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Taking Stock: An Overview of Findings
from the Rochester Youth Development Study

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INTRODUCTION

In 1986 we began the Rochester Youth Development Study with funding from the Office of Juvenile Justice and Delinquency Prevention (OJJDP). The purpose of the study was to investigate the causes and correlates of adolescent delinquency, with a particular focus on serious, chronic offenders. The Rochester study was initially supported for a 5-year period, as were two other projects, the Denver Youth Survey and the Pittsburgh Youth Study. These three coordinated projects, with the same basic objective and similar research designs, formed OJJDP's Program of Research on the Causes and Correlates of Delinquency.

While initially funded until 1991, the Rochester Youth Development Study continues to investigate the life course development of its sample members. To do so the National Institute of Drug Abuse provided major support from 1994 to 1997 and currently the National Institute of Mental Health is the primary supporter through the year 2003. The National Science Foundation has also supported our research and OJJDP has provided continuous support since 1986 to maintain the Program of Research on the Causes and Correlates of Delinquency. As a consequence, what started out as a study of adolescent delinquency and drug use has expanded into a broader investigation of both prosocial and antisocial development over the life course, reaching both forward into the adult years and backwards into childhood as we begin to investigate intergenerational issues.

While the Rochester study has indeed expanded to address new substantive areas, it has also remained focused on its basic objective—understanding the causes and consequences of juvenile delinquency. We have reported our findings on this core issue in over 40 publications, 17 reports and bulletins, 8 doctoral dissertations, and scores of presentations to both scholarly and practitioner audiences. We have investigated a number of interrelated analytic topics and in this paper we try to "take stock" of at least some of what we have learned. We first summarize the theoretical and methodological approaches of the Rochester Youth Development Study and then discuss some of our key empirical findings.

THEORETICAL FRAMEWORK

The overall design of the Rochester study was guided by two theoretical models—interactional theory and network theory. Interactional theory was first presented by Thornberry in 1987 and provides the core conceptual framework for hypotheses concerning the causes and consequences of delinquency. Network theory was developed by Krohn in 1986 and its complementary perspective has been used to expand the theoretical purview of interactional theory. While these conceptual models helped to guide the research design and measurement space of the Rochester project, the results of the study have also helped us to revise, expand, and better integrate our conceptual models of delinquency. In this section we provide brief overviews of interactional theory and network theory and in the concluding

sections of this paper, after empirical results have been reviewed, we identify future directions of the project.

Interactional Theory

There are three fundamental premises to an interactional theory of delinquency. First, the theory adopts a developmental or life course perspective; second, it emphasizes bidirectional causality; and third, it incorporates social structural influences into the explanation of individual delinquent careers.

Developmental Influences

Elder and colleagues define the life course as the "sequence of culturally defined age-graded roles and social transitions that are enacted over time" (Caspi, Elder, and Herbener, 1990:15; see also, Elder, 1997). Delinquency itself can be considered a behavioral trajectory that unfolds over time; for most people it has an onset, duration, and a termination. Movement along this behavioral trajectory can, at least in part, be explained by movement along other life course trajectories that are related to major social institutions, such as family and work (Thornberry, 1997).

A life course perspective holds that delinquency is not solely caused by a static underlying trait that is stable across developmental stages and heterogeneously distributed in the population. In contrast, interactional theory assumes that the causes of delinquency vary systematically with stages of the life course and with the success or failure with which the life course has been traversed. Interactional theory is a dynamic model, in the sense that all "state dependent" models are dynamic (see

Nagin and Paternoster, 1991). It holds that prior states and behaviors, including antisocial behavior, have important developmental consequences and, in fact, are causally related to later states and behaviors. This leads to the second fundamental premise of interactional theory.

Bidirectional Causality

To understand the causal dynamics behind delinquent careers, interactional theory emphasizes bidirectional or reciprocal causation. From this perspective, it is neither adequate nor accurate to simply identify the causes of delinquency; it is necessary to examine how delinquency can also produce changes in its putative causes. This emphasis on bidirectionality stems from interactional theory's fundamental assertion that behavior patterns emerge from interactions between the person and his or her environment and not simply from the environment acting upon the individual.

Social Structure

The third premise of interactional theory is that life course trajectories are embedded in the social structure. To understand how these trajectories develop, it is imperative to understand how they are related to social class position, race, and gender. The individual's structural position influences, and to some extent determines, the initial values of process variables at early stages of the life course. For example, as compared to children born to more advantaged families, children born to severely disadvantaged families are more likely to start life with high negative values on such explanatory variables as

family, school, peer, and individual attributes. They are also likely to have multiple and cumulating deficits and to have fewer buffering or protective factors available in their environments. As a result, disadvantaged youth have multiple risk factors for delinquency and relatively fewer sources of protection to ward off the impact of these risk factors.

Causal Dynamics

Based on this framework, interactional theory posits that the basic cause of delinquency is a weakening of social controls caused by an attenuation of the person's bond to conventional society. For adolescents in particular, the bond is formed by strong relationships to parents and family, by commitment to and success in school, and by aspirations for and belief in conventional success goals. Adolescents who are strongly attached to, monitored by, and involved with their families are unlikely candidates for prolonged involvement in delinquency. The affective and control elements of these family processes should place bounds on the behavioral freedom of the adolescent. Similar arguments can be made with regard to both school and belief variables (see, Thornberry, 1987).

In contrast, adolescents who have brittle relationships with their parents, who are alienated from school, and who lack conventional goals for success, have fewer social constraints to channel their behavior toward prosocial arenas. They have greater behavioral freedom and are more likely to become involved in delinquency.

For these youth to become seriously and persistently involved in delinquency, however, they need a social environment in which their new-found freedom is channeled into delinquency. That environment is epitomized by the delinquent peer group which provides reinforcements for both delinquent behavior and delinquent beliefs. As youth freed from the constraints of the conventional world gravitate together, they find a social environment that supports and encourages prolonged involvement in delinquency.

At a very general level, therefore, interactional theory offers a two-stage explanation of delinquency. The causally prior one is a weakening of social bonds which then leads to involvement in delinquent networks.

While the theoretical model begins here, it is more complex than this, as suggested by the earlier discussion of interactional theory's basic premises. First, interactional theory does not view these causal influences as static or unidirectional. Indeed, a core argument is that delinquent behavior feeds back upon and produces changes in both bonding and associations. The more the individual engages in delinquency, the more that involvement is likely to increase alienation from parents, reduce commitment to school, and render conventional success goals moot. To illustrate, interactional theory does not assume, as do traditional static theoretical models, that no matter how many drugs a youth does and no matter how stoned he or she is that such behavior has no causal impact on school performance. Quite the contrary, interactional theory explicitly

argues that prolonged drug use has profound effects on school performance and other sources of control. Interactional theory also says that involvement in deviance will increase both associations with deviant peers and the formation of pro-deviant belief systems.

