" associated with "treatment," namely a reduction in recidivism.

After demonstrating some initial success in rehabilitating juvenile offenders community treatment models have been put forth as effective "intermediate interventions" (Lundman, 2001). nonresidential treatment programs have proliferated during recent years as the Office of Juvenile Justice and Delinquency Prevention (OJJDP) and other governmental organizations have championed the need for intensive and comprehensive services in community settings (Howell, 1995). OJJDP's Comprehensive Communities Program initiatives have been heavily influenced by social development theory, a theoretical framework that has implications for both understanding the causes of delinquency but also has implications for the structuring of intervention services. Strategies that appear to be the most promising are those that provide "comprehensive programs that include treatment strategies targeting the systems that affect the juvenile's development" (Stanton & Meyer, 1998: 221).

Delinquency is a product of multiple, interacting risk factors (Thornberry, 1997b). Instead of searching for a single cause of delinquency, the implication of social development theory is that individual involvement in delinquency increases among those who experience multiple attitudinal, behavioral, and contextual stressors (risk factors). More importantly, the impact of any specific stressor or group of stressors is developmentally specific and thus possibly inconsistent throughout the life course. For example, association with drug using peers is likely to be more damaging at age 8 compared to age 38.

Several goals were established at the onset of this research initiative. The first goal was to trace the development of the treatment ideology in the juvenile justice system, and ultimately set the stage for why many believe community-based alternatives to traditional probation services can be one of the most effective treatment strategies for young offenders. The second goal of this manuscript has been to argue the form and function of responses to juvenile crime are directly related to the governing theoretical understanding of the "causes of delinquency." For example, when the family environments of delinquents were thought to offer nothing but criminogenic influences, juvenile delinquents were universally moved to institutions to "protect" them from negative influences. Using social development theory as a theoretical foundation for the type of intervention services advocated by OJJDP, the argument was advanced that the effectiveness of intervention programs in reducing delinquency is contingent on the extent to which it is developmentally specific and delivers program services that address the causes of delinquency.

Using data collected as part of the Youth and Family Studies (YFS) intervention program for adjudicated juvenile offenders, a framework was established for testing the efficacy of community-based alternative treatment programs compared to residential placement programs. This research is a necessary addition to the current literature because it moves beyond traditional program evaluation models. The classic evaluation design details a program model and then typically tests the effectiveness of one program over another in offsetting recidivism. In this scenario, several assumptions are made. First, there is an assumption anything actually "happened" as part of the program and that the participants received the program as described in its ideal form. The second

assumption is program services create favorable change in the delinquency risk factors that underlie the program's theoretical foundation. Third, there is also an assumption that change in delinquency risk factors will reduce recidivism.

These assumptions lie at the core of this research. For straightforward, compressed programs these concerns might not pose significant problems. For example, assumptions that programs are true to their ideal form may be sufficient in many cases for a short-term program where everyone receives exactly the same service. In these scenarios it is less likely major program failure will occur short of the program not being administered. Take, for example, the case of the challenge course model where clients report to a predefined location and spend one or more days involved in team building exercises on a military-style obstacle course. Similar "off the shelf" type programs can be structured to the point where there is little concern about the level of variation in services received among individuals. However, program failure is more likely in the case of long term, intensive programs that tailor services to fit individual needs.

Summary and Discussions

Social development theory offers several intrinsic advantages over other theories of delinquency. The theoretical model offers advantages not only because it is a more complete picture of the onset and trajectory of delinquency careers, but because the model also offers implications for developing and implementing intervention services for juvenile offenders. Social development theory is not a theoretical framework that posits distinct direct and indirect relationships between a unique set of independent variables and delinquency, but instead integrates the most prominent existing theories into a more complete theoretical model. Delinquency is best represented by the interaction of

multiple domains of risk factors that originate from individual, social, and ecological influences. Moreover, the relative importance of a particular risk factor or set of risk factors is contingent both on when in the individual's development the risk factor is realized and the extent to which certain risk factors co-occur. Social development theory also offers implications for how intervention treatment services should be delivered to delinquent youth. To be effective, stage-salient services must be delivered that intervene in the delinquency "process" by providing intensive, sustained services that offset the impetus for delinquency.

Impact of Delinquency Risk Factors

Delinquency is a product of discernible risk factors that increase the likelihood of initial participation in delinquent activity. The independent and cumulative effects of delinquency risk factors explain not only the onset of delinquency, but also levels of sustained involvement and escalation in delinquent careers (Blumstein et al., 1988b; Blumstein et al., 1986; Blumstein et al., 1985; Farrington, 1992).

The experimental group, historical control group, and concurrent control group were compared on delinquency risk factors using both the Court intake placement risk classification data and the delinquency risk factors measured as part of the structured interviews. The purpose of these analyses was to determine if characteristics of risk and change in risk predicted later levels of official recidivism (18 months) and self-reported delinquency (12 months) after court referral to the Department of Social Services. Of the three groups considered in the initial set of analyses (experimental, and historical and concurrent control groups), the concurrent control group was at greatest "risk" based on the initial placement scores. There were some significant differences in risk between the

three groups evident in the Court intake data (*see* Tables 12a and 12b). Members of the concurrent control group were first arrested at significantly younger ages compared to both the historical control group and the experimental group. A larger percentage of the concurrent control group also had prior arrests, had difficulties in school, used drugs, was arrested for more serious offenses, were on probation at the time of arrest, had a prior FIA placement, and were previously in a runaway status. However, it was expected that there would have been greater differences between the three groups apparent in the intake classification data and, in general, the differences were less than expected. From a theoretical point of view, it was still important to determine if these differences in risk explained recidivism.

Based on these differences it was hypothesized the concurrent control group would respond less favorably to intervention services than others due to apparent increases in risk, yet this was not the case. Compared to the experimental and historical control groups, the concurrent control group has the largest proportion of non-recidivists (*see* Table 14). Of all of the variables considered in the preliminary recidivism (Tables 17-19) models, age at instant offense was the only variable that consistently demonstrated a significant relationship with recidivism. Since behavior can be characterized by developmental progression, this finding was consistent with the social development perspective. From this standpoint, there is "normal" sequencing to behavior that makes its occurrence and temporal ordering relevant to certain developmental phases (Loeber, 1988). Behavior inconsistent with expected temporal ordering can be classified as abnormal and expected to hold the possibility of adversely affecting normal development. The impact of initiation into delinquency is not even across all developmental phases.

The significant relationship between age at instant offense and recidivism implies younger offenders and older offenders initiated into delinquency at younger ages should be considered more serious and subject to additional scrutiny by the juvenile justice system.

The predictive power of the intake placement variables was more limited than expected. Except for drug use and offense seriousness, none of the other intake placement variables approached statistical significance for any of the models. The lack of meaningful relationships may be partly caused by their limited variability or due to problems with multicollinearity. To account for these problems, further analysis was performed on delinquency risk factors coded from the structured interviews (*see* Table 20).

Findings from Table 20 were similar to those in Table 14. The concurrent control was considered more at risk compared to the experimental group on a few of the T_1 delinquency risk factors. More specifically, they reported significantly more negative attitudes toward school, alcohol/drug use, and stressful life events. Although not statistically significant, members of the concurrent control also reported higher levels of exposure to delinquent peers. Again, it was surprising the differences between these two groups were not more apparent on other measures included in the analyses.

It was evident that T_1 delinquency risk factors had little effects when regressed into prediction models. Even when controlling for T_1 risk, age at instant offense remained the most predictive of recidivism (*see* Tables 25 and 26) and self-reported delinquency (Table 29). The only relationship continually supported in the current research was the relationship between age at first arrest and delinquency, a finding

indicating earlier offending was predictive of recidivism. Younger juveniles in the study groups were consistently more likely to recidivate. This finding complements those by Blumstein (1985), Loeber (1996), Loeber, Farrington, and Washbush (1998), and Thornberry (1997b) that consistently identify age as one of the most stage-salient considerations. In this case, the research is extended to suggest that earlier delinquency not only predicts involvement in the criminal justice system but also predicts recidivism. However, contrary to what was expected, baseline delinquency risk factors actually explained very little in terms of variance in later delinquency.

Somewhat different findings were evident when T_3 self-reported delinquency was considered as the dependent variable (*see* Table 29). When stepped into a OLS regression model with the background variables, the T_1 risk index was negatively associated with later self-reported delinquency. However, when the three T_1 delinquency risk factors were considered independently the findings suggested increases in T_1 negative school behavior significantly increased T_3 self-reported delinquency.

Although the findings relating to the role of substance abuse was inconsistent throughout this research, its role in the initiation and progression of delinquency presents important policy considerations. Juvenile substance abuse poses a serious problem to the juvenile justice system. There are many ways the use of illegal substances is connected to crime (Fagan & Pabon, 1990; Goldstein, 1995). In some situations pharmacological effects of substance use results in aggression not present absent drug use. Since drug and alcohol, especially among younger teens, tends to be concentrated among a small percentage of the population, its use may bring people into contact with those already predisposed to delinquency.

Many delinquents caught up in the juvenile justice system use illegal drugs at least occasionally (Dembo, Schmeidler, Nini-Gough, & Manning, 1998; Grobsmith, 1989; Hawkins et al., 1992). Although alcohol/drug use is not a sufficient precursor to more serious delinquent behavior[49], many youth involved in delinquency use alcohol or drugs at least occasionally (ADAM, 2000; Dembo, Dertke et al., 1987; Dembo et al., 1998; Johnson, 1995; Kelley, Huizinga, Thornberry, & Loeber, 1997; Lipsey & Derzon, 1998). For the developing young adult, drug and alcohol abuse undermines motivation, interferes with cognitive processes, contributes to debilitating mood disorders, and increases risk of accidental injury or death" (Hawkins et al., 1992: 64).

There are discernible individual, social, and ecological risk factors for alcohol and drug abuse that often share the same etiological causes as other forms of delinquency. Similar to findings from previous research, alcohol and drug abuse were dependable predictors of recidivism throughout this research. Juveniles using illegal substances experience more problems with their families and many report other types of negative consequences such as missing school, having automobile accidents, becoming depressed, or getting into trouble with the police because of their drug or alcohol use (Dembo, Dertke et al., 1987).

Other delinquency risk factors that were operationalized from the T_1 interviews were excluded from further analyses because of problems with multicollinearity. Although the relationships between these and risk factors and delinquent behavior were not included, preliminary analyses revealed insight into the relationships between these and delinquency. Contrary to previous research clearly establishing consistent

[49] Alcohol/drug use in many cases may by definition be considered delinquency. Measures of drug use, for example, are often included on self-reported delinquency scales. In this case alcohol/drug use is considered independent of other delinquent behavior such as property or personal crime.

relationships between peer networks and delinquency[50] exposure to delinquent peers almost universally failed to predict onset of recidivism. The null finding was puzzling because the argument is generally accepted that delinquency is a group phenomenon (Elliot & Menard, 1996; Erickson & Jensen, 1977; Farrington, 1996; Warr, 2002) and that middle adolescence is the height of peer importance (Warr, 2002). Since the mean age of the population is approximately 15 years (*see* Table 8), peers would be expected to play a more important role in the production and trajectory of delinquency.

