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Childhood antecedents of adolescent and adult crime and violence.

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FINAL REPORT ON THE NATIONAL INSTITUTE OF JUSTICE – SUPPORTED COMPONENTS OF THE CHILDREN IN THE COMMUNITY STUDY

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Abstract

Research goals and objectives:

The purpose of this study was to add official arrest records, other public agency data, and questionnaires to a data set, including periodic psychiatric assessments, that has been accumulated over a 25 year period on a random sample of 800 young Americans. These data were to be used to enhance knowledge regarding the origins of criminal and other aggressive behavior such as partner violence , including intergenerational effects. Participants in this study were an average of 30 years old, equally male and female, and 92% white, representing the geographic area from which they were sampled.

Research Design and Methodology:

A questionnaire addressing a number of aspects of young adult functions was mailed to study participants. In addition, with consent of the participants, FBI and New York State adult arrest records were assembled and consolidated. New York Child Welfare records were also obtained.

Analyses of these data have includes multilevel regression and logistic regression analyses of trajectories of mental disorders and a range of other multivariate methods suitable for complex multi-wave longitudinal data.

Research Results and Conclusions:

Six manuscripts representing the study aims are being prepared or have been submitted for publication. Major findings include the following:

- Young adults with a history of childhood physical or sexual abuse had an elevated rate of arrest for a crime against persons. Young adults with an official

or self-reported history of neglect did not have an elevated adult arrest rate.

- Maternal and paternal history of antisocial behavior were related to offspring adult arrests. This relationship was accounted for by differences in the child rearing and child-observed behavior of these parents.
- Persons with adult arrest records for violent, property, and drug-related crimes are shown to have had distinctive trajectories of psychopathology in childhood and adolescence.
- Analyses examining males and females with distinct trajectories of aggressive or property offenses from childhood to adulthood showed a number of distinguishing risks, including early childhood problems in executive function.
- Adolescent aggressive behavior was shown to be a sign of particularly high risk in females.
- Partner violence among young adults was shown to be related to a history of abuse, harsh punishment, and to childhood and adolescent conduct disorder.
- The effects of urbanicity on arrest rates for young adults were examined in this sample in which substantial fractions lived in rural or suburban as well as in urban areas. Arrest for most offenses were highest in urban areas except for driving offenses associated with drinking which were highest in rural areas. Most differences were accounted for by lower socioeconomic status of the urban families.

Implications of these findings for policy and practice are discussed in the context of the prepared manuscripts.

Executive summary

This funding permitted the integration of several additional data sets into ongoing research supported by the NIH and based on a random sample of American young people . This sample of about 815 persons, born between 1965 and 1974 and living in upstate New York in 1975 when first studied, has particularly contributed to our understanding of the onset and course of psychiatric disorders in children as they move into adulthood. This NIJ grant allowed us to collect data on adult illegal and aggressive behavior, both as self-reported and as reflected in official arrest records, as well as on other variables relevant to the adequacy of adult functioning at an average sample age of 30. The data included a mailed questionnaire that provided particularly rich information on a topic on which we had no previous data, on romantic or marital partner aggression. In addition, we collected data on adult arrests from the Federal Bureau of Investigation's files and from the files of the New York Department of Criminal Justice. We also obtained new records of child abuse or neglect victimization or perpetration from the New York Department of Child Welfare. A search for Death Certificates of study participants whom we have been unable to locate is underway via the Centers for Disease Control. Our efforts to obtain financial data (other than self-reported) and military records (other than self-reported) were not successful.

In this report we summarize the questionnaire and arrest record data, describe the correspondence between the official arrest data and the self-report data, and then go on to present draft manuscripts from six analyses based in part on these newly collected data and designed to address the project proposal's substantive aims.

The first of these aims is to examine models of aggression within and outside

the family. One in-press manuscript addressing this aim examines the relationship between history of child abuse or neglect and adult arrest record. Findings indicate an elevated risk for any arrest for those with a history of physical abuse, and an elevated risk for arrest for a crime against a person for those with a history of physical abuse and for those with a history of sexual abuse (predominantly self-reported). Those with a history of neglect without physical or sexual abuse, whether officially identified or based on our longitudinal reports, did not have an elevated adult arrest rate. These relationships persisted in the presence of statistical controls for demographic and other family risks.