Second, interactional theory argues that these causal influences vary developmentally. For example, during childhood, family influences are more powerful than school or peer influences in shaping behavior. As the individual moves through adolescence, the burgeoning search for and attainment of autonomy increases the impact of school and peer influences, while the impact of the family fades.

These developmental stages are not discrete realms but are themselves causally interrelated. The more successful the individual is in meeting the developmental challenges of earlier stages the more likely they are to succeed as they reach later stages. For example, children who form strong family attachments during childhood are better positioned to successfully negotiate autonomy during adolescence without resorting to heavy involvement in delinquency. Similarly, the more successful the person is during adolescence—forming prosocial competencies and avoiding strong antisocial influences—the easier their transition to adulthood should be and the easier it should be for them to escape any involvement they may have had in delinquency.

Finally, interactional theory posits that all of these processes vary by structural position. Youth growing up in socially disadvantaged families and neighborhoods, especially if

they are people of color, are apt to have more difficult life course trajectories in which all of the previous processes leading to delinquent careers are exacerbated. Their environment diminishes the chances that strong prosocial bonds and opportunities will be available and heightens the chances that deviant opportunities—delinquent peers, street gangs, drug markets, etc.—will be available as they reach adolescence. Given that, the bidirectional causal effects and their developmental consequences described earlier have fertile ground in which to unfold and these youngsters are more likely to have serious and persistent delinquent careers.

Network Theory

To complement interactional theory's focus on the importance of the relationships between adolescents and both their peers and parents, the Rochester Youth Development Study has employed social network theory (Krohn, 1986) to better understand the structure and dynamics of those relationships. Social network theory emphasizes the importance of the characteristics of one's social group or network on behavior.

A social network is defined as a "specified set of links among social actors" (Fischer et al., 1977: 33). Thus, the focus of network analysis is on the structure and content of those links rather than on the individual characteristics of the actors. How a network is structured and where a particular individual is within that set of relationships are considered important in determining the behaviors of the individual actors involved in the network.

The social network perspective assumes that all social networks constrain the behavior of their participants to some extent. However the degree of constraint depends on the structure of the social network. The type of behavior in which network members participate affects the type of behavior to which any member is constrained.

The structural characteristics of the social networks include homophily, density, intimacy, multiplexity, and stability. Homophily refers to the similarity of friends in terms of a number of attributes including both personal characteristics such as race and attitudes and behaviors such as drug use. Density is the degree to which each member of a social network knows or likes all other members of the network. Social networks can also be characterized by how intimate or supportive the relationships are among members. Multiplexity refers to the number of different role relations any two people have with one another or the number of contexts in a relationship. Stability of friendship networks is the degree to which individuals report having the same friends over time. All of these structural characteristics can be applied to peer social networks while only homophily, intimacy, and multiplexity can be applied to the family network.

Delinquent behavior is expected when the individual is enmeshed in some, and especially, many, networks that allow or encourage such behavior. This is especially the case if the networks are interlocking (multiplex), dense, intimate, stable, and have members who exhibit similar behavior and attitudes.

DESIGN OF THE ROCHESTER YOUTH DEVELOPMENT STUDY

The Rochester Youth Development Study utilizes a longitudinal research design to follow a panel of juveniles from their early teenage years through their early adult years. To date, we have collected 12 waves of data spanning the ages of 13 through 22.

Each subject and a primary caretaker (in the vast majority of cases, the biological mother) were interviewed at six-month intervals from the Spring of 1988 until the Spring of 1992. After a two-year gap in data collection, annual interviews began in 1994. At the end of Wave 12, in the Spring of 1997, we reinterviewed 846 of the initial 1,000 subjects in the study, a retention rate of 85%.

The interviews cover a wide range of topics including family, school, social class, peers, neighborhood, delinquency and drug use, psychological functioning, and social support. We also collected data from official agencies, including the schools, police department, probation department, family court, and social services.

Sample

Because we know that the base rates for serious delinquency and drug use are relatively low, youth at high risk for these behaviors are oversampled. This was accomplished by 1) limiting the target population to seventh and eighth grade students in the public schools of Rochester, New York—a city with a diverse population and a relatively high crime rate and 2) selecting a stratified sample so that high-risk youth are overrepresented.

To oversample high-risk youth, the sample was stratified on two dimensions. First, males were oversampled (75% versus 25%) because they are more likely than females to be chronic offenders and to engage in serious delinquency. Second, students from high crime areas of the city were oversampled based on the assumption that adolescents who live in high crime rate areas are at greater risk for offending. Since the probability of selection into the study is known for all the students, we can weight the data to represent the target population -- the total cohort of 7th and 8th graders in the public schools of Rochester in 1988.

A final panel of 1,000 students and their primary caretakers was selected for study. This sample is 68% African American, 17% Hispanic, and 15% white. Virtually all of the Hispanic respondents in the sample are of Puerto Rican descent. Males represent 72.9% of the sample and females 27.1%.

Subject Retention

Subject attrition is a potentially serious threat to the validity of inferences drawn from panel studies of delinquency and drug use. The importance of maintaining high levels of retention are underlined in Thornberry, Bjerregaard, and Miles (1993a). Higher levels of attrition than those actually found in the Rochester sample were simulated and two sets of results were compared: those obtained when the more elusive (those who are more mobile), less cooperative (those who require more contacts) respondents are included and those obtained when these hard-to-interview respondents are excluded. This simulation demonstrates that concerns about subject attrition are warranted. When the

more elusive respondents are excluded from analyses, estimates of the prevalence and frequency of delinquency as well as results from basic regressions analyses are biased. Similar results are obtained for the less cooperative respondents, although the differences are smaller.

Because of these implications for validity, considerable effort has been devoted to maximizing subject retention over the course of the study, particularly given the low income, highly mobile nature of many of our subjects, and the expectation that delinquent youth would be among those more difficult to contact and track. First, there was no *a priori* limit to the number of attempted contacts that were made at each wave. Second, all subjects who moved from Rochester were followed and interviewed whenever possible. Third, even though we conducted most of the adolescent interviews in the Rochester schools, adolescents who left the Rochester schools remained in the panel. Finally, we attempted to maintain cooperation by incentive payments, newsletters, and routine reminders to the subjects of the importance of the study and of their participation in it.

As a result of these procedures, the Rochester study has an excellent record of retaining these predominantly high-risk, mobile youth over a nine-year period involving 12 waves of data collection. At Wave 12, 85% of the original sample was retained. Thornberry et al. (1993a) also examined the level of attrition over the first 6 waves of the study. The retention rate at Wave 6 was 90%. Comparisons of race/ethnicity, gender, census tract of residence, and delinquency and drug use at Wave 1 show that

only small differences in retention are evident from Wave 1 to Wave 6; therefore, differential attrition is minimal.