Delinquent peers can be expected to influence delinquent patterns through one of two paths (Elliot & Menard, 1996). Using the social learning approach, the first suggests exposure to delinquent peers leads to greater delinquency (Burgess & Akers, 1966; Sutherland & Cressey, 1978). In this case delinquency is learned through a process of regular interaction with individuals more knowledgeable of the tricks of the delinquency trade. This represents the traditional mode of thought that delinquency is a learned behavior. The second suggests involvement in delinquent behavior precedes regular association with delinquent peers (Glueck & Glueck, 1950; Hirschi, 1969). This is based on the argument that crime is a simple process that requires little specialized knowledge or skills (Gottfredson & Hirschi, 1990) so learning the tricks of the trade is unnecessary because there is little to learn. As juveniles become repeatedly involved in delinquency their conventional ties to society are dramatically reduced. During the process of increased exposure and involvement in delinquency youth either reject conventional norms or choose to ignore them. Elliot and Menard (1996) favor the first approach, especially among younger delinquents. The temporal ordering of delinquent peers and

[50] Warr (2002) provides a comprehensive assessment of the theoretical and empirical relationships between peer networks and juvenile delinquency.

delinquency could not be discerned here because longitudinal data before the onset of delinquency were not available.

It was also surprising that school level variables mattered very little in terms of recidivism or T_3 self-reported delinquency. Mid-adolescence is a time when schools play a prominent role in the lives of juveniles (Gottfredson, 2001). Juveniles with little bonding to their schools report higher levels of delinquency (Maguin et al., 1995), and those involved in minor forms of negative school behavior such as truancy also report higher levels of self-reported and official delinquency (Farrington, 1989). Outside of families, schools represent one of the strongest conventional attachments students have to their community (Hirschi, 1969). Institutional level characteristics such as school climate have strong influences not only on aggregate crime rates, but also influences individual delinquency (Farrington, 1993; Olweus, 1993; Sharp & Thompson, 1994; Smith & Sharp, 1994).

There are also two other possible alternative explanations for the lack of consistency in the predictive power of the risk factors for both official and self-reported delinquency outcome measures. It could be that juveniles become "better" criminals, perfecting their involvement to the point where they simply do not get caught. In this case levels of delinquency are not reduced but remain undetected. However, the impulsive and unskilled nature of crime, especially juvenile crime, suggests this is probably not the case (Gottfredson & Hirschi, 1990). A more viable explanation is that low level offending is just more common among all juvenile offenders and that 18 months follow-up for official delinquency is not sufficient to get at the full picture of recidivism.

The delinquency risk factors from the structured interviews added very little predictive power to the logistic regression models. Although the vast majority of delinquency research would suggest these variables, in isolation or in combination with one another, should be important predictors of recidivism no clear picture emerges. Most models failed to achieve statistical significance, and in general, accounted for little explanatory power. These findings stand in striking contrast to considering the predictive power of the initial intake placement variables (see Table 18). The intake placement scores are analogous to the delinquency risk factors. It was originally believed these variables, although important, were not the best measures because of their limited variability.

Impact of Change in Delinquency Risk Factors

If delinquency is understood to be caused by particularly criminogenic risk variables in the domains of attitudes, behavior, the social world of individual offenders, how should we understand "success" to be measured? To understand delinquency as a product of a multitude of causes implies success, at least at some level, and must be measured by favorable changes in the risk factors program services are intended to "fix." Success then is multi-dimensional and can be measured using a variety of outcome measures that would be expected to change on account of the type of "response" initiated for the problem. If the theoretical foundation was properly specified, we would not expect reductions in levels of delinquency unless there are significant reductions in the causes of the behavior (e.g., delinquency risk factors). Consideration of delinquency risk factor change should be a critical piece of any evaluation research where the opportunity

exists. OJJDP's "risk-focused" prevention and intervention strategies hinge on reduction of risk, reductions expected to reduce delinquency (Howell, 1995).

The direction and significance level of the change score index indicated the variable mattered little in understanding recidivism (*see* Table 26a). Contrary to what was expected, not only was the relationship between initial risk and recidivism in the unexpected direction, so was the relationship between change in risk and recidivism. In this case, individuals who experienced increases in risk were less likely to recidivate. The variable also failed to reach statistical significance regardless if treatment modality was included or excluded. The relationship between the change score index and T_3 self-reported delinquency are quite different. First, the relationship is positive and, as hypothesized, indicates those with greater reductions in risk were less delinquent in the future. This is supportive of the argument that reductions in risk reduce delinquent behavior.

The findings presented above do little to clarify the relationship between changes in drug/alcohol use and delinquency. The findings in Table 26b suggested official recidivism actually increased as drug/alcohol use decreased, a finding that was completely counterintuitive. While the relationship was not significant in the first model, it reached significance in Model B when treatment modality was simultaneously considered. The relationship took on a different dynamic when T_3 self-reported delinquency was regressed on the variable in Table 29. In that case, decreases reductions in drug/alcohol use resulted in significantly lower levels of self-reported delinquency.

There is little doubt to think that reductions in drug and alcohol use would serve as a positive change on the future life course of the user. However, the magnitude of the

change remains unclear and, in this research, was contingent on which dependent variable was used. It is unclear if the damage of substance use is effectively done once substance abuse is initiated, or if it is possible to steer juveniles away from drug using behavior after use has begun. The concurrent control group reported a significantly greater reduction in substance use but it was not possible to disentangle if the reduction was a result of reduced opportunity to use due to the residential nature of the program or if the treatment strategies themselves were more effective

As suggested earlier, the discrepancies in the conclusions reached about the predictive power of risk factors and changes in risk factors when different outcome measures were considered may be partly explained by the very nature of the outcome measures. Although the measure of self-reported delinquency reflects relatively serious behavior, official recidivism generally reflects some of the most serious behavior. In this case, it takes a certain level of seriousness, harm, and consistency for problematic behavior to be "discovered" and punished by actors in the criminal justice system. For example, arrests are made only 10% of time when a serious crime occurs.[51] A longer follow-up would likely to have revealed increased instances of official recidivism, but the limited period yielded populations where approximately 33 percent were considered recidivists. It could also be the inherent relationships between the independent variables and self-reported delinquency can be more easily detected because of the manner in which it was operationalized. The larger distribution of the dependent variable (compared to binary coding scheme for official recidivism) was likely more sensitive to change.

[51] Of 1,000 serious crimes that occur, 500 go unreported and of those reported, 400 remain unsolved (U.S. Department of Justice: Bureau of Justice Statistics, 1999).

Another possibility is that official recidivism and self-reported delinquency were two conceptually distinct types of behaviors and thus not subject to the same causal influences. Some have argued self-reported and official measures are dissimilar measures and should be not used interchangeably (Tittle, Villemez, & Smith, 1978). Hindelang, Hirschi, and Weis (1991) questioned this argument and instead reported both types of measures effectively tap similar domains of behavior.

The self-reported delinquency measures used in the current research reflect reasonably serious crimes. For example, the indicators include "robbed someone", "stole something over $100," and "forced someone to be sexual with you." These indicators were serious indicators of delinquency and would be expected to be highly correlated with official measures of delinquency. The two most nonspecific indicators in terms of seriousness were "hit someone in anger," and "damaged property that wasn't yours." While the self-reported scale is open to criticism because it may have covered too wide a range of behavior, delinquency is a multi-dimensional type of behavior. It is believed that the range of behavior covered on the self-reported index makes the scale analogous to official measures of delinquency, thereby mitigating the impact of this explanation.

The final possibility is self-reported delinquency was more sensitive to the independent variables because the behavioral measures are more similar. In this possibility, independent measures such as negative school behavior and alcohol/drug use may be measuring the same phenomenon and thus would be expected to be related. This was a possibility, yet to account for this potential problem all measures of low level delinquency and drug use were intentionally excluded from the T_3 self-reported delinquency scale.

The fact that juveniles exposed to the YFS program experienced reductions in delinquency risk factors similar to the concurrent control group, neither consistently more nor consistently less, could also be interpreted as a positive. While it was hypothesized the community-based alternative would be more successful in reducing risk since it was both comprehensive and kept youth in a familiar environment, youth in the experimental group were less serious offenders to begin with. Since the community-based experienced less risk at the beginning of the program, there was an inherent cap on the level of positive change they could experience. Taken to an extreme, it could be the community-based group did not experience reductions in risk because they did not have substantial levels of risk to begin with.[52]

Impact of Program Efforts

There was reason to believe the quantity and type of intervention services youthful offenders received would be an important predictor of desistance from future criminality. Treatment *matters*, and those who received more treatment services directed at the etiology and trajectory of delinquent behavior were expected to experience substantially less occurrences of delinquent behavior. Comparing differences in mean effect sizes for treatment and control groups, Lipsey and Wilson's (1998) meta-analysis

[52] Maltz, Gordon, McDowall, and McCleary (1980) addressed the possibility of statistical artifacts of pretest-posttest research designs. Reductions in T_1 delinquency risk factors, self-reported delinquency, and official delinquency are possibly explained by the concept "regression to the mean," a statistical artifact. The data presented suggest the concurrent control group were significantly more serious offenders. This finding was substantiated by initial intake placement data and T_1 delinquency risk factors. It was also evident based on the higher intake placement score that the concurrent control group included more individuals with more serious prior offenses and a greater total number of offenses. Thus, members of the concurrent control group could be considered as existing on one end of the continuum of offending. Since this more serious group was near the "ceiling" they had no place to go but down. If this was so, the changes would be a statistical artifact. It seems likely that "regression to the mean" may very well explain part of the findings detailed in this research. However, the significant reductions in delinquency for the historical control group, a group presumed to closely resemble the experimental group, indicate there are substantive reasons to believe the reductions in recidivism are also at least partly explained by characteristics of the treatment modalities.

of 200 previously published studies found differences were best explained by four different clusters of variables: characteristics of juveniles, amount of treatment, treatment type, and general program characteristics.

According to Lipsey and Wilson (1998), the combined effects of the four clusters of variables for non-institutionalized youth explained a significant proportion of variation in the mean differences in effect sizes. Juvenile characteristics explained the largest proportion (.40), followed by treatment type (.26), amount of treatment (.20), and general program characteristics (.15). In total, the combined effects of the clusters explained 55% of the variation (Lipsey & Wilson, 1998: 320). The most effective types of treatment included interpersonal skills, individual counseling, and behavioral programs. Programs that used a combination of the above treatment services demonstrated meaningful effects on the standardized mean differences, but to a lesser degree (324).