A second study addressing this aim examines inter-generational transmission of criminal behavior and whether it is accounted for by parental behavior. It is shown that both maternal and paternal history of antisocial behavior is related to offspring adult arrests, and that this relationship is mediated by parenting behavior. This manuscript is being revised for submission to a peer-reviewed journal.

The second substantive aim examined the relationship between earlier psychiatric disorder and adult arrest. In the first study addressing this aim we employed multilevel growth models to examine differences in the levels of symptoms of six disorder clusters from early adolescence to the middle twenties. Groups of study participants defined by arrest charge type (crime against person, property crime, substance-related crime, other, or none, hierarchically arranged) are shown to have distinctive levels of symptoms and patterns of changes over these ages.

A second paper addressing the second aim examines predictors of trajectories of crime from childhood to adulthood. It examines both aggressive and property

offense patterns and looks at males and females separately. Neuropsychiatric deficits reflected in attention deficit and hyperactivity, family risk, adolescent psychopathology and level of educational aspirations are among the potential differential predictors of offense pattern hypothesized by Moffit's 1993 theory. Aspects of this theory were supported by the data, but, in particular, aggressive behavior in adolescent girls was associated with high psychopathology and other risks, rather than being relatively benign. This paper was presented at the American Society for Criminology and is being readied for publication.

The third aim is to integrate the previous aims, by examining both inter-generational issues and psychiatric symptom history. A first paper addressing this integration focused on partner violence, and demonstrates its relationship to history of abuse, harsh punishment, and childhood disruptive disorder. This paper has been submitted for publication.

The final substantive aim in the proposal was to examine potential differences between urban and rural areas of upbringing in adult arrest patterns and predictors of these patterns. In the first analyses, reported here, we found substantial differences, with arrest rates for most offenses elevated in the city. The one exception was arrests for DWI or DUI, where rates were highest for those from (and probably still living in) rural areas. Differences between suburban and rural areas were generally too small to be significantly different. Once arrested, however, the rate of re-arrest was similar regardless of area of upbringing. Additional analyses that investigate demographic differences that may account for these differences between those raised in the city and those not raised in the city were carried out. They showed that socioeconomic status

of family of origin and race both accounted for these differences, and that there were no differences in arrest rates net of these variables.

Introduction and study sample

This work is based on the longitudinal study of a random sample of about 800 persons born between 1965 and 1974. This cohort has been studied in 5 previous waves of interviews since 1975 when their families were living in one of two upstate New York counties. The sample is broadly representative of the general US population with regard to parental education and income, divorce rates, and urbanicity, although the area is more Catholic (56% of the parent generation as compared to approximately 26% for the current US population: we do not have denominational information from this generation), with fewer black families (8% as compared to 12% for the entire country in 1990) and, at the time of the sampling, virtually no Latino families. As reflected in the over 120 professional publications based on the Children in the Community sample, much of the past work has focused on the incidence, prevalence, and risk factors for mental disorders in childhood, adolescence, and young adulthood, and has been supported primarily by the National Institute of Mental Health (see website http://nypisys.cpmc.columbia.edu/childcom/). In the NIJ-supported work we added a new questionnaire covering aspects of adult financial status, arrest history, partner violence, and victimization. In addition, we collected arrest records from the FBI and from New York State (where the majority of this sample still live). We are also adding new information from official abuse records, although it appears that no more than 5 or 6 new cases have been identified. Efforts to obtain credit and military records were not successful.

This final report presents frequency data on both questionnaire responses and on arrest records in an appendix. In addition, abstracts of manuscripts submitted or to

be submitted for publication are included. These articles and chapters address the study's substantive aims. We anticipate additional published reports based on these data as well, over the next two or three years.

I. Data collected for the current study

Questionnaire:

We sent questionnaires and made follow-up reminders to 815 study participants. We have received 583 (71%) questionnaires, 61 (7%) subjects refused to participate, 9 (1%) subjects are deceased, we were unable to locate 62 (8%) subjects and 100 (12%) respondents did not return their questionnaires despite repeated requests (nor did they refuse to participate).

The questionnaire and response frequencies have been added to the appendix, and are summarized below.