Krohn and Thornberry (1998) investigated retention through Wave 10 in greater detail. Over the course of the study, about 1% of the focal subjects were lost per year. Even with the two-year gap in data collection between Waves 9 and 10 when the subjects moved from being high school students to the much more mobile and diverse stage of young adulthood, retention only dropped from 88% to 86%.

Parent attrition is slightly larger and is more uneven across the waves. There was a noticeable drop in parent retention from Waves 4-5 to Waves 6-8. This is primarily due to an increasing number of adolescents who no longer lived with their parents. Since the vast majority of adolescent respondents did live with their parents, however, the interview schedule was developed accordingly and was somewhat inappropriate for the parents who had little or no contact with the subject. Starting in Wave 10, when many respondents no longer lived with their parents, the interview schedule was revised to reflect this and retention increased to 83%.

Krohn and Thornberry (1998) also examined whether there is selection bias due to attrition by comparing the respondents who were retained in the study with those who were not retained. These groups were compared on gender, social class, and family structure within racial/ethnic categories. Only small differences are evident and none of these differences are statistically significant, indicating that the loss of

respondents over 10 waves of data collection did not affect the demographic portrait of our respondents.

When Wave 1 delinquency and drug use of the respondents who were retained in the study at Wave 10 are compared to the Wave 1 values for those who were not retained, differences are small and not statistically significant. This finding also holds for different racial/ethnic groups. Overall, evidence points to low levels of attrition and small differences in attrition across various subgroups in the sample.

Measurement

The Rochester project contains a wealth of measures on youth behaviors, as well as measures on a wide range of environmental, social, and psychological forces that contribute to these behaviors. Because of the longitudinal nature of the project, we have multiple measures of the same variable over time enabling us to track developmental progressions and changes in behaviors. To allow for replication of analyses across the three projects in the Program of Research on the Causes and Correlates of Delinquency, over half of the measures are drawn from a set of common measures developed at the beginning of the study.

Delinquency

At each wave respondents are asked if they committed each of 36 delinquent acts and, if they had, how often they had done so. All responses are screened to make sure they are categorized appropriately and then grouped into meaningful indices used extensively in prior research. For example, the general offending index includes 32 items covering a range of delinquent

behaviors from status offenses, vandalism, and minor property crimes to serious violent and property crimes. Violent offending is comprised of six items including attacking someone with a weapon and throwing objects such as rocks or bottles at people. Similar indices are constructed for a variety of other categories including both severity and type of offending, as well as for drug use and drug sales.

Official data on involvement with the police was obtained from the juvenile records of the Rochester Police Department. Probation and family court data were also collected. In addition to self-reported and official data on offending, other related data including self-reported gang membership and illegal gun carrying were collected.

Other Variables

In addition to delinquency, we measure a wide range of other topics that can be categorized into seven domains: parent-child relations, school factors, peer relationships, family sociodemographic characteristics, parental stressors, area characteristics, and individual characteristics. Most of these variables come from parent and youth interviews, but some are drawn from school records, social services records, and census data.

Self-reported measures of parent-child relations are included in both the parent and youth interviews. These measure the warmth of the parent-child relationship, basic parenting behaviors, and the climate of hostility within the family. Child abuse is measured by a report of substantiated abuse for any

child in the youth's family on file with the county department of social services.

School variables such as commitment to school and attachment to teacher, as well as aspirations and expectations for the future are included in the student interview. GPA and scores on the California Achievement Test were obtained from the Rochester schools.

Peer relationships are an important source of influence on adolescents' behavior. The delinquent peers measure is based on the subject's report of how many of their friends were involved in delinquent activities. In addition, peer reactions to the subject's deviance are also measured. Intimate relationships (dating and sexual activity) and partner violence are also included at age-appropriate waves.

Measures of sociodemographic characteristics and structural position are found predominantly in the parent interview. These include family poverty, race/ethnicity, parent education, welfare receipt, unemployment, and family composition.

Parental stressors also play an important role in the lives of children. Examples of these measures are depression, partner violence, and social support from family and friends.

Information relating to neighborhood or area characteristics is gathered from a variety of sources. Some of these measures (e.g., percent poverty) are taken from census data and refer to the tract the family of the youth lived in at the start of the study. The parent's self-reported perception of their

neighborhood is indicated by several measures including neighborhood disorganization, satisfaction, and violence.

A range of individual experiences and attitudes influence adolescent behaviors. Negative life events measures whether life stresses, such as breaking up with a close friend, being suspended from school, or being ill were experienced by the subject up to the wave in question. The delinquent beliefs scale measures how wrong the subject feels it is to engage in a variety of delinquent acts. Other examples of these are depression, externalizing and internalizing behaviors, and self-esteem.

ANALYTIC THEMES

The Rochester study is a wide-ranging investigation of the development of delinquent behavior, following a high-risk sample from early adolescence through early adulthood and assessing multiple domains of the subjects' lives. Our analytic approach is also wide-ranging. Given the breadth of our measures we have been able to investigate a variety of substantive topics related to the causes and consequences of delinquency and drug use. In this paper we group these individual investigations into several broader themes to summarize our empirical findings.

Some of these themes test hypotheses that flow directly from the conceptual models that guide this study. For example, both interactional theory and network theory emphasize the importance of family and peers in the explanation of adolescent delinquency and several publications have focused on these issues. In them we have tried to examine the various conceptual premises that underlie interactional and network theories. For example, we

have examined bidirectional causal influences, developmental changes in causal effects, and how family and peer networks coincide to produce delinquency and drug use.

While many of our investigations stem from the conceptual models that guide this project, others have been responsive to the environmental and life course changes that have occurred during the course of the study. For example, during the late 1980s and early 1990s two secular changes occurred that could not have been anticipated at the outset of this longitudinal study. One was the sharp and rapid increase in youth violence, both nationally and in Rochester. The other was the tremendous spread of adolescent street gangs to more and more American cities, including Rochester. One of the great advantages of longitudinal studies is their ability to investigate new issues such as these as they unfold during the course of the study. Because of that, we added measures of both gang membership and guns, the latter benefiting greatly from Lizotte's earlier work in this area (Lizotte and Bordua, 1980).

Other themes emerged as a result of our ability to continue following these subjects past their adolescent years. Early on, for example, we noted a high rate of teen pregnancy and parenthood among the sample members and that led to an interest in assessing this behavioral area and, ultimately, to a study of the intergenerational continuities in antisocial behavior.

In the following pages we identify several themes and summarize the empirical findings we have for each. We begin with

themes testing our theoretical models and then move to the themes that emerged as the study unfolded.

FAMILY AND DELINQUENCY

The effectiveness and quality of parenting and the warmth of relationships among family members play important roles in interactional theory. What occurs in the home, particularly in the early adolescent years, is hypothesized to influence adolescents' attitudes to and performance in school, adherence to prosocial and deviant beliefs, the choice of friends, and their participation in delinquent behavior. Interactional theory also recognizes that participation in delinquent behavior and association with delinquent peers will affect the quality of the child-parent interaction causing strain in those relationships. As adolescents mature, other social influences become more salient in their lives and the influence of the family begins to fade. Because of the important role that the family is hypothesized to play during the early adolescent years, we have explored its influence in some depth.