There are marked contrasts for treatment programs targeting institutionalized offenders compared to those for non-institutionalized offenders. Among the four clusters identified earlier, characteristics of juveniles accounted for the smallest proportion of explained variance (.10). The largest proportions were accounted for by general program characteristics (.36), amount of treatment (.27) and treatment type (.26). Although the cluster of variables explained a similar amount of total variance (R-square = .51), the clusters for institutionalized offenders behaved differently (328). For institutionalized offenders, interpersonal skills treatment continued to be most beneficial, followed by family services. The authors concluded types and levels of treatment are important measures for explaining the success of some programs over others in rehabilitating non-institutionalized and institutionalized juvenile delinquents.

Based on these findings, it was hypothesized individuals receiving more programming would experience less recidivism than their counterparts. This is important because it further questions if the level of "failure" for rehabilitative efforts in the past was a result of the inadequacy of rehabilitation as a concept, or because individuals that failed to demonstrate "success" did not receive the same level of services than others. Indicators of services received were self-reported by the participants during the structured interviews. There were reasons to expect the concurrent control group might receive more services than the experimental group because those participating in residential programs are in the company of treatment specialists throughout the entire day. As both a literal and figurative "captive audience," those in residential placement might be expected to have more time available for treatment services and receive more intensive supervision throughout the day since they do not leave the confines of the treatment facilities.

Yet there was also reasons to expect the experimental group would receive more program services. The YFS community-based day treatment model was conceptualized as a comprehensive service delivery program able to provide directed services in a more effective and efficient manner. Justified as a program designed specifically to deliver comprehensive treatment services, it would be plausible to hypothesize services to be more intensive. The data suggest few notable differences between the experimental and concurrent control groups in the level of services received (see Table 22). For example, both groups received statistically indistinguishable levels of counseling, educational, and recreational services. The concurrent control group did, however, report significantly higher levels of job skills training. It is not clear if the differences were due to one

specific program administered to those under traditional probation or a conglomerate of services administered across several different programs. The concurrent group did report significantly more job skills training, but the impact of employment related services is mixed. Lipsey and Wilson (1998) reported the effect of employment related services to be mixed by generally positive for noninstitutionalized offenders, and weak or nonexistent for institutionalized juvenile offenders (Table 13.8, 332).

In this research, subtypes of program services were aggregated into one summary measure of program services (variable, "Total Services") because of problems associated with multi-collinearity. It would have been preferable to consider the independent effects of the different measures, but it was not possible in this scenario. The results detailing the relationship between program services and recidivism are difficult to explain. When considered simultaneously with basic intake data, background variables and group membership (see Table 27, Model B), the measure for total program services was significantly predictive of recidivism but the relationship is in the unexpected direction. Individuals who received higher levels of program services were over 2.5 times more likely to recidivate. Similarly, the indicator of total program services was positively associated with T_3 self-reported delinquency, yet the relationship was non-significant.

Limitations of Current Research and Directions for Future Research

This research was not without limitations that should be considered when interpreting the findings detailed previously. One of the most methodologically challenging issues to this research has been the sample sizes, especially as they related to the size of the experimental and concurrent control groups. Sample size is an important consideration for detecting intervention effects because it is closely connected with

measures of statistical power such as significance tests and effect sizes. The samples for this research involved 99 individuals considered members of the experimental group and 79 members of the concurrent control group. The limited numbers in each group reduced the ability to perform additional analyses that may have further clarified some of the relationships proposed earlier. For example, if the sample sizes were larger it would have been meaningful to analyze the effects of the independent variables for the different study populations as separate models instead of adding reference categories for population membership. Analysis of separate models would have allowed statistical tests to determine if the combined effects of the independent models behaved differently across models (see Paternoster, Brame, Mazerolle, & Piquero, 1998).

Members of the experimental and concurrent control group were also not randomly assigned to their respective groups. In this case, it would be difficult to discern if these findings are generalizable to other groups of offenders. We know the concurrent control group was different in terms of "risk" from the experimental group to some extent so it was clear the selection process itself, as intended, funneled more serious offenders into traditional probation services and less serious offenders into the experimental group. It would be beneficial in an ideal sense to randomly assign groups of offenders to the treatment and control groups, yet such random selection is often neither feasible nor desirable from a community safety perspective.

It should also be noted that the juveniles included in this study were considered relatively serious offenders who were state commitments. These juveniles were not typical juvenile offenders coming before a court but those considered so serious that the county court moved jurisdiction to State officials, and thus represented the tail end of the

continuum as some of the more serious juveniles. Including only the most serious offenders most likely resulted in a restricted range on many of the delinquency scales. Inclusion of less serious youth may have revealed different relationships between initial risk, changes in risk, treatment effects, and recidivism. The lack of significant findings especially as they related to measures of official recidivism might be explained

While the reader is cautioned that the lack of random assignment and restriction in range in terms of seriousness of the population may limit the generalizability of the findings in some fashion or another, it by no means invalidates the importance of the findings. The design of the analysis plan controls for indicators of "seriousness" of the offenders by including not only intake placement scores but also other background characteristics and delinquency risk factors. It is these types of characteristics that often differentiate more serious from less serious offenders. In this case, total risk score in conjunction with offense type were the primary determinants between classifications into the treatment versus control groups. Mandatory overrides to more serious classification levels did occur in some instances because of serious family problems (see Appendix A), but the placement guidelines were generally followed.

With the statistical controls considered in the models proposed in Chapter 4, these findings are expected to be generalizable to a broad class of juvenile offenders. The statistical controls included intake placement variables, instant offense type, background characteristics, and T_1 delinquency risk factors. The participants in the treatment and control groups also included a wide range of offenders, most referred for serious offenses (*see* Table 7).

The current research would also have been strengthened by more robust measures of treatment services. Treatment services currently represented aggregations of self-reported measures that reflected frequency of participation in certain types of services across one or more programs. Respondents were asked to identify all of the programs by name from which they received services during the identified time period. Respondents were subsequently asked to indicate the frequency with which they attended individual or group counseling services, educational tutoring, job-skills training, or recreational services for each program identified (*see* "Program Treatment Model" in Chapter 3 for future discussion on measures).

When designing a similar program, it would make sense to develop agreements with individual service providers to maintain logs of when individuals attend their programs, the types of services received during the visit, and the duration of different services (e.g., group therapy). This "official" measure of program services could service either as a substitute for self-reported measures or as supplemental information. Where possible, data collection procedures should also create finer distinctions between various types of program services.

It would have been preferential to collect data from a non-delinquent group of juveniles to compare to the delinquent groups. It was impossible to determine if the youth included in this study were at one end of the continuum in terms of both initial risk and change in risk or if their relative levels of risk were developmentally "normal." There were two core assumptions running throughout this manuscript. First, those at greater initial risk would be more likely to recidivate because high levels of risk as operationalized in the measures is not normal from the perspective of developmental

theory. Thus, those at greater risk would respond by participating in greater levels of delinquency. The second assumption was that changes in risk were directly attributable to services received from participation in the program. For example, the implicit assumption was reductions in drug use for both populations were a result of effective intervention services. Regardless if the reductions were attributable to reduced opportunity to procure drugs or use drugs caused by increased surveillance, or attributable to reductions in the psycho-physiological cravings (e.g., addiction) resultant to therapy, it was assumed any apparent reductions are due to the treatment models themselves.

There is a host of research that identifies "normal" developmental patterns in both delinquent and non-delinquent behaviors (Elliot et al., 1985; Elliot et al., 1989; Farrington, 1992; Furstenberg & Hughes, 1997; Loeber, 1996; Loeber & Hay, 1994; Loeber et al., 1993; Thornberry, 1997b; Thornberry et al., 1994; Warr, 2002) and the inclusion of a non-delinquent control group similar in age, gender, and socio-economic status would provide the ability to see if T_1 delinquency risk factors or changes in those risk factors were "normal" issues that occurred in this age-specific developmental stage. Warr (2002), for example, provided a comprehensive assessment of how the changing roles of peers and peer networks influence levels of delinquency throughout the life-course. The use of a non-delinquent control group would advance the argument the presence of T_1 delinquency risk factors and changes in those risk factors are unique to the study populations.

Finally, this study would have been aided by a longer follow-up for both the structured interviews and measures of official recidivism. The eighteen-month follow-up

period was consistent with previous research investigating similar phenomenon, yet following individuals over extended periods of time may have yielded relationships not evident in the current analyses. Many longitudinal research designs consider the relationships between early delinquency (before age 15) and criminal behavior in adulthood. Farrington (1989), for example, reported early impulsivity diagnosed between ages 8-10 to be predictive of self-reported violence at age 32. Similarly, Tremblay and LeMarquand (2001) reported, among other findings, problem behavior (oppositional behavior and physical aggression) during kindergarten predictive of involvement in both property and violent crime at ages 11 and 12. Expansion of the follow-up would allow for consideration of the issue of "staying power" of treatment effects, and consider the long-term effects of T_1 delinquency risk factors and change in risk factors on recidivism for a larger part of the life course.

Policy Implications

Treatment in the juvenile justice system should be structured in manners that use the least restrictive placement options that best facilitate goals of the system such as reduced recidivism and reintegration into the community (Miller, 1991). Early treatment of juvenile offenders should be one of the primary goals of the juvenile justice system. A review of the literature leaves little reason to doubt that large-scale success in either preventing delinquency or intervening after the onset of delinquent behavior has yet to be realized. Private citizens, religious organizations, and government agencies have invested undeterminable levels of time and resources into the search for the "cure" for delinquency. Since the early 1900s treatment strategies have taken many different forms, some focusing on psychoses of individual offenders, others at peer networks or families,

and still others directed at social changes that increase the presence of legitimate opportunities for residents of distressed communities. Despite the best of intentions, the involvement of juveniles in crime, particularly serious crime, increased throughout much of the twentieth century. While there has been some controversy about the accuracy of official statistics, few can dispute that the involvement of juveniles in serious and violent crime increased throughout this period. The most promising strategies involve formulating intervention programs for younger offenders near the onset of delinquency (Howell, 1998, 1995).

Recent policy initiatives have advocated the implementation of comprehensive service delivery models that are developmentally specific and deliver intervention services that realize the ontology of delinquency. The Office of Juvenile Justice and Delinquency Prevention established a series of guidelines and published extensively on model programs directed at this effort. Regardless of the exact form of the intervention services, early and comprehensive intervention programs should be guided by the notion of the least restrictive alternative. However, it is unclear at this point what "least restrictive" actually means. Miller's (1991) assessment of the inadequacies and harmful effects of juvenile institutions in Massachusetts could be interpreted as support for a lack of official involvement by the juvenile justice system. To do so would be a shortsighted interpretation of this important work. Although Miller (1991) argued many young offenders before juvenile courts today need little, if any, direct intervention by actors in the criminal justice system, he also recognized there are a significant number of juvenile offenders that do need intervention services and such services should be meaningful and humane.