Victimization. Over the previous 5 years 27% of the respondents had property stolen and 6% had been robbed. Of those participants who were robbed 17% were threatened with a weapon, 7% were injured and 6% needed medical attention. Of the 15% who reported having been assaulted or threatened with assault, 31% had been threatened with a weapon, 27% were injured and 16% needed medical help. 4% of respondents were victims of rape. Over the respondents' lifetimes, one third had been physically threatened or abused by their partners. There are no national data to which these rates can be compared, as they are aggregated over a period of years and for a limited age group.

Self-reported criminal behaviors of respondents. Fewer respondents reported committing crimes than having been a victim of a crime. Theft was reported by 3% of

respondents and 1% committed robbery of whom 38% reported using a weapon and none reported injuring a victim in the previous five years. Of respondents who reported committing robbery 25% had been investigated, 13% were arrested and three subjects were convicted. Of the 5% who reported assaulting or threatening to assault another person, 22% used a weapon and 63% injured someone during the assault. 20% were investigated for assault, 17% were arrested and 14% were convicted. One respondent reported having committed rape. Five percent of respondents reported driving while drunk within the past five years. The percent of respondents who report physically threatening or abusing their partners (27%) in their lifetimes was slightly lower than those who report being threatened or abused (35%).

Official Crime Data:

Formal arrangements were made and signed with the Federal Bureau of Investigation (FBI) and with New York State Division of Criminal Justice Services (DCJS) for destruction of the raw records after conversion to our needed variables and for their destruction of the names and other identifying information on the subjects participating in our study following transfer of the records to us.

New York State DCJS data were provided as an ascii file with code books. Data were nested in that each arrest constitutes a record with multiple lines corresponding to charges, dispositions, and sentences. Confirmation of the identity of subjects was made by names and dates of birth. Data were converted to system files. Because of relatively sparse data for many charges, charges were aggregated by type in order to create categories with sufficient numbers of respondents for data analysis.

The FBI data were sent to us in hard copy. Confirmation of the identity of

a study participant was made by name, date of birth, and social security number. The data were entered in a format roughly corresponding to the state format and cleaned.

Aggregation of the Official Data. As noted, data for charges, dispositions, and sentences were combined into a limited number of variables on which there were sufficient cases for analyses. Penal law codes as defined by the New York Law Enforcement Handbook, were combined into eight categories: violent crimes (murder (n = 1), rape (n = 1), aggravated assault, robbery, kidnapping (n = 1)), property crimes (burglary, larceny, motor vehicle theft, arson, extortion, embezzlement), simple assault, weapon possession, illicit drug offenses (possession, use, sale, paraphernalia, etc), DWI or DUI, child endangerment offenses (n = 2) and minor and miscellaneous offenses. In cases in which an arrest led to multiple categories of charges, the categorization represents the most severe charge. The dispositions for both FBI and New York DCJS were combined into convicted, interim (no disposition yet), and dropped (dismissed, covered by another charge etc). Two variables were created for sentences: Sentence category (1= jail or prison, 2 = probation, 3 = fine and license revoked or suspended,4 = fine only, 5 = community service,6 = discharged or none) - this variable was coded into the lowest applicable number; and Days in jail or prison, estimated as 2/3 of the minimum sentence if the individual was still incarcerated or when data on time served was unavailable.

A syntax file was developed to combine FBI and State data into one set of variables per study subject. Having created the variables from each data set for each arrest as noted above we added to each data set variables indicating the earliest and latest arrest date, the number of arrests by charge category, the number of arrests by

conviction category, the number of arrests by sentence category, the total period in custody across arrests, and the longest single custody period. The two data sets were merged by employing, for each variable, the data set with the highest number of charges, dispositions, sentences, etc, and the earliest arrest date. Thus the final data for each subject may include information from both state and FBI records. An additional set of variables were created which indicate whether subjects had ever been charged with each of the crime categories (for which a single arrest could result in more than one category).

Results of State and Federal Searches:

Among those respondents not refusing permission to use the data, the DCJS yielded 140 subjects with arrest information and the FBI 136 subjects. These combined into a total of 159 subjects with official criminal arrests. Assuming 702 living participants, this is 22.6%. To my knowledge there are no national or state data on the proportion of persons in this age group who have ever had an adult arrest. Arrests are reported in both data bases for subjects 16 years and older. The earliest arrest was in 1982 four days after the subject's 16th birthday and the most recent arrest was at the beginning of 2000 when the youngest participants were age 26. Some arrests in the DCJS data base were blank because they were sealed at the request of the subject (5%) or information on the arrest had not been entered into the data base (29%). Corrections to previous arrest data were not counted as arrests and were removed.