Measurement Issues

Our first step was to investigate alternative ways to measure family processes (Krohn et al., 1992). Prior research had identified three general clusters of family process: 1) the provision of control, 2) the provision of guidance, and 3) affective attachment. Much of the research on these clusters of variables had been limited to measuring the children's perception of what parents did and how youth felt about their parents. Krohn et al. (1992), recognizing that family processes involve

the interaction of children and their parents, examined the extent to which the perceptions of parents could shed additional light on the relationship between delinquency and family processes.

Krohn et al. (1992) measured nine different family processes with parallel measures asked of both children and their parents. Not surprisingly, they found that adolescent and parent perceptions were not very highly correlated (Pearson correlation coefficients ranging from .05 to .31). Parent and child perceptions of control mechanisms such as supervision and discipline were particularly discordant. When family processes were correlated to both official and self-reported measures of delinquency, differences in the performance of child and parent measures were observed. Both child and parent measures of family processes contributed independently to the explanation of delinquency. However, child measures of family processes were more strongly related to self-reported delinquency whereas parent measures were more strongly related to official delinquency. Of the nine different measures of family process, attachment and involvement were the most effective variables whether measured with child or parent data for both self-reported and official delinquency. This study highlights the importance of acquiring information on parent and child relationships from sources other than the child.

The Impact of Structure

Having found that family process variables are related to delinquency, we examined whether the effect of family variables

might be different for children from different racial or ethnic backgrounds. Smith and Krohn (1995) posited a causal model that included a measure of economic hardship and single parent families as exogenous variables to the family process variables of attachment (parent's perception), involvement (adolescent's perception), and control (adolescent perception). All five variables were predicted to have direct effects on self-reported delinquency. Path coefficients were computed separately for white, African American, and Hispanic males.

Although the results indicated that family processes play a role for all families in the determination of who will be law abiding, the impact of family life on adolescents does not appear to be uniform across different racial and ethnic contexts. Family socialization has a relatively weak impact on African American and white families but has a stronger impact on Hispanic families. Hispanic males appear to be more adversely affected (in terms of delinquent outcomes) by not having a father present in the home than are either whites or African Americans. In addition, parental involvement in the lives of children is directly related to delinquency for Hispanic males but is not directly related for white or African American males. In contrast, parental attachment and control are directly related to delinquency for whites and African Americans but not for Hispanics.

These findings suggest that how family variables are related to delinquency may interact with the racial or ethnic background of the family. We need to place these findings in the context of

what is known about the differences among the different racial and ethnic groups in order to better understand how the family influences an adolescent's decision to commit delinquent or prosocial behavior.

Although not a central focus of their research, Smith and Krohn did find some support for interactional theory's hypothesis that social structural variables like economic hardship and family structure were related to family process variables. Stern and Smith (1995) extended this analysis by incorporating several dimensions of what they refer to as family context measures. These include economic hardship, disadvantaged neighborhood, life distress, social isolation, and lack of partner support. Using the entire RYDS sample they found that the family's disadvantaged neighborhood, life distress, social isolation, and lack of partner support were associated with dysfunctional parenting. Surprisingly, economic hardship per se was not associated with dysfunctional parenting. Life distress, a dimension that included recent life events, parental depression, and perceived ability to cope with stress were particularly influential in adversely affecting the quality of the relationship between parents and their children. Overall, it is important to note that the social and family context plays a key role in producing delinquent behavior through its effects on parenting.

The type of stress that these high-risk families are under can lead to more extreme forms of aberrant family relationships such as childhood maltreatment. Smith and Thornberry (1995) found that 13.6% of the RYDS sample had substantiated abuse or

maltreatment cases prior to the age of 12. As hypothesized, they found that respondents who had been the victims of childhood maltreatment were more likely to have both self-reported and official delinquency during the teenage years even when a number of control variables including social class were entered into the analysis. The relationship was particularly strong and robust for the more serious forms of delinquent behavior. Smith and Thornberry also examined the effect of more serious and extensive child maltreatment. They found that the more extensive maltreatment is, the higher the rate of delinquency. Another study by Smith (1996) also linked childhood maltreatment to teen pregnancy, again independently of social structural variables like social class and single-parent status. Clearly, maltreatment in childhood is an important aspect of family life that must be taken into account when assessing the family's impact on delinquent and high-risk behavior.

Reciprocal Effects

Much of the research on family and delinquency, including the RYDS studies reviewed in this section, limit the analysis to the unidirectional effect of family variables on delinquent behavior. Interactional theory emphasizes the role that delinquent behavior can play in leading to disruption in the relationship between parent and child and to the further deterioration of this relationship. Two studies have examined the reciprocal nature of the relationship between family process variables and delinquency.

Thornberry et al. (1991) investigated the hypothesized interrelationships between attachment to parents, commitment to school, and delinquent behavior using the first three waves of adolescent interviews. They found a complex pattern of relationships between attachment to parents and delinquency. From Wave 1 to Wave 2 these variables are reciprocally related. However, from Wave 2 to Wave 3 the relationship is unidirectional; delinquent behavior has a negative impact on attachment, but attachment does not have a significant effect on delinquency. This latter finding is consistent with interactional theory's hypothesis that family influences on delinquency begin to fade as the youth moves into middle adolescence.

Jang and Smith (1997) included both attachment to parents and parental supervision in a three-wave panel model. They found that parental supervision is involved in a reciprocal relationship with delinquent behavior. Low parental supervision increases the likelihood of delinquent behavior and delinquent behavior, in turn, attenuates subsequent parental supervision. However, their findings regarding attachment to parents do not support the bidirectional hypothesis. Consistent with Thornberry et al. (1991), the relationship between delinquency and attachment to parents is unidirectional; delinquent behavior decreases attachment to parents, but attachment to parents has no significant effect on delinquent behavior. This is not a surprising finding since Jang and Smith used data from Waves 2 through 4 when respondents were moving into middle adolescence.

The failure to find an effect of attachment on delinquent behavior may further support interactional theory's hypothesis concerning the fading effect of the family influences, especially attachment, on delinquency during middle adolescence.

The decreasing effect of the family on delinquent behavior as youth traverse their teenage years is also illustrated in some findings from a study by Jang and Krohn (1995). The focus of the study was on whether differences in the rate of delinquency between males and females are invariant over the developmental stages of adolescence. As part of the analysis, Jang and Krohn examined whether parental supervision could account for the differences in the rates of delinquency between males and females. Parental supervision was chosen because it has been suggested that one of the differences in how females are raised as compared to males is that parents are much more concerned about monitoring their daughter's whereabouts and behavior than they are their son's.