Yet the mandate for effective treatment in the least restrictive settings remains reasonably broad. Evidence from the current study indicates the non-secured residential model was more effective in producing the intended outcomes of reducing recidivism and delinquency risk factors. Even in light of the fact that the clients in residential placement were slightly more serious offenders, the treatment modality was more effective in reducing recidivism. While those in residential placement received similar levels of services during their commitment, their treatment was overall likely to include more intensive supervision since their ability to leave the premises was restricted. This provides support for the argument that the treatment modality itself matters and that all interventions are not equal. In this case, "least restrictive" should not be interpreted as meaning "non-restrictive."

Policy should be concerned with establishing not only if programs work, but why certain programs work while others do not. Determining why one program model is more effective over another answers only part of the question and leaves the field of juvenile intervention woefully lacking in viable alternatives. Lipsey and Wilson (1998) advanced the argument that it is important to disaggregate treatment programs by subtypes of services. The effectiveness of intervention programs is not only based on the type of offenders, but the nature of the setting in which services are delivered (institutional setting versus non-institutional setting) and the specific types of intervention services delivered (educational, interpersonal counseling, family therapy, etc.). In the case of this research, the global measure of program services was significantly related to measures of official recidivism, yet the relationship was in the unexpected direction. Meaning, those who received more services were also more likely to recidivate.

Related to the above, it is also important to determine if failure was caused by a flawed conceptual foundation characterized by a misspecified understanding of the problem or caused by implementation problems. There is no doubt that the Youth and Family Studies program suffered from major implementation problems. For example, the program design called for a "tracking" component that included hiring personnel to verify the location and activities of clients when they were not involved in program activities. Face-to-face and phone contacts were to be initiated at random times throughout the week with special emphasis on "high crime" times such as nights and weekends. This aspect of the program failed to be operational in any real sense for a substantial part of the program. Clients were largely left completely unsupervised by program staff while not involved in program-related functions (Bynum, Davidson II, Beitzel, Nguyen, & Wordes, 2000).

The program was also never able to integrate parents, guardians, or other family members into program activities. Although multiple special events (e.g., ice cream socials) were created in an attempt to create positive interaction between youth and their families, few families took advantage of these opportunities. Finally, there were also major problems with staff turnover during the first two years the YFS program was in operation. This is important from a policy perspective because it is necessary to build "startup time" into a problem model. Providing for a six-to-twelve month startup period can assist with working out the "kinks" of a program. When implementing programs of this nature sufficient time should be taken to plans its implementation and fix emergent problems in the program model as they arise.

The notion of treatment is one of the cornerstones of the juvenile justice system and it is philosophically grounded on providing safe treatment services to wayward youth. Although the non-secured residential treatment was more effective in providing the intended outcomes in this case, the day treatment model should not be abandoned. It was notable that the day treatment model produced delinquency risk factor change scores that were similar in magnitude to traditional probation. While members of the concurrent control group were more serious, they proportionately experienced less (favorable) change. The YFS program was an attempt to maintain the connections between clients and their communities, including their families. This type of community-based alternative may have been more effective in reducing delinquent behavior if given enough time to work out the implementation problems but these findings suggested otherwise. In this case, the cumulative evidence indicated support for the argument that non-secure residential facilities may offer effective alternatives to more restrictive forms of institutional treatment.

APPENDIX A

DELINQUENT YOUTH
CLASSIFICATION AND ASSIGNMENT REPORT
MICHIGAN DEPARTMENT OF SOCIAL SERVICES
WAYNE COUNTY

	Name of Youth (Last, First, Middle):	Admission Date:
Who Completed Risk Report: (Circle One) 1 = Juvenile Court 2 = MDSS Intake & Court Services 3 = Reception & Assessment Center 4 = DSW 5 = Other ODS Staff 6 = Other	Date of Birth:	Soc. Sec. #: Sex: ☐ Male ☐ Female
	Court Case Number:	County:
	Residential Provider Number	Worker Name:
	Supervisor's Signature:	Report Date:
	ODS Case #: MDSS Case #:	Site #: Stay #:

INITIAL SECURITY MATRIX

MOST SERIOUS ADJUDICATED OFFENSE CATEGORY	RISK SCORE	SECURITY LEVEL ASSIGNMENT
CLASS 1 & II	HIGH	**HIGH**
	MODERATE	**MEDIUM**
	LOW	**MEDIUM**
CLASS III	HIGH	**LOW**
	MODERATE	**COMMUNITY BASED**
	LOW	**COMMUNITY BASED**
CLASS IV & V	HIGH	**LOW**
	MODERATE	**COMMUNITY BASED**
	LOW	**COMMUNITY BASED**

INITIAL SECURITY MATRIX

MANDATORY OVERRIDES

☐ Manslaughter ☐ Negligent Homicide ☐ Felony Child Abuse ☐ CSC IV (311)

☐ FA (301) ☐ AW/ICC (302) ☐ PRIOR CLASS I or III ☐ BEOD (306)

DISCRETIONARY OVERRIDE: ENTER CODE FROM OPERATIONS HANDBOOK: _____

PLACEMENT SECURITY CATEGORY

☐ COMMUNITY BASED ☐ LOW ☐ MEDIUM ☐ HIGH

MICHIGAN DEPARTMENT OF SOCIAL SERVICES

INITIAL DELINQUENCY RISK ASSESSMENT SCALE

1. Age At First Adjudication		7. Number Of Out-Of Home Placements	
11 Or Under	3	One Or Fewer	0
12-14	2	Two Or More	1
15	1	8. Number Of Runaways From Prior Placements	
16 Or Over	0	None	0
2. Number Of Prior Arrests		One Or More	1
None	0	9. Last Grade Completed	
One Or Two	1	10th Grade Or Higher	0
Three Or More	2	9th Grade	1
3. Current School Status		8th Grade	
Attending Regularly, Occasional Truancy	0	10. Level Of Parent/Caretaker Control	
Dropped Out Of School	1	Supervision Provided Even If Ineffective	0
Expelled/Suspended/Habitual Truant	2	Little Or No Supervision Provided	1
4. History Of Drug Use		11. Peer Relationships	
No Known Use Or Exper Only	0	Good Support & Influence/Associates With Non-Delinquent Friends	0
Regular Use	1	Non-Peer Oriented Or Some Companions W/Del Orient.	2
5. Current Offense		Most Companions Involved In Delinquent Behavior Or Gang Involvement	3
Non-Assaultive Felony Or Misdem	2		
All Others	0		
6. Youth Was On Probation At Time Of Commitment			
No	0		
Yes	1		

TOTAL SCORE _____

RISK CATEGORY_____

RISK LEVELS		
0-8 – LOW	9-11 – MODERATE	12-19 - HIGH

COMPLETED BY: _____ | | | | | | |

STAFF CODE/LOAD #

APPENDIX B

Table B-1. Detailed Listing of Qualifying Offenses (n=369).

		Experimental	Concurrent	Historical	Total
Robbery	Count	2	4	2	8
	Col %	2%	4%	2%	2%
Assaultive	Count	26	15	24	65
	Col %	20%	14%	18%	18%
Criminal Sexual Conduct	Count	2	12	3	17
	Col %	2%	11%	2%	5%
Arson	Count	1	0	1	2
	Col %	1%	0%	1%	1%
Burglary	Count	10	13	17	40
	Col %	8%	12%	13%	11%
Drugs	Count	26	20	10	56
	Col %	20%	19%	8%	15%
Receiving and Conceal. Stolen Property	Count	14	14	14	42
	Col %	11%	13%	11%	11%
Larceny	Count	8	3	9	20
	Col %	6%	3%	7%	5%
Weapons	Count	16	3	14	33
	Col %	12%	3%	11%	9%
Retail Fraud	Count	1	1	1	3
	Col %	1%	1%	1%	1%
Malicious Dest. Of Property	Count	7	8	6	21
	Col %	5%	8%	5%	6%
Auto Theft	Count	5	0	5	10
	Col %	4%	0%	4%	3%
Trespass	Count	0	2	0	2
	Col %	0%	2%	0%	1%
Other Prop	Count	0	1	0	1
	Col %	0%	1%	0%	0%
Other	Count	7	5	6	18
	Col %	5%	5%	5%	5%
Status/Disorder	Count	7	5	19	31
	Col %	5%	5%	15%	8%
Total	Count	132	106	131	369
	Col %	100%	100%	100%	100%

Table B-2. Multicollinearity diagnostic tests for intake variables(N=396).

Model A_1		
	Tolerance	VIF
Age Instant	0.596	1.679
Offense	0.859	1.164
Age 1st Arrest	0.105	9.481
Prior Arrest	0.131	7.623
School History	0.122	8.215
Drug Use	0.246	4.060
Offense Serious.	0.090	11.136
Prob Time of Offense	0.276	3.621
Prior Placement	0.268	3.728
Runaway Status	0.518	1.930
Last Grade	0.202	4.956
Parental Commitment	0.349	2.865
Peer Relations	0.117	8.578
Total Risk Score	0.013	75.750

Model B_1		
	Tolerance	VIF
Age Instant	0.595	1.680
Offense	0.824	1.214
Age 1st Arrest	0.105	9.529
Prior Arrest	0.130	7.718
School History	0.120	8.323
Drug Use	0.245	4.080
Offense Serious.	0.089	11.220
Prob Time of Offense	0.273	3.659
Prior Placement	0.267	3.740
Runaway Status	0.518	1.930
Last Grade	0.199	5.020
Parental Commitment	0.347	2.884
Peer Relations	0.116	8.632
Total Risk Score	0.013	76.995
Historical	0.726	1.377
Concurrent	0.668	1.497

Model A_2		
	Tolerance	VIF
Age Instant	0.623	1.605
Offense	0.863	1.159
Age 1st Arrest	0.565	1.769
Prior Arrest	0.818	1.223
School History	0.780	1.282
Drug Use	0.841	1.189
Offense Seriousness	0.829	1.206
Prob Time of Offense	0.788	1.269
Prior Placement	0.892	1.121
Runaway Status	0.902	1.108
Last Grade	0.755	1.324
Parental Commitment	0.955	1.048
Peer Relations	0.883	1.133

Model B_2		
	Tolerance	VIF
Age Instant	0.621	1.610
Offense	0.825	1.212
Age 1st Arrest	0.559	1.788
Prior Arrest	0.811	1.234
School History	0.767	1.304
Drug Use	0.812	1.232
Offense Seriousness	0.808	1.238
Prob Time of Offense	0.783	1.277
Prior Placement	0.884	1.131
Runaway Status	0.891	1.122
Last Grade	0.751	1.331
Parental Commitment	0.944	1.059
Peer Relations	0.871	1.148
Historical	0.727	1.375
Concurrent	0.679	1.473

Table B-3. Multicollinearity diagnostic tests for intake variables(N=396).