Correspondence between FBI and State records.

Twenty-five subjects appeared in the NY DCJS data that were not matched by FBI records and nine subjects with arrest records in N Y State were found in the FBI data but not in the NY DCJS data. 15 subjects had FBI records for arrests outside of New York State. The number of arrests ranged from one to twenty with an average of four arrests for those subjects appearing in the NY DCJS data and three for those in the FBI data.

There are several possible reasons for the variations in report by NY State and the FBI. First, it may be that minor offenses were not sent by NY State to the FBI. Most of the crimes for which the twenty five who appeared on the NY files but not on the FBI files were arrested were minor. However, a few were not. Second, errors in the search may have also contributed to the discrepancy. In particular, 9 people were listed in the FBI as having NY State records for whom we did not get records from NY State, possibly because of problems in search accuracy.

Financial Records:

We originally proposed to collect credit histories on our subjects. However, we were unable to do so, despite permission from our study participants, because by law this information is only provided to businesses. We considered asking respondents to mail in their own requests for credit information and then pass that information on to us. However, based on past experience of our own and from other survey studies it is highly probable that such a request would result in a very low rate of return and returns from an unrepresentative sample from the full cohort. Therefore, we decided not to pursue this option. As a courtesy to our participants we sent them a letter explaining

both how credit ratings are created and how they could request their credit ratings for their own information, if desired. We also considered requesting Social Security information as an alternative way to learn about our participants' work histories. However again, subjects would have to request this information and then forward it us. Again, low anticipated return rates and sample unrepresentativeness led us to decide not to pursue this further.

Information about subjects' credit histories from the questionnaire is summarized below and in Appendix B.

Self-reported Financial status. Respondents reported incomes that ranged from less than $5000 to $100,000 or more, with the highest frequency in the $25,000 to $40,000 range (26%). Half of our respondents have experienced some form of financial difficulty. 35% of respondents have been at one time unable to pay their minimum monthly balances on their credit cards, 24% have had a credit card cancelled because they failed to make minimum payments and 32% have been denied a credit card because of poor credit. 14% have defaulted on a loan and 7% have filed for bankruptcy.

Military Data:

We attempted to acquire records on subjects who had been in the military. We hoped to obtain both military records, and information on military applicants whose applications had been denied. Despite identification of a potential facilitator, we were unable to get this information. However, we did obtain self-report information from subjects. 46 (8%) respondents have been in the military and 7 (15%) of these respondents reported having experienced combat when they had been between the

ages of 18 and 25 (presumably in the Gulf War).

Death Certificate Data:

We have been unable to locate 63 of our original sample. Therefore we have a recently approved proposal to the CDC to search the National Death Index to find out if any of our difficult to reach subjects are deceased. This work will probably be completed after the official closing of the NIJ work, although NIJ support will be acknowledged in any manuscripts that may ensue.

Child maltreatment data.

We reached an agreement with the New York State Child Welfare agency for access to update these data, after considerable delay associated with legal review by a number of interested parties. As for other agencies providing official records, an agreement was reached for the destruction of identifying data on study participants following provision of the record data to us. It appears that 4 new cases have been identified in this search.

II. Agreement between official arrest data and self-reported crime and arrests.

We had obtained self-report data on criminal and aggressive behavior from our sample in 1986 and 1992, when some or all of our cohort were at least age 16, as well as in the NIJ-funded questionnaire at the end of the decade. We therefore begin our report on findings with the levels of agreement between the self-reported and official arrest data.

A. Matching categories: This cohort was born between 1965 and 1974, and therefore the oldest reached age 16 in 1981, just prior to our first follow-up. In the second follow-up, in 1985-86 over ½ of the sample had turned 16. Because the timing

of potential criminal behavior self-reported in these interviews was not limited to the over-16 period, and because we did not discriminate between behavior resulting in arrest and behavior not followed by arrest, our work thus far has not attempted to take these reports into account except to note an over-age-16 subject's report of having been in trouble with the police as a self-reported arrest (with unknown charge). In the 1991-1994 interviews the average age of the respondents was 22.4, the questions covered the previous 5 years, and the respondents distinguished between behavior resulting in arrest and that not resulting in arrest. In the 1999 questionnaires the respondents identified behavior and whether it resulted in arrest in the previous five years. We have pooled the 1991-1994 (Wave 4) data with the questionnaire data to make the first comparison between the official arrest records and self-reported arrest. Subsequent analyses will examine the self-reported behavior not necessarily resulting in arrest.