Jang and Krohn found that for the first five waves of data, parental supervision could, indeed, account for the sex differences in delinquency. However, for the later waves (Waves 6 through 9) supervision does not explain sex differences in delinquency. Further analysis revealed that this is due to the declining effect of parental supervision on delinquency rather than any systematic changes in sex differences in parental supervision. Again, these results lend credence to interactional theory's hypothesis concerning the fading effect of family process variables on delinquency as adolescents age.

Summary

Our research on the effect of dimensions of family life on delinquent behavior has supported the major hypotheses from interactional theory. First, several family process variables were found to be related to delinquent behavior, including both parent and child measures. Second, social and family structural variables were found to be indirectly related to delinquent behavior through their effect on these family process variables. Third, the relationship between family process variables and delinquency is a reciprocal one; poor parenting increases the probability of delinquent behavior and delinquent behavior further attenuates the relationship between parent and child. Finally, we found that the impact of family variables does appear to fade as adolescents age and become more independent from their parents, but that the pattern of these developmental changes is more complex than originally thought. At the earlier waves, delinquency and family process variables are reciprocally related. Over time the impact of family process variables on delinquency fades, but the impact of delinquency on family processes appears to remain.

SCHOOL AND DELINQUENCY

One of the core predictions of interactional theory is that commitment to and success in school will reduce the likelihood that adolescents will engage in delinquent behavior. If they do become enmeshed in delinquency, however, interactional theory predicts that their involvement will have feedback effects that

reduce school performance. The interplay between educational factors and delinquency has been examined in three publications.

The most explicit examination of interactional theory's hypothesized reciprocal relationships between commitment to school and delinquency was conducted by Thornberry et al. (1991) in which they analyzed a panel model covering the first three waves of the study. They report significant lagged effects from commitment to school to delinquency, as well as significant contemporaneous effects from delinquency to commitment to school. All effects are negative, as predicted. Thus, higher commitment to school reduces delinquent behavior and delinquent behavior also reduces commitment to school, at least during the early adolescent years.

An alternate way of examining the impact of schooling variables on delinquency is to see if educational success provides resilience or protection for youth at high risk for delinquency. This was the approach adopted by Smith et al. (1995) who identified sample members at high risk for delinquency and drug use in terms of nine family-based measures including low parental education and social class, teenage parenthood, high residential mobility, and childhood maltreatment. To be considered high risk the youth had to experience five or more of the nine risk factors. Approximately one-fifth of the sample are considered at risk by this criterion. Over 60% of adolescents identified as high risk are resilient to negative outcomes such as delinquency and drug use in early adolescence (Waves 2 and 3). Resilience is attributed to the protective factors that

distinguish between high-risk youth who do have negative outcomes and those that do not.

The most salient factors for resilience to both delinquency and drug use are school factors. Those who avoided delinquency have higher standardized reading and math scores, are more committed to school and attached to teachers, have higher aspirations and expectations about attending college, and have parents who have higher expectations about their college attendance. With the exception of the adolescent's aspirations for attending college, all of these variables also discriminate between drug users and non-users.

Overall, therefore, Smith et al. found that educational commitment and performance reduce the level of both delinquency and drug use, even for high-risk youth. This protective effect appeared to fade over time for delinquency, but those with many protective factors are still resilient to drug use three years later.

While school performance unfolds over the adolescent years in many ways, it culminates either in graduating from or dropping out of school. Graduation is a significant marker for the transition to adult status and failure to graduate may confirm and reinforce a problematic behavioral trajectory. Krohn et al. (1995) examined the interplay between dropping out of high school and involvement in drug use and delinquency.

They found that prior drug use is significantly related to dropping out of school, even after demographic, family, and school performance variables are held constant. Prior

involvement in serious delinquency is not related to drop out status, however.

Examining the impact of drop out status on later deviance, Krohn et al. (1995) found that drop out status was not related to later involvement in either drug use or serious delinquency once school commitment and performance variables are held constant. Several of the school variables themselves are related to later delinquency and drug use, however.

Overall, the results of the Rochester Youth Development Study indicate that school is an important domain for understanding adolescent behavior. Weak school commitment and performance are related to involvement in delinquency and drug use (Krohn et al., 1995; Smith et al., 1995; Thornberry et al., 1991) and school success is associated with resilience (Smith et al., 1995). In turn, involvement in delinquency reduces commitment to school (Thornberry et al., 1991), and involvement in drug use (but not delinquency) increases the chances of dropping out of high school.

PEERS, BELIEFS, AND DELINQUENCY

The role that friends play in generating delinquent behavior has been the focus of much prior research (Thornberry and Krohn, 1997); having friends who participate in delinquent behavior is one of the most consistent and robust correlates of delinquent behavior. Pro-delinquent belief systems are also a robust correlate of involvement in delinquency. Research using the RYDS data finds strong relationships among these variables (Krohn et al., 1996; Krohn and Thornberry, 1993; Thornberry et al., 1994;

Thornberry et al., 1993b). Following one of the major premises of interactional theory, our research has focused on the reciprocal relationship between associating with delinquent peers, holding delinquent beliefs, and delinquency.

Thornberry et al. (1994) examined the hypothesized relationships between associating with delinquent peers and delinquency using three waves of the RYDS data. They presented a complex model that suggests that delinquent peers provide a social environment in which delinquency is reinforced and, because of that reinforcement, members of the network are likely to engage in delinquent behavior. In turn, adolescents who engage in delinquency are likely to seek out or be forced into associational patterns with others who engage in delinquency. Delinquent beliefs are also hypothesized to be involved in a reciprocal relationship with both delinquent peers and delinquent behavior.

The results from the analysis largely support the tenets of interactional theory. Association with delinquent peers has an indirect effect on delinquency through the reinforcing environment of the peer network. Engaging in delinquent behavior leads to increases in associations with delinquent peers. The predicted reciprocal effect between beliefs and delinquency was also supported as delinquent beliefs exert lagged effects on peers and behavior which, in turn, tend to harden the formation of delinquent beliefs.

Krohn et al. (1996) extended the analysis by using five waves of data and focusing on drug use rather than delinquency.

They estimated a model including a contemporaneous loop between drug use, drug using peers, and peer reaction to drug use, as well as a cross-lagged model. Results from estimating the first model indicate that there are contemporaneous causal loops from drug use to peer drug use and then from peer drug use to peer reactions and back to drug use. It is evident that a spiraling process is taking place in which those who use drugs associate with others who use. The peer network serves to reinforce drug use and thereby increases the likelihood of drug use.

In the second model, the contemporaneous loop among these three variables was replaced by a direct cross-lagged effect of peer drug use at one time on drug use at the next time and an indirect lagged effect via peer reactions. Drug use is also expected to have a direct effect on peer drug use across time. With the exception of the indirect effect of peer drug use on drug use through peer reactions, the results support the hypothesized effects.