	Tolerance	VIF
Age Instant	0.620	1.613
Offense	0.823	1.215
Age 1st Arrest	0.559	1.789
Prior Arrest	0.799	1.251
School History	0.765	1.307
Drug Use	0.811	1.233
Offense Seriousness	0.804	1.244
Prob Time of Offense	0.768	1.302
Prior Placement	0.868	1.152
Runaway Status	0.890	1.123
Last Grade	0.747	1.338
Parental Commitment	0.944	1.060
Peer Relations	0.860	1.162
Days in Detention	0.863	1.158
Historical	0.701	1.426
Concurrent	0.645	1.551

Table B-4. Multicollinearity diagnostic tests for background variables (n=178).

Model A		
	Tolerance	VIF
Age Instant	0.919	1.088
Intake Offense	0.973	1.027
Total Intake	0.925	1.081
Soc Dis	0.472	2.120
Ses	0.453	2.208
Det Days	0.877	1.140

Model B		
	Tolerance	VIF
Age Instant	0.906	1.104
Intake Offense	0.927	1.078
Total Intake	0.802	1.246
Soc Dis	0.471	2.122
Ses	0.453	2.208
Det Days	0.971	1.281
Concurrent	0.695	1.438

Table B-5. Multicollinearity diagnostic tests for background variables and T_1 Delinquency Risk Factors (n=178).

Model A			Model B		
	Tolerance	VIF		Tolerance	VIF
Age Instant	0.918	1.089	Age Instant	0.905	1.104
Offense	0.973	1.027	Offense	0.926	1.080
Total Intake	0.893	1.120	Total Intake	0.792	1.263
T_1 Risk	0.956	1.046	T_1 Risk	0.928	1.077
Soc Dis	0.471	2.121	Soc Dis	0.471	2.123
Ses	0.450	2.223	Ses	0.450	2.223
Det Days	0.877	1.141	Det Days	0.776	1.288
			Concurrent	0.675	1.481

Model A			Model B		
	Tolerance	VIF		Tolerance	VIF
Age Instant	0.865	1.156	Age Instant	0.850	1.177
Offense	0.982	1.018	Offense	0.924	1.082
Total Intake	0.898	1.114	Total Intake	0.772	1.295
T_1 SB	0.629	1.591	T_1 SB	0.627	1.596
T_1 DU	0.586	1.707	T_1 DU	0.578	1.730
T_1 SL	0.751	1.332	T_1 SL	0.713	1.402
Soc Dis	0.472	2.119	Soc Dis	0.471	2.121
Ses	0.450	2.222	Ses	0.448	2.232
Det Days	0.925	1.081	Det Days	0.841	1.189
			Concurrent	0.646	1.547

Table B-6. Multicollinearity diagnostic tests for background variables and Delinquency Risk Factor Change Scores (n=178).

Model A			Model B		
	Tolerance	VIF		Tolerance	VIF
Age Instant	0.907	1.102	**Age Instant**	0.900	1.111
Offense	0.928	1.078	**Offense**	0.874	1.144
Total Intake	0.878	1.139	**Total Intake**	0.768	1.302
AS Change	0.752	1.330	**AS Change**	0.751	1.331
SB Change	0.559	1.788	**SB Change**	0.557	1.794
AD Change	0.696	1.436	**AD Change**	0.694	1.440
SE Change	0.909	1.100	**SE Change**	0.907	1.102
PV Change	0.853	1.172	**PV Change**	0.850	1.176
EP Change	0.675	1.481	**EP Change**	0.675	1.481
FIP Change	0.866	1.155	**FIP Change**	0.865	1.156
DU Change	0.543	1.842	**DU Change**	0.528	1.896
SL Change	0.578	1.732	**SL Change**	0.577	1.732
CI Change	0.801	1.248	**CI Change**	0.798	1.253
Soc Dis	0.465	2.151	**Soc Dis**	0.465	2.151
Ses	0.451	2.216	**Ses**	0.450	2.222
Det Days	0.934	1.070	**Det Days**	0.914	1.094
			Concurrent	0.764	1.309

Table B-7. Multicollinearity diagnostic tests for background variables and Program Services (Disaggregated and Cumulative Measure) (n=178).

Model A_1		
	Tolerance	VIF
Age Instant	0.901	1.110
Offense	0.979	1.022
Education	0.148	6.777
Job Skills	0.351	2.853
Recreational	0.123	8.107
Soc Dis	0.489	2.046
Ses	0.478	2.093
Det Days	0.904	1.107

Model B_1		
	Tolerance	VIF
Age Instant	0.898	1.114
Offense	0.945	1.059
Education	0.146	6.871
Job Skills	0.339	2.954
Recreational	0.123	8.107
Soc Dis	0.488	2.049
Ses	0.478	2.094
Det Days	0.882	1.134
Concurrent	0.888	1.126

Model A_2		
	Tolerance	VIF
Age Instant	0.921	1.086
Offense	0.978	1.023
Total Intake	0.961	1.041
Total Services	0.950	1.053
Soc Dis	0.489	2.043
Ses	0.480	2.083
Det Days	0.959	1.043

Model B_2		
	Tolerance	VIF
Age Instant	0.910	1.099
Offense	0.918	1.089
Total Intake	0.829	1.207
Total Services	0.944	1.059
Soc Dis	0.489	2.043
Ses	0.480	2.084
Det Days	0.935	1.069
Concurrent	0.800	1.249

Table B-8. Multicollinearity diagnostic tests for complete model (n=178).

Model A		
	Tolerance	VIF
Age Instant	0.763	1.311
Offense	0.896	1.116
Total Intake	0.795	1.258
AS_{T1}	0.384	2.602
SB_{T1}	0.379	2.639
AD_{T1}	0.379	2.641
SE_{T1}	0.555	1.802
PV_{T1}	0.350	2.860
EP_{T1}	0.408	2.448
FIP_{T1}	0.580	1.725
DU_{T1}	0.354	2.824
SL_{T1}	0.475	2.107
CI_{T1}	0.468	2.139
AS Change	0.433	2.310
SB Change	0.384	2.606
AD Change	0.445	2.247
SE Change	0.544	1.838
PV Change	0.433	2.309
EP Change	0.491	2.036
FIP Change	0.623	1.605
DU Change	0.391	2.555
SL Change	0.431	2.321
CI Change	0.529	1.892
Total Services	0.842	1.188
Soc Dis	0.450	2.221
Ses	0.427	2.339
Det Days	0.823	1.215

Model B		
	Tolerance	VIF
Age Instant	0.754	1.326
Offense	0.848	1.179
Total Intake	0.672	1.488
AS_{T1}	0.384	2.603
SB_{T1}	0.376	2.658
AD_{T1}	0.378	2.644
SE_{T1}	0.555	1.802
PV_{T1}	0.339	2.953
EP_{T1}	0.407	2.456
FIP_{T1}	0.580	1.725
DU_{T1}	0.352	2.844
SL_{T1}	0.458	2.182
CI_{T1}	0.467	2.140
AS Change	0.433	2.311
SB Change	0.373	2.678
AD Change	0.443	2.256
SE Change	0.539	1.856
PV Change	0.432	2.312
EP Change	0.487	2.054
FIP Change	0.623	1.606
DU Change	0.387	2.581
SL Change	0.431	2.322
CI Change	0.525	1.905
Total Services	0.840	1.190
Soc Dis	0.450	2.222
Ses	0.425	2.351
Det Days	0.710	1.409
Concurrent	0.575	1.740

APPENDIX C

Correlations

		X1	X2	X3	X4	X5	X6
Age at Instant(X1)	Pearson Correlation	1	-.027	.025	-.115	-.044	.029
	Sig. (2-tailed)	.	.674	.699	.104	.538	.685
	N	238	238	238	202	201	202
Offense at Intake(X2)	Pearson Correlation	-.027	1	.084	.113	.038	-.082
	Sig. (2-tailed)	.674	.	.165	.102	.584	.238
	N	238	283	277	209	208	209
Intake Placement Score(X3)	Pearson Correlation	.025	.084	1	.079	.146*	-.076
	Sig. (2-tailed)	.699	.165	.	.260	.037	.278
	N	238	277	277	205	204	205
AST1(X4)	Pearson Correlation	-.115	.113	.079	1	.373**	-.335**
	Sig. (2-tailed)	.104	.102	.260	.	.000	.000
	N	202	209	205	209	208	209
SBT1(X5)	Pearson Correlation	-.044	.038	.146*	.373**	1	-.300**
	Sig. (2-tailed)	.538	.584	.037	.000	.	.000
	N	201	208	204	208	208	208
ADT1(X6)	Pearson Correlation	.029	-.082	-.076	-.335**	-.300**	1
	Sig. (2-tailed)	.685	.238	.278	.000	.000	.
	N	202	209	205	209	208	209
SET1(X7)	Pearson Correlation	-.032	.070	-.006	-.157*	-.087	.005
	Sig. (2-tailed)	.652	.311	.930	.024	.212	.940
	N	202	209	205	209	208	209
PVT1(X8)	Pearson Correlation	.097	.032	-.150*	-.228**	-.205**	.469**
	Sig. (2-tailed)	.171	.649	.032	.001	.003	.000
	N	202	209	205	209	208	209
EPT1(X9)	Pearson Correlation	-.126	.086	.071	.320**	.496**	-.412**
	Sig. (2-tailed)	.074	.217	.311	.000	.000	.000
	N	202	209	205	209	208	209
FIPT1(X10)	Pearson Correlation	.006	.003	.058	-.130	-.142*	.130
	Sig. (2-tailed)	.931	.970	.406	.061	.041	.061
	N	202	209	205	209	208	209