The combined FBI and New York State data identified 153 arrested (27.5%) among the 663 respondents who did not refuse permission to use their official arrest record data and for whom previous self-report data were available. The self-report data, determined according to the syntax described above, included 182 arrested (27.5%) among the same group. Of these, 102 were reported by both sources. Thus agreement was clearly statistically significant, but moderate (kappa = .48).

With regard to specific crime categories, agreement between official records and self-report was highest for DWI/DUI charges, kappa = .64, with 81 self-reporting and 72 official reporting, of whom 52 were reported by both sources. Agreement on other categories of arrest charges was much, much less impressive, although still statistically

significant. The kappa on violent crime charge was .19, with 16 self-reporting, 22 official records, and only 4 cases overlapping. Theft (property crime) showed higher agreement (kappa = .31) with 41 self-reports, 49 official cases, and 16 overlapping. Simple assault agreement was also moderately low, kappa = .26, 36 self-reported cases, 44 official cases, and 12 overlapping. Drug-associated charges were self-reported by 33 respondents, official records appeared for 52, with 16 overlapping (kappa = 34). Our "miscellaneous, mostly minor" category included 91 cases both in the self-reported and in the official records, but there were only 29 overlaps (kappa = .21).

On the whole we would have to guess that the reasons for disagreement may lie primarily in the differences in timing and definition rather than in a reluctance to admit having been arrested for a particular offense. Our reasoning for this conclusion is based on the fact that the self-reported numbers were only modestly smaller than the official records. Because the official records are public data we were also able to examine potential bias attributable to those who did not wish us to employ their data. Our conclusion is that these subjects did not differ materially in arrest histories from those included here.

III. Findings with regard to substantive aims

With regard to the study's substantive aims, the proposal listed four, and the following analyses addressing these aims are now being written up for publication. The following reports are drafts of these papers that have been, or will shortly be, submitted to a peer reviewed journal or equivalent publication. We request that quotations from these manuscripts not be made until they have actually been published.

Substantive Aim 1: To test models of aggression within the family and outside the family using record and interview data.

Study 1: Effects of childhood maltreatment on adult arrests in a general population sample.

Patricia Cohen, Elizabeth Smailes, Jocelyn Brown, M.D., M.P.H.

Summary of a presentation at the NIJ Conference: Violence against Women and Family Violence, October 1-3, 2000.

Several studies have found that children and adults with a history of child maltreatment are at excess risk of illegal behavior and arrest (Garbarino & Plantz, 1986; Maxfield & Widom, 1996; Smith & Thornberry, 1995; Widom, 1989; Zingraff, Leiter, Myers, & Johnson, 1993). These studies have used a variety of methods of measuring both the maltreatment history and illegal and aggressive behavior, each with certain advantages and limitations. Studies have employed self-reports of maltreatment history from clinical, justice, high-risk or general population samples. The difficulties of such self-reports are well known, including potential self-interest or bias in reports, failure to report actual maltreatment due to forgetting, embarrassment or interpretive variation, and potential mildness of reported cases, blending into more normative discipline. On average, the severity of self-reported maltreatment is likely to be less severe and long-lasting, so that lesser consequences may be attributable to these factors.

An alternative is follow-up of those who have an official record of childhood

victimization. In such cases the existence of maltreatment is confirmed, although it is clear that not all such maltreatment is detected and recorded. Officially identified cases are generally compared either to population rates of illegal or aggressive behavior or to rates in samples selected for comparability on other relevant risks. In these studies the attribution of excess delinquent or criminal behavior *to maltreatment as such* may be in error. It is extremely difficult to match "control" samples on other relevant risks, especially parental criminal history, family disorganization and conflict, more general maladaptive parenting, child misbehavior prior to the maltreatment, and even associated demographic risks such as parent age, marital status, income stability and adequacy, family health, and family support network. Therefore we cannot be sure that elimination of childhood victimization would necessarily have an impact on crime.

Studies also vary in their measurement of juvenile and adult delinquent, criminal, and aggressive behavior. Reports may come from parents, agency files, youth or adult self-report, or arrest or detention data. Each of these methods also includes certain measurement