The analysis by Krohn et al. (1996) also examined the interplay between peers and drug use, on the one hand, and beliefs about drug use, on the other. Bidirectional effects were consistently observed. In general, the effects from peers and from drug use to beliefs were somewhat larger than the effects from beliefs to either peers or to drug use. This is consistent with interactional theory's developmental predictions about the formation of pro-deviant belief systems during early to mid-adolescence.

The results from these two studies suggest that simple models including only unidirectional relationships among delinquent peer associations, delinquent beliefs, and delinquent behavior are not adequate. The reciprocal effects among peer-related variables specified by interactional theory apply equally well to the explanation of drug use and delinquent behavior.

SOCIAL NETWORKS AND DELINQUENT BEHAVIOR

An impressive amount of research including our own has established that youth are likely to behave in a manner consistent with the behavior of their friends. However, there have been relatively few investigations into why this relationship exists. The Rochester project addresses this question from a social network perspective (Krohn, 1986). The social network perspective assumes that all social networks constrain the behavior of their participants to some extent. The degree of constraint depends on the structure of the social network, how tightly the person is integrated into it, how central it is in the person's life, how it links to the person's other networks, and how stable the network is over time.

Krohn and Thornberry (1993) examined the impact of the network characteristics of homophily, density, intimacy, multiplexity, and stability on alcohol and marijuana use. They did not find significant differences between users and nonusers in terms of density or multiplexity, but found interesting differences in regard to homophily, intimacy, and stability. Homophily refers to the similarity in the background and attitudes of friends. Users are more likely to have friends who

are of a different sex, attend a different school, and are in a different grade than are nonusers. However, users' friends are more likely to be from the same neighborhood, lending support to those who suggest that we need to understand the dynamics of the neighborhood context in order to explain deviant behavior. It appears that users are more socially active, are more likely to associate with older friends, and have a neighborhood rather than a school base for their friends.

Users reported being closer to their friends in terms of how much they confided in and trusted them than did non-users, suggesting that users found it more necessary to discuss problems with their friends. When the stability of friendship networks was assessed from one wave to the next (approximately a six-month time period), the friendship networks of users were found to be less stable than those of non-users. Although users rely on their friends for social support, they are likely to acquire a different set of friends within a fairly short time period. This may suggest that the intimacy of friendship networks reflects more the immediate needs than the strength or quality of the relationship. This study is seen as a beginning step in the process of investigating differences in the social network structure of users and non-users, but the results suggest that this may be a promising avenue to pursue.

Gangs and Delinquency

A type of social network that is particularly germane to the study of delinquent behavior is the adolescent street gang. At the beginning of the Rochester study, gangs were not a major

problem in Rochester. However, within the first year that we were in the field, the police and community leaders became concerned about a growing gang problem and we began to assess the level of gang membership and the impact that such membership was having on rates of delinquent behavior. Doing so has allowed us to examine the impact of a social network explicitly organized around deviant behavior on the life course of individual gang members.

Thornberry (1998) reported that 30% of the Rochester sample had indicated that they had been in a street gang prior to the end of high school. These gang members, while accounting for slightly less than one third of the population, accounted for two thirds of the acts of general delinquency, 86% of the serious acts of delinquency, 68% of violent delinquencies, and 70% of drug sales that were reported. Bjerregaard and Smith (1993) compared female and male gang members in Rochester in terms of their delinquent behavior. They found that female gang members, like male gang members, had elevated rates of serious and violent delinquency when compared with non-gang members.

Bjerregaard and Lizotte (1995) also found that gang members in Rochester were more than three times as likely as non-gang members to own a gun for protective reasons.

These results clearly demonstrate the strong relationship between gang membership and delinquent behavior, particularly serious and violent delinquency. Why do gang members have such high rates of delinquent behavior? Thornberry et al. (1993b) identified three models that could account for this relationship.

The social selection model suggests that gangs recruit or attract individuals who are already involved in delinquency and violence. If this is the case, then prior to periods of active gang membership, gang members should be more heavily involved in delinquency and violence than are non-gang members. In the facilitation model the norms, group processes, and network characteristics of the gang are thought to facilitate involvement in delinquency and violence. If this model is accurate, then gang members would not be particularly different from non-members prior to or after their periods of active gang membership; during that period, however, they would be much more extensively involved in delinquency. The third model is a mixed model suggesting that both selection and facilitation are at work.

By using the longitudinal panel design of the RYDS, Thornberry et al. (1993b) were able to examine the rates of different forms of delinquency before, during, and after gang membership for males. In addition, they could distinguish the impact of gang membership on delinquency rates for stable gang members (those who remained in a gang for two consecutive years) as compared to transient gang members (those who remained in a gang for no more than a single year). They report strong support for the facilitation model and virtually no support for the selection model. For example, gang members have higher rates of violent offenses only when they are active gang members. The means for violent crimes are about twice as large when they are in the gang as when they are not in the gang. The drop in violent crimes once gang members left the gang was particularly

evident. Support for the facilitation model was evident for both stable and transient gang members, although there was some support for a mixed model for stable gang members. Using a similar technique to analyze rates of gun ownership, Bjerregaard and Lizotte (1995) also find strong support for the facilitating effect of gang membership. However, they find a weak selection factor as future gang members were slightly more likely to own a gun prior to gang membership than were non-gang members.

It is possible that factors other than gang membership might have created what appears to be a facilitation effect. For example, gang members may have elevated rates of violence because of the accumulation of risk in their backgrounds. To examine this possibility Thornberry (1998) grouped violent delinquency into the same three periods analyzed in Thornberry et al. (1993b) and then regressed self-reported violence on a dummy variable indicating whether the subject was a gang member during that year and a variety of prior risk factors. The inclusion of the dummy variable allows for an assessment of the facilitative effect of active gang membership on violent behavior net of the impact of the other antecedent variables. The results indicate that the relationship between gang membership and violent delinquency is not spurious. Even when family poverty level, parental supervision, commitment to school, experiencing negative life events, prior involvement in violence, and associating with delinquent peers are held constant, gang membership exerts a strong impact on the incidence of violent behavior.

We began the discussion of gangs by suggesting that they are a form of peer social network. It is not clear, therefore, whether the effect of being a member of a gang simply reflects association with delinquent peers or if gang membership is qualitatively different. To examine this issue, Thornberry (1998) classified male respondents into five groups at each interview wave. One group consists of active gang members at that wave. Respondents who were not gang members were divided into quartiles based on their score on a scale measuring their association with delinquent peers, also at that wave. The most important comparison concerns the non-gang members in the highest quartile (those with the greatest number of delinquent peers) and the gang members. If gang members are qualitatively different, then they should have substantially higher rates of delinquency than will the non-gang members who associate with highly delinquent peer groups. This is precisely what is found at all eight waves for which the data were analyzed. All of the differences between the gang members and the nonmembers in the highly delinquent peer group are statistically significant.