Correlations

		X1	X2	X3	X4	X5	X6
DUT1(X11)	Pearson Correlation	.121	-.004	.169*	.318**	.570**	-.359**
	Sig. (2-tailed)	.087	.951	.015	.000	.000	.000
	N	202	209	205	209	208	209
SLT1(X12)	Pearson Correlation	.032	-.030	-.217**	-.230**	-.420**	.131
	Sig. (2-tailed)	.648	.666	.002	.001	.000	.058
	N	202	209	205	209	208	209
CIT1(X13)	Pearson Correlation	-.041	.000	-.042	-.356**	-.261**	.262**
	Sig. (2-tailed)	.558	.996	.554	.000	.000	.000
	N	202	209	205	209	208	209
AS Change(X14)	Pearson Correlation	.097	-.130*	-.136*	-.639**	-.136	.130
	Sig. (2-tailed)	.134	.029	.024	.000	.051	.061
	N	238	283	277	209	208	209
SB Change(X15)	Pearson Correlation	.059	.004	-.090	-.228**	-.532**	.052
	Sig. (2-tailed)	.362	.944	.135	.001	.000	.456
	N	238	283	277	209	208	209
AD Change(X16)	Pearson Correlation	.031	.092	-.038	.279**	.193**	-.579**
	Sig. (2-tailed)	.633	.122	.530	.000	.005	.000
	N	238	283	277	209	208	209
SE Change(X17)	Pearson Correlation	.076	-.104	.000	.069	-.083	.014
	Sig. (2-tailed)	.241	.080	.994	.321	.235	.839
	N	238	283	277	209	208	209
PV Change(X18)	Pearson Correlation	-.037	-.016	.082	.101	.055	-.261**
	Sig. (2-tailed)	.575	.790	.173	.147	.429	.000
	N	238	283	277	209	208	209
EP Change(X19)	Pearson Correlation	.075	.002	-.017	-.197**	-.237**	.149*
	Sig. (2-tailed)	.250	.980	.781	.004	.001	.031
	N	238	283	277	209	208	209
FIP Change(X20)	Pearson Correlation	-.058	.063	-.147*	.048	.049	.027
	Sig. (2-tailed)	.373	.293	.015	.490	.484	.695
	N	238	283	277	209	208	209

Correlations

		X1	X2	X3	X4	X5	X6
DU Change(X21)	Pearson Correlation	.063	-.032	-.075	-.236**	-.317**	.246**
	Sig. (2-tailed)	.333	.594	.214	.001	.000	.000
	N	238	283	277	209	208	209
SL Change(X22)	Pearson Correlation	-.080	-.048	.122*	.003	.172*	.023
	Sig. (2-tailed)	.219	.421	.043	.962	.013	.742
	N	238	283	277	209	208	209
CI Change(X23)	Pearson Correlation	-.105	.011	.057	.212**	.077	-.194**
	Sig. (2-tailed)	.106	.851	.344	.002	.267	.005
	N	238	283	277	209	208	209
Program Services(X24)	Pearson Correlation	-.190**	.028	.065	.092	.125	-.079
	Sig. (2-tailed)	.003	.635	.279	.187	.073	.253
	N	238	283	277	209	208	209
Soc Dis(X25)	Pearson Correlation	-.051	-.078	.145*	-.065	-.032	.001
	Sig. (2-tailed)	.435	.191	.015	.348	.651	.994
	N	238	283	277	209	208	209
SES(X26)	Pearson Correlation	.107	-.072	.113	-.096	-.043	.037
	Sig. (2-tailed)	.099	.227	.059	.168	.542	.591
	N	238	283	277	209	208	209
Detention Days(X27)	Pearson Correlation	-.052	.054	-.047	-.054	.086	-.089
	Sig. (2-tailed)	.421	.399	.466	.442	.218	.204
	N	238	243	239	207	206	207
Control Group(X28)	Pearson Correlation	-.077	-.196**	.343**	.034	.179**	-.061
	Sig. (2-tailed)	.235	.002	.000	.629	.010	.384
	N	238	243	239	207	206	207

Correlations

		X7	X8	X9	X10	X11	X12
Age at Instant(X1)	Pearson Correlation	-.032	.097	-.126	.006	.121	.032
	Sig. (2-tailed)	.652	.171	.074	.931	.087	.648
	N	202	202	202	202	202	202
Offense at Intake(X2)	Pearson Correlation	.070	.032	.086	.003	-.004	-.030
	Sig. (2-tailed)	.311	.649	.217	.970	.951	.666
	N	209	209	209	209	209	209
Intake Placement Score(X3)	Pearson Correlation	-.006	-.150*	.071	.058	.169*	-.217**
	Sig. (2-tailed)	.930	.032	.311	.406	.015	.002
	N	205	205	205	205	205	205
AST1(X4)	Pearson Correlation	-.157*	-.228**	.320**	-.130	.318**	-.230**
	Sig. (2-tailed)	.024	.001	.000	.061	.000	.001
	N	209	209	209	209	209	209
SBT1(X5)	Pearson Correlation	-.087	-.205**	.496**	-.142*	.570**	-.420**
	Sig. (2-tailed)	.212	.003	.000	.041	.000	.000
	N	208	208	208	208	208	208
ADT1(X6)	Pearson Correlation	.005	.469**	-.412**	.130	-.359**	.131
	Sig. (2-tailed)	.940	.000	.000	.061	.000	.058
	N	209	209	209	209	209	209
SET1(X7)	Pearson Correlation	1	.100	-.121	.160*	-.119	.117
	Sig. (2-tailed)	.	.150	.082	.021	.085	.090
	N	209	209	209	209	209	209
PVT1(X8)	Pearson Correlation	.100	1	-.277**	.186**	-.214**	.158*
	Sig. (2-tailed)	.150	.	.000	.007	.002	.022
	N	209	209	209	209	209	209
EPT1(X9)	Pearson Correlation	-.121	-.277**	1	-.228**	.390**	-.482**
	Sig. (2-tailed)	.082	.000	.	.001	.000	.000
	N	209	209	209	209	209	209
FIPT1(X10)	Pearson Correlation	.160*	.186**	-.228**	1	-.261**	.139*
	Sig. (2-tailed)	.021	.007	.001	.	.000	.045
	N	209	209	209	209	209	209

Correlations

		X7	X8	X9	X10	X11	X12
DUT1(X11)	Pearson Correlation	-.119	-.214**	.390**	-.261**	1	-.425**
	Sig. (2-tailed)	.085	.002	.000	.000	.	.000
	N	209	209	209	209	209	209
SLT1(X12)	Pearson Correlation	.117	.158*	-.482**	.139*	-.425**	1
	Sig. (2-tailed)	.090	.022	.000	.045	.000	.
	N	209	209	209	209	209	209
CIT1(X13)	Pearson Correlation	.106	.156*	-.159*	.339**	-.373**	.051
	Sig. (2-tailed)	.128	.025	.022	.000	.000	.463
	N	209	209	209	209	209	209
AS Change(X14)	Pearson Correlation	.101	.078	-.100	.079	-.157*	.159*
	Sig. (2-tailed)	.145	.264	.150	.258	.024	.022
	N	209	209	209	209	209	209
SB Change(X15)	Pearson Correlation	.098	.090	-.215**	.006	-.360**	.276**
	Sig. (2-tailed)	.157	.194	.002	.927	.000	.000
	N	209	209	209	209	209	209
AD Change(X16)	Pearson Correlation	-.009	-.205**	.222**	-.148*	.216**	-.016
	Sig. (2-tailed)	.894	.003	.001	.032	.002	.821
	N	209	209	209	209	209	209
SE Change(X17)	Pearson Correlation	-.598**	-.122	-.020	.019	.019	-.012
	Sig. (2-tailed)	.000	.078	.774	.785	.788	.860
	N	209	209	209	209	209	209
PV Change(X18)	Pearson Correlation	.029	-.660**	.229**	-.082	.126	-.124
	Sig. (2-tailed)	.674	.000	.001	.237	.069	.074
	N	209	209	209	209	209	209
EP Change(X19)	Pearson Correlation	.173*	.168*	-.451**	.088	-.141*	.237**
	Sig. (2-tailed)	.012	.015	.000	.206	.042	.001
	N	209	209	209	209	209	209
FIP Change(X20)	Pearson Correlation	-.048	.026	.113	-.470**	.029	-.069
	Sig. (2-tailed)	.489	.714	.104	.000	.676	.323
	N	209	209	209	209	209	209

Correlations

		X7	X8	X9	X10	X11	X12
DU Change(X21)	Pearson Correlation	.159*	.124	-.241**	.087	-.547**	.219**
	Sig. (2-tailed)	.021	.074	.000	.213	.000	.001
	N	209	209	209	209	209	209
SL Change(X22)	Pearson Correlation	-.095	-.085	.151*	.008	.159*	-.432**
	Sig. (2-tailed)	.171	.223	.029	.908	.022	.000
	N	209	209	209	209	209	209
CI Change(X23)	Pearson Correlation	-.041	-.028	.035	-.170*	.148*	.031
	Sig. (2-tailed)	.551	.688	.620	.014	.033	.658
	N	209	209	209	209	209	209
Program Services(X24)	Pearson Correlation	-.025	-.115	.047	-.046	.088	-.042
	Sig. (2-tailed)	.716	.098	.502	.508	.207	.546
	N	209	209	209	209	209	209
Soc Dis(X25)	Pearson Correlation	.119	-.043	.063	.187**	-.117	-.107
	Sig. (2-tailed)	.087	.533	.367	.007	.091	.122
	N	209	209	209	209	209	209
SES(X26)	Pearson Correlation	.101	-.039	-.041	.091	-.188**	-.044
	Sig. (2-tailed)	.145	.573	.555	.189	.007	.530
	N	209	209	209	209	209	209
Detention Days(X27)	Pearson Correlation	.037	-.168*	.038	.000	.046	-.044
	Sig. (2-tailed)	.592	.016	.586	.994	.508	.533
	N	207	207	207	207	207	207
Control Group(X28)	Pearson Correlation	-.077	-.022	.126	-.010	.251**	-.311**
	Sig. (2-tailed)	.272	.754	.070	.891	.000	.000
	N	207	207	207	207	207	207

Correlations

		X13	X14	X15	X16	X17	X18	X19
Age at Instant(X1)	Pearson Correlation	-.041	.097	.059	.031	.076	-.037	.075
	Sig. (2-tailed)	.558	.134	.362	.633	.241	.575	.250
	N	202	238	238	238	238	238	238
Offense at Intake(X2)	Pearson Correlation	.000	-.130*	.004	.092	-.104	-.016	.002
	Sig. (2-tailed)	.996	.029	.944	.122	.080	.790	.980
	N	209	283	283	283	283	283	283
Intake Placement Score(X3)	Pearson Correlation	-.042	-.136*	-.090	-.038	.000	.082	-.017
	Sig. (2-tailed)	.554	.024	.135	.530	.994	.173	.781
	N	205	277	277	277	277	277	277
AST1(X4)	Pearson Correlation	-.356**	-.639**	-.228**	.279**	.069	.101	-.197**
	Sig. (2-tailed)	.000	.000	.001	.000	.321	.147	.004
	N	209	209	209	209	209	209	209
SBT1(X5)	Pearson Correlation	-.261**	-.136	-.532**	.193**	-.083	.055	-.237**
	Sig. (2-tailed)	.000	.051	.000	.005	.235	.429	.001
	N	208	208	208	208	208	208	208
ADT1(X6)	Pearson Correlation	.262**	.130	.052	-.579**	.014	-.261**	.149*
	Sig. (2-tailed)	.000	.061	.456	.000	.839	.000	.031
	N	209	209	209	209	209	209	209
SET1(X7)	Pearson Correlation	.106	.101	.098	-.009	-.598**	.029	.173*
	Sig. (2-tailed)	.128	.145	.157	.894	.000	.674	.012
	N	209	209	209	209	209	209	209
PVT1(X8)	Pearson Correlation	.156*	.078	.090	-.205**	-.122	-.660**	.168*
	Sig. (2-tailed)	.025	.264	.194	.003	.078	.000	.015
	N	209	209	209	209	209	209	209
EPT1(X9)	Pearson Correlation	-.159*	-.100	-.215**	.222**	-.020	.229**	-.451**
	Sig. (2-tailed)	.022	.150	.002	.001	.774	.001	.000
	N	209	209	209	209	209	209	209
FIPT1(X10)	Pearson Correlation	.339**	.079	.006	-.148*	.019	-.082	.088
	Sig. (2-tailed)	.000	.258	.927	.032	.785	.237	.206
	N	209	209	209	209	209	209	209

Correlations

		X13	X14	X15	X16	X17	X18	X19
DUT1(X11)	Pearson Correlation	-.373**	-.157*	-.360**	.216**	.019	.126	-.141*
	Sig. (2-tailed)	.000	.024	.000	.002	.788	.069	.042
	N	209	209	209	209	209	209	209
SLT1(X12)	Pearson Correlation	.051	.159*	.276**	-.016	-.012	-.124	.237**
	Sig. (2-tailed)	.463	.022	.000	.821	.860	.074	.001
	N	209	209	209	209	209	209	209
CIT1(X13)	Pearson Correlation	1	.171*	.130	-.121	.000	-.042	.114
	Sig. (2-tailed)	.	.014	.061	.080	1.000	.546	.101
	N	209	209	209	209	209	209	209
AS Change(X14)	Pearson Correlation	.171*	1	.308**	-.304**	-.136*	-.084	.248**
	Sig. (2-tailed)	.014	.	.000	.000	.023	.160	.000
	N	209	283	283	283	283	283	283
SB Change(X15)	Pearson Correlation	.130	.308**	1	-.195**	-.074	-.097	.410**
	Sig. (2-tailed)	.061	.000	.	.001	.215	.103	.000
	N	209	283	283	283	283	283	283
AD Change(X16)	Pearson Correlation	-.121	-.304**	-.195**	1	.009	.281**	-.149*
	Sig. (2-tailed)	.080	.000	.001	.	.874	.000	.012
	N	209	283	283	283	283	283	283
SE Change(X17)	Pearson Correlation	.000	-.136*	-.074	.009	1	.086	-.079
	Sig. (2-tailed)	1.000	.023	.215	.874	.	.148	.183
	N	209	283	283	283	283	283	283
PV Change(X18)	Pearson Correlation	-.042	-.084	-.097	.281**	.086	1	-.120*
	Sig. (2-tailed)	.546	.160	.103	.000	.148	.	.044
	N	209	283	283	283	283	283	283
EP Change(X19)	Pearson Correlation	.114	.248**	.410**	-.149*	-.079	-.120*	1
	Sig. (2-tailed)	.101	.000	.000	.012	.183	.044	.
	N	209	283	283	283	283	283	283
FIP Change(X20)	Pearson Correlation	-.114	-.079	.055	.149*	-.008	.104	-.075
	Sig. (2-tailed)	.100	.188	.360	.012	.892	.081	.211
	N	209	283	283	283	283	283	283

Correlations

		X13	X14	X15	X16	X17	X18	X19
DU Change(X21)	Pearson Correlation	.222**	.284**	.559**	-.312**	-.193**	-.132*	.335**
	Sig. (2-tailed)	.001	.000	.000	.000	.001	.026	.000
	N	209	283	283	283	283	283	283
SL Change(X22)	Pearson Correlation	-.102	-.148*	-.512**	-.034	.149*	.050	-.468**
	Sig. (2-tailed)	.141	.013	.000	.570	.012	.402	.000
	N	209	283	283	283	283	283	283
CI Change(X23)	Pearson Correlation	-.519**	-.199**	-.171**	.273**	.082	.121*	-.050
	Sig. (2-tailed)	.000	.001	.004	.000	.169	.041	.406
	N	209	283	283	283	283	283	283
Program Services(X24)	Pearson Correlation	-.019	-.172**	-.284**	.072	.083	.085	-.081
	Sig. (2-tailed)	.788	.004	.000	.225	.164	.156	.175
	N	209	283	283	283	283	283	283
Soc Dis(X25)	Pearson Correlation	.171*	-.062	-.041	-.049	-.036	.040	-.038
	Sig. (2-tailed)	.013	.300	.489	.413	.548	.498	.521
	N	209	283	283	283	283	283	283
SES(X26)	Pearson Correlation	.173*	-.042	-.018	-.036	.012	.033	-.012
	Sig. (2-tailed)	.012	.485	.762	.543	.844	.575	.842
	N	209	283	283	283	283	283	283
Detention Days(X27)	Pearson Correlation	-.012	.034	-.086	.059	-.005	.066	.057
	Sig. (2-tailed)	.863	.595	.184	.358	.934	.306	.380
	N	207	243	243	243	243	243	243
Control Group(X28)	Pearson Correlation	-.068	-.035	-.085	-.044	.103	.025	-.033
	Sig. (2-tailed)	.329	.587	.188	.491	.108	.693	.612
	N	207	243	243	243	243	243	243

Correlations

		X20	X21	X22	X23	X24	X25
Age at Instant(X1)	Pearson Correlation	-.058	.063	-.080	-.105	-.190**	-.051
	Sig. (2-tailed)	.373	.333	.219	.106	.003	.435
	N	238	238	238	238	238	238
Offense at Intake(X2)	Pearson Correlation	.063	-.032	-.048	.011	.028	-.078
	Sig. (2-tailed)	.293	.594	.421	.851	.635	.191
	N	283	283	283	283	283	283
Intake Placement Score(X3)	Pearson Correlation	-.147*	-.075	.122*	.057	.065	.145*
	Sig. (2-tailed)	.015	.214	.043	.344	.279	.015
	N	277	277	277	277	277	277
AST1(X4)	Pearson Correlation	.048	-.236**	.003	.212**	.092	-.065
	Sig. (2-tailed)	.490	.001	.962	.002	.187	.348
	N	209	209	209	209	209	209
SBT1(X5)	Pearson Correlation	.049	-.317**	.172*	.077	.125	-.032
	Sig. (2-tailed)	.484	.000	.013	.267	.073	.651
	N	208	208	208	208	208	208
ADT1(X6)	Pearson Correlation	.027	.246**	.023	-.194**	-.079	.001
	Sig. (2-tailed)	.695	.000	.742	.005	.253	.994
	N	209	209	209	209	209	209
SET1(X7)	Pearson Correlation	-.048	.159*	-.095	-.041	-.025	.119
	Sig. (2-tailed)	.489	.021	.171	.551	.716	.087
	N	209	209	209	209	209	209
PVT1(X8)	Pearson Correlation	.026	.124	-.085	-.028	-.115	-.043
	Sig. (2-tailed)	.714	.074	.223	.688	.098	.533
	N	209	209	209	209	209	209
EPT1(X9)	Pearson Correlation	.113	-.241**	.151*	.035	.047	.063
	Sig. (2-tailed)	.104	.000	.029	.620	.502	.367
	N	209	209	209	209	209	209
FIPT1(X10)	Pearson Correlation	-.470**	.087	.008	-.170*	-.046	.187**
	Sig. (2-tailed)	.000	.213	.908	.014	.508	.007
	N	209	209	209	209	209	209

Correlations

		X20	X21	X22	X23	X24	X25
DUT1(X11)	Pearson Correlation	.029	-.547**	.159*	.148*	.088	-.117
	Sig. (2-tailed)	.676	.000	.022	.033	.207	.091
	N	209	209	209	209	209	209
SLT1(X12)	Pearson Correlation	-.069	.219**	-.432**	.031	-.042	-.107
	Sig. (2-tailed)	.323	.001	.000	.658	.546	.122
	N	209	209	209	209	209	209
CIT1(X13)	Pearson Correlation	-.114	.222**	-.102	-.519**	-.019	.171*
	Sig. (2-tailed)	.100	.001	.141	.000	.788	.013
	N	209	209	209	209	209	209
AS Change(X14)	Pearson Correlation	-.079	.284**	-.148*	-.199**	-.172**	-.062
	Sig. (2-tailed)	.188	.000	.013	.001	.004	.300
	N	283	283	283	283	283	283
SB Change(X15)	Pearson Correlation	.055	.559**	-.512**	-.171**	-.284**	-.041
	Sig. (2-tailed)	.360	.000	.000	.004	.000	.489
	N	283	283	283	283	283	283
AD Change(X16)	Pearson Correlation	.149*	-.312**	-.034	.273**	.072	-.049
	Sig. (2-tailed)	.012	.000	.570	.000	.225	.413
	N	283	283	283	283	283	283
SE Change(X17)	Pearson Correlation	-.008	-.193**	.149*	.082	.083	-.036
	Sig. (2-tailed)	.892	.001	.012	.169	.164	.548
	N	283	283	283	283	283	283
PV Change(X18)	Pearson Correlation	.104	-.132*	.050	.121*	.085	.040
	Sig. (2-tailed)	.081	.026	.402	.041	.156	.498
	N	283	283	283	283	283	283
EP Change(X19)	Pearson Correlation	-.075	.335**	-.468**	-.050	-.081	-.038
	Sig. (2-tailed)	.211	.000	.000	.406	.175	.521
	N	283	283	283	283	283	283
FIP Change(X20)	Pearson Correlation	1	.056	-.095	.217**	-.118*	-.074
	Sig. (2-tailed)	.	.347	.110	.000	.048	.217
	N	283	283	283	283	283	283

Correlations

		X20	X21	X22	X23	X24	X25
DU Change(X21)	Pearson Correlation	.056	1	-.424**	-.299**	-.274**	.054
	Sig. (2-tailed)	.347	.	.000	.000	.000	.369
	N	283	283	283	283	283	283
SL Change(X22)	Pearson Correlation	-.095	-.424**	1	.049	.155**	.074
	Sig. (2-tailed)	.110	.000	.	.416	.009	.214
	N	283	283	283	283	283	283
CI Change(X23)	Pearson Correlation	.217**	-.299**	.049	1	.076	-.095
	Sig. (2-tailed)	.000	.000	.416	.	.202	.110
	N	283	283	283	283	283	283
Program Services(X24)	Pearson Correlation	-.118*	-.274**	.155**	.076	1	.042
	Sig. (2-tailed)	.048	.000	.009	.202	.	.484
	N	283	283	283	283	283	283
Soc Dis(X25)	Pearson Correlation	-.074	.054	.074	-.095	.042	1
	Sig. (2-tailed)	.217	.369	.214	.110	.484	.
	N	283	283	283	283	283	283
SES(X26)	Pearson Correlation	-.025	.125*	-.024	-.036	.061	.654**
	Sig. (2-tailed)	.681	.035	.685	.551	.309	.000
	N	283	283	283	283	283	283
Detention Days(X27)	Pearson Correlation	.006	-.052	-.017	.039	.097	.060
	Sig. (2-tailed)	.924	.415	.790	.541	.132	.354
	N	243	243	243	243	243	243
Control Group(X28)	Pearson Correlation	-.063	-.194**	.138*	.124	-.013	.103
	Sig. (2-tailed)	.326	.002	.031	.054	.840	.110
	N	243	243	243	243	243	243