THE IMPACT OF STRUCTURAL POSITION

The previous sections have examined our empirical results with respect to the process variables included in interactional theory. One of the key tenets of this perspective is that the person's social structural position such as social class or community of residence influences these process variables—e.g., the quality of parenting or the availability of delinquent peer

groups—and thereby indirectly influences the development of delinquency and drug use.

Communities impact the individuals that live in them in a variety of ways. Communities set the stage for and provide a context in which individual actors play out their lives. In addition, one's position in the social structure, especially in terms of social class and minority group status, influences both life course trajectories and the chances of delinquency. Interactional theory predicts that youngsters who grow up in poor families and in poor neighborhoods are more likely to be delinquent than are their counterparts, in large part because these structural conditions adversely impact process variables. Several papers from the Rochester study have played upon this theme. In part, this is because we have collected a wealth of data on both the structural position of these families and the communities in which the subjects live. This allows us to analyze the interplay between community characteristics, the individual's structural position in those communities, and the impact of these factors on delinquency.

In an early paper Farnworth, Thornberry, Krohn, and Lizotte (1994) dispel the notion that there is no direct relationship between social class and delinquency. They show that when social class is measured in theoretically appropriate ways, for example by using measures of continuing underclass status, there is a strong and consistent class-crime association. This is particularly the case for prolonged involvement in more serious forms of delinquency. Interestingly, when we correlated the more

typical, yet theoretically less relevant measures of class based on status attainment theory and omnibus indices of delinquency, the relationship between class and delinquency vanishes. Theoretically-informed measures appear to be crucial to a fuller understanding of this association.

Two papers examined the impact of community structure. Stern and Smith (1995) studied the impact of living in disadvantaged neighborhoods on delinquency, as those neighborhood effects are mediated through basic family processes. They found that living in disadvantaged neighborhoods is correlated with economic hardship, life distress, social isolation, and lack of partner support. Together, these disadvantages lead to a lack of parent-child involvement, attachment, and control over adolescents. In turn, these parenting variables are significantly associated with increased delinquency. Disadvantaged neighborhoods specifically have both direct and indirect effects on delinquency. Stern and Smith (1995) find an indirect effect of disadvantaged neighborhoods mediated through reduced parent involvement and control of adolescents.

Lizotte, Thornberry, Krohn, Chard-Wierschem, and McDowall (1994) also found that neighborhood characteristics have an indirect impact on delinquency. For example, in places where poverty is high and where there is much ethnic heterogeneity parents are not well-integrated into their neighborhoods. In these neighborhoods parents provide less supervision of adolescent peer groups and, when this occurs, the children are more likely to be delinquent. So, once again there is an

indirect impact of neighborhood characteristics on parents' ability to control and monitor their children which leads to delinquency.

Smith and Krohn (1995) show how the impact of economic hardship and single parent families on parent-child attachment and involvement lead to different delinquent outcomes for white, African American, and Hispanic subjects. That is, economic hardship and single parent families produce different pathways to delinquency for different racial and ethnic groups. So, race/ethnicity interacts with parenting variables to produce varying pathways to delinquency.

LONG-TERM DEVELOPMENTAL EFFECTS

The developmental focus of interactional theory emphasizes that delinquent behavior can have long-term and cumulative consequences for the life chances of adolescents. Participation in deviant behavior can create schisms with prosocial influences and, in effect, decrease chances of success in prosocial pursuits. In addition, those engaging in deviant behavior are more likely to engage in other risky behaviors that can further attenuate conventional life chances.

Having a child during adolescence can adversely affect the adolescent's chances of finishing school and getting a job and that can result in long-term instability. Thornberry, Smith, and Howard (1997) examined the risk factors that predicted teenage fatherhood among our male respondents. They identified 10 general domains incorporating 39 risk factors and estimated their relationships to teenage fatherhood. They find a clear link

between teenage fatherhood and other deviant behaviors. Gang membership and chronic drug use are particularly important in predicting who will father a child during adolescence.

Thornberry et al. also find that the cumulation of risk factors is very important in predicting teen fatherhood. For example, of those with four risk factors, 12% are teenage fathers, whereas almost a third of those with five risk factors and about half of those with six or more risk factors become teenage fathers.

Teenage parenthood can be considered a premature or precocious transition to adult roles. Such precocious transitions can reduce the success of adult development. In turn, the timing, order, and success of transitions to adult statuses may affect the probability of the continuation and perhaps escalation of deviant behavior. Krohn, Lizotte, and Perez (1997) examined the impact of early drug use on precocious transitions and the effect of precocious transitions on drug use during early adulthood. In addition to parenthood, they included pregnancy, high school drop out, and living independently from one's parents during the teenage years, as precocious transitions.

Krohn et al. found that for males early substance use (prior to the age of 15) is significantly related to all four precocious transitions even when controlling for several potential correlates of use and precocious transitions. For females, early substance use is related to teenage parenthood and independent living, but not to pregnancy and dropout. They then examined the impact of these transitions on later alcohol and drug use. For

males, all four precocious transitions were significantly related to both later alcohol and later drug use even after controlling for a number of potential correlates including prior substance use. For females, all four precocious transitions predicted later drug use, but only pregnancy predicted later alcohol use.

These studies suggest that deviant behavior can increase the probability that youth exit adolescent roles early and without proper preparation. The early adoption of adult roles can, in turn, have long term consequences including the continued use of drugs.

VIOLENCE

Youth violence is one of the most serious problems facing American society today. All three studies in the Program of Research on the Causes and Correlates of Delinquency have been actively involved in researching this important area and much of this work has been collaborative across the three sites. Over the 10- to 19-year old age range, we found high levels of youth violence in all three cities. For males, these rates continue to increase through age 19. For the females, we also found substantial amounts of violence, but those rates did begin to decline at older ages (Kelley, Huizinga, Thornberry, and Loeber, 1997).

Thornberry, Huizinga, and Loeber (1995) focused particular attention on chronic, or high rate, violent offenders. As in other longitudinal studies, we too find that while chronic violent offenders are only a small proportion of the population (15%) they account for the vast majority of violent crimes (75%).

The chronic violent offenders are also those who are most heavily involved in a myriad of other forms of delinquency, including property crimes, public disorder and status offenses, drug sales, and drug use (Thornberry, Huizinga, and Loeber, 1995). We found that the careers of chronic violent offenders start early and end later. These careers follow a progression from minor aggression at young ages to violent serious delinquencies at older ages.

This research found that chronic violent offenders experience many risk factors that do not exist in isolation from one another. These risk factors have additive and interactive effects compounding violent behavior. Particularly troubling risk factors for promoting violence among youth are childhood maltreatment, partner violence among parents, and family hostility (Smith and Thornberry, 1995; Thornberry, 1994; Thornberry et al., 1995). Furthermore, experiencing multiple types of family violence significantly elevates self-reported violence by the subjects.