Correlations

		X26	X27	X27
Age at Instant(X1)	Pearson Correlation	.107	-.052	-.077
	Sig. (2-tailed)	.099	.421	.235
	N	238	238	238
Offense at Intake(X2)	Pearson Correlation	-.072	.054	-.196**
	Sig. (2-tailed)	.227	.399	.002
	N	283	243	243
Intake Placement Score(X3)	Pearson Correlation	.113	-.047	.343**
	Sig. (2-tailed)	.059	.466	.000
	N	277	239	239
AST1(X4)	Pearson Correlation	-.096	-.054	.034
	Sig. (2-tailed)	.168	.442	.629
	N	209	207	207
SBT1(X5)	Pearson Correlation	-.043	.086	.179**
	Sig. (2-tailed)	.542	.218	.010
	N	208	206	206
ADT1(X6)	Pearson Correlation	.037	-.089	-.061
	Sig. (2-tailed)	.591	.204	.384
	N	209	207	207
SET1(X7)	Pearson Correlation	.101	.037	-.077
	Sig. (2-tailed)	.145	.592	.272
	N	209	207	207
PVT1(X8)	Pearson Correlation	-.039	-.168*	-.022
	Sig. (2-tailed)	.573	.016	.754
	N	209	207	207
EPT1(X9)	Pearson Correlation	-.041	.038	.126
	Sig. (2-tailed)	.555	.586	.070
	N	209	207	207
FIPT1(X10)	Pearson Correlation	.091	.000	-.010
	Sig. (2-tailed)	.189	.994	.891
	N	209	207	207

Correlations

		X26	X27	X27
DUT1(X11)	Pearson Correlation	-.188**	.046	.251**
	Sig. (2-tailed)	.007	.508	.000
	N	209	207	207
SLT1(X12)	Pearson Correlation	-.044	-.044	-.311**
	Sig. (2-tailed)	.530	.533	.000
	N	209	207	207
CIT1(X13)	Pearson Correlation	.173*	-.012	-.068
	Sig. (2-tailed)	.012	.863	.329
	N	209	207	207
AS Change(X14)	Pearson Correlation	-.042	.034	-.035
	Sig. (2-tailed)	.485	.595	.587
	N	283	243	243
SB Change(X15)	Pearson Correlation	-.018	-.086	-.085
	Sig. (2-tailed)	.762	.184	.188
	N	283	243	243
AD Change(X16)	Pearson Correlation	-.036	.059	-.044
	Sig. (2-tailed)	.543	.358	.491
	N	283	243	243
SE Change(X17)	Pearson Correlation	.012	-.005	.103
	Sig. (2-tailed)	.844	.934	.108
	N	283	243	243
PV Change(X18)	Pearson Correlation	.033	.066	.025
	Sig. (2-tailed)	.575	.306	.693
	N	283	243	243
EP Change(X19)	Pearson Correlation	-.012	.057	-.033
	Sig. (2-tailed)	.842	.380	.612
	N	283	243	243
FIP Change(X20)	Pearson Correlation	-.025	.006	-.063
	Sig. (2-tailed)	.681	.924	.326
	N	283	243	243

Correlations

		X26	X27	X27
DU Change(X21)	Pearson Correlation	.125*	-.052	-.194**
	Sig. (2-tailed)	.035	.415	.002
	N	283	243	243
SL Change(X22)	Pearson Correlation	-.024	-.017	.138*
	Sig. (2-tailed)	.685	.790	.031
	N	283	243	243
CI Change(X23)	Pearson Correlation	-.036	.039	.124
	Sig. (2-tailed)	.551	.541	.054
	N	283	243	243
Program Services(X24)	Pearson Correlation	.061	.097	-.013
	Sig. (2-tailed)	.309	.132	.840
	N	283	243	243
Soc Dis(X25)	Pearson Correlation	.654**	.060	.103
	Sig. (2-tailed)	.000	.354	.110
	N	283	243	243
SES(X26)	Pearson Correlation	1	.131*	.107
	Sig. (2-tailed)	.	.041	.095
	N	283	243	243
Detention Days(X27)	Pearson Correlation	.131*	1	.120
	Sig. (2-tailed)	.041	.	.061
	N	243	243	243
Control Group(X28)	Pearson Correlation	.107	.120	1
	Sig. (2-tailed)	.095	.061	.
	N	243	243	243

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

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

APPENDIX D

VARIABLE CODING TABLE

VARIABLE NAME	VARIABLE DESCRIPTION	VARIABLE TYPE	DATA SOURCE	CONCEPTUAL RELATIONSHIP TO DELIN.
Dependent Variables				
Recidivism	Arrests (non-technical violations of probation) 18 months after referral for instant offense		Court Data	
Self-Reported Delinquency	T3 self-reported delinquency		T3 SI	
Independent Variables				
Age at Instant Offense	Age at petition for instant offense. Higher value denotes older youth	Continuous	CID	Early offending = Risk Factor
Instant Offense	Offense type of instant offense	Categorical	CID	Control
Age 1st Adjudication	Age 1st adjudication. Higher value denotes younger youth	Categorical	CRA	Risk Factor
Prior Arrests	Number of prior arrest. Higher value denotes more prior arrests	Categorical	CRA	Risk Factor
School Status	Current school status. Higher value denotes problems in school	Categorical	CRA	Risk Factor
Drug Use	History of drug use. Higher value indicates problematic alcohol or drug use	Categorical	CRA	Risk Factor
Offense Seriousness	Current offense seriousness. Higher value denotes instant offense was of a serious nature.	Categorical	CRA	Risk Factor
Prob at Time of Commitment	Probation at time of commitment. Higher value denotes juvenile was on probation at time of instant offense	Categorical	CRA	Risk Factor
Prior Placement	Number of out-of home placements. Higher value denotes more prior FIA placements	Categorical	CRA	Risk Factor
Runaway Status	Number of prior runaways. Higher value denotes prior runaway status	Categorical	CRA	Risk Factor

a Structured Interviews
b Court Intake Data
c Court Risk Assessment

VARIABLE CODING TABLE

VARIABLE NAME	VARIABLE DESCRIPTION	VARIABLE TYPE	DATA SOURCE	CONCEPTUAL RELATIONSHIP TO DELIN.
Last Grade Completed	Last grade completed. Higher value denotes lower grade completed.	Categorical	CRA	Risk Factor
Parental Commitment	Level of parent/caretaker control. Higher value indicates lower parental commitment	Categorical	CRA	Risk Factor
Peer Relations	Peer relations. Higher value denotes problematic peer relations	Categorical	CRA	Risk Factor
Total Intake	Total intake placemewnt risk score. Higher value denotes greater risk	Categorical	CRA	Risk Factor
Historical Control	Historical Control Group Membership	Categorical		Control
Concurrent Control	Concurrent Control Group Membership	Categorical		Control
AST1	Negative Attitude Toward School	Continuous	T1 SI	Risk Factor
SBT1	Negative School Behavior	Continuous	T1 SI	Risk Factor
ADT1	Favorable Attitude Toward Delinquency	Continuous	T1 SI	Risk Factor
SET1	Self-esteem	Continuous	T1 SI	Protective Factor
PVT1	Prosocial Values	Continuous	T1 SI	Protective Factor
EPT1	Exposure to Delinquent Peers	Continuous	T1 SI	Risk Factor
FIPT1	Positive Family Involvement	Continuous	T1 SI	Protective Factor
DUT1	Alcohol/Drug Use	Continuous	T1 SI	Risk Factor
SLT1	Stressful Life Events	Continuous	T1 SI	Risk Factor
CIT1	Community Involvement	Continuous	T1 SI	Protective Factor
T1 Risk	Index of T1 Delinquency Risk Factors	Continuous	T1 SI	Risk Factor
AS Change	Negative Attitude Toward School Change Score	Continuous	T1, T3 SI	Reduction = Reduced Risk
SB Change	Negative School Behavior Change Score	Continuous	T1, T3 SI	Reduction = Reduced Risk
AD Change	Favorable Attitude Toward Delinquency Change	Continuous	T1, T3 SI	Reduction = Reduced Risk
SE Change	Change Self-esteem Change Score	Continuous	T1, T3 SI	Increase = Increased Risk
PV Change	Prosocial Values Change Score	Continuous	T1, T3 SI	Increase = Increased Risk
EP Change	Exposure to Delinquent Peers Change Score	Continuous	T1, T3 SI	Reduction = Reduced Risk

a Structured Interviews
b Court Intake Data
c Court Risk Assessment

VARIABLE CODING TABLE

VARIABLE NAME	VARIABLE DESCRIPTION	VARIABLE TYPE	DATA SOURCE	CONCEPTUAL RELATIONSHIP TO DELIN.
PV Change	Prosocial Values Change Score	Continuous	T1, T3 SI	Increase = Increased Risk
EP Change	Exposure to Delinquent Peers Change Score	Continuous	T1, T3 SI	Reduction = Reduced Risk
FIP Change	Positive Family Involvement Change Score	Continuous	T1, T3 SI	Increase = Increased Risk
DU Change	Alcohol/Drug Use Change Score	Continuous	T1, T3 SI	Reduction = Reduced Risk
SL Change	Stressful Life Events Change Score	Continuous	T1, T3 SI	Reduction = Reduced Risk
CI Change	Community Involvement Change Score	Continuous	T1, T3 SI	Increase = Increased Risk
Risk Change	Index for Change in Risk Factors	Continuous	T1, T3 SI	(+) Value = Increased Risk; (-) = Decreased Risk
Soc Dis	Social Disorganization of Neighborhood	Continuous	1990 Census Tract Data	High Disorganization = Increased Risk
Poverty	Poverty Measures of Neighborhood (Low SES)	Continuous	1990 Census Tract Data	High Poverty = Increased Risk
Det Days	Total Days in Detention: 18 Month Follow-up	Continuous	Court Data	
Total Services	Index of Total Services Received	Continuous	T1 SI	High Services = Reduced Risk

a Structured Interviews

b Court Intake Data

c Court Risk Assessment

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