There is some good news, however; we find that the more protective factors that youth possess, the more resilient they are. However, this effect is transitory. That is, protective factors have immediate beneficial consequences in buffering violent behavior, but they only do so in the short run. They must stay in place in order to be effective.

These findings suggest that early, comprehensive interventions that follow youth through the adolescent life course are likely to be effective in reducing violent behavior. This is because there is no one single risk factor for

delinquency. Rather, an accumulation of risk factors put children at risk for a myriad of co-occurring problem behaviors. Furthermore, programs should be comprehensive because multiple protective factors are more effective at reducing the risk of violent behavior. Finally, because we find that the benefits of protective factors are transitory, long-term interventions are more desirable.

YOUTH AND GUNS

Over the course of the Rochester Youth Development Study the United States experienced dramatic increases in firearm homicides among young males. Fortunately, we have consistently collected data on both legal and illegal gun ownership and use among our subjects, providing a unique opportunity to investigate how patterns of gun use unfold over the adolescent-young adult life course.¹ Lizotte, Tesoriero, Thornberry, and Krohn (1994) have shown that there are real differences between boys who own guns for legitimate sporting reasons and those who own for more troubling reasons. First, they own different types of guns; those who own for sporting purposes own rifles and long guns while those who own for "protection" own pistols, sawed-off rifles, and shotguns. Second, and perhaps more importantly, they differ in their behaviors. In terms of their criminal activity, those who own guns for sport essentially look like those who do not own guns at all. However, boys who own guns for "protection"

¹ Given the uneven distribution of gun carrying in our sample, these analyses are limited to the male subjects.

are much more likely to commit a wide array of criminal behaviors and they do so at high rates. Furthermore, we have found that the socialization into sporting gun ownership comes from the family, while socialization into protective ownership comes from associating with peers who own and use illegal guns.

Bjerregaard and Lizotte (1995) found that gang membership has complex linkages to illegal gun ownership. Gangs tend to recruit those who are already somewhat involved with illegal guns. If the boy does not own an illegal gun prior to joining a gang, then joining a gang increases the probability of illegal gun ownership dramatically. However, upon leaving the gang, the likelihood of gun ownership decreases. The same pattern holds for involvement in gun-related crimes before, during, and after gang membership.

While there is a relatively large literature on gun ownership, there are surprisingly few investigations of the determinants of gun carrying, an important step for many types of crimes. Recently, we investigated this issue by examining the impact of gang membership, drug selling, and friend's illegal gun ownership on the likelihood of gun carrying over the adolescent-young adult life course (Lizotte, Howard, Krohn, and Thornberry, 1997). We found that sizable percentages of adolescents carry guns (between 6% and 10%, depending upon the age) but most of this illegal gun carrying is transient. More than half of the carriers carry for only six months or less. Illegal gun carrying is associated with peers who own illegal guns, gang membership, and drug selling. The impact of gang membership is larger when

the boys are younger, while the effect of drug selling is greater when they are older.

FUTURE DIRECTIONS

The Rochester Youth Development Study has followed a sample of urban adolescents from ages 13 to 22 or, in terms of school, from middle school to college graduation or entry to work roles. The detailed information we have learned through the tremendous cooperation we have received from these subjects and their parents has allowed us to investigate a number of substantive topics and this work has contributed to our understanding of the causes and consequences of delinquency. While we feel we have learned a great deal, there is much left to be done. We will, of course, continue to analyze the data already collected and to refine the theoretical models that inform this study. In addition, we plan continued data collection to follow these subjects across time to gain a fuller understanding of how delinquency unfolds over the life course.

Intergenerational Transmission of Antisocial Behavior

One of these follow-ups that focuses on the intergenerational transmission of antisocial behavior has already been funded by the National Institute of Mental Health. Past research indicates a substantial degree of behavioral continuity across adjacent generations. That is, antisocial parents often have antisocial children and prosocial parents have prosocial children. But there are also substantial degrees of behavioral discontinuity. That is, many parents who were antisocial during adolescence have prosocial children and many parents who were

prosocial during adolescence have antisocial children. This leads to an intriguing set of theoretical questions. They include simply estimating, in a fully prospective design, the levels of intergenerational continuities and discontinuities. In fact, surprisingly little is known about this issue. They also include an attempt to explain why some families exhibit intergenerational continuities while others exhibit discontinuities in their patterns of behavior. Understanding the causal processes that bring about these varying outcomes is important for both theory and practice.

The Rochester Youth Development Study is ideally suited to investigate this issue. Approximately one-third of the sample members were teen parents and about half were parents by age 22. Thus, there are an abundant number of parents and young children to study. Indeed, as of January 1999 there will be 450 oldest biological children two or older and they will become the focal subjects of the new study. By following them over time we will actually be studying the third generation of these families since we have been interviewing one of their parents and one of their grandparents since 1988.

The design and implementation of this project is complex as multiple developmental stages, multiple caregivers, and varying family structures are involved. Nevertheless, the potential payoff seems well worth the effort. By embedding a longitudinal study of these young children within the ongoing longitudinal investigation of their parents, we should be able not only to investigate the intergenerational transmission of antisocial

behavior but also to expand our understanding of the development of antisocial behavior beginning in childhood.

Phase III

Phase III of the Rochester Youth Development Study will continue following the inner-city sample through their early adulthood years. We view criminal activity and drug use as intricately interwoven with movement along basic life course trajectories such as family, education, and work. The mid to late twenties is a particularly crucial time for understanding these relationships, since during these years transitions to adult statuses are made (or fail to be made), largely determining the course of adult development. Specifically, we are interested in the impact of adolescent pro and antisocial behaviors on the timing and success of transitions to adult roles and statuses, and the effect of those transitions on the continuation or termination of criminal activity. We are also interested in examining the interplay of multiple problem behaviors including delinquency, gang membership, risky sexual behavior, and drug use. A life course perspective suggests that the best way to understand both the causes and consequences of these behaviors is to follow the same respondents across long portions of the life course, examining the reciprocal interplay among these variables.

We will capitalize on the rich body of data that the Rochester Youth Development Study has collected over the past nine years. This will be supplemented by two additional waves of data collected during the mid and late twenties. These later data collection points will allow us to examine bidirectional

relationships between problem behaviors and transitions to adult roles and statuses, focusing on this high-risk sample during a critical period in the life course.

We are particularly interested in how the causes of these problem behaviors unfold over the life course. We will examine the impact of adolescent development on continuity and change in problem behaviors for early adults. In turn, we will study the impact of transitional life events on problem behaviors and how problem behaviors impact transitional life events. The success and timing of these transitions is of particular concern as is continuity and change in problem behaviors on successful transitions into adult roles and statuses. Finally, Phase III will allow us to consider the dynamics of initiation and desistance of problem behaviors.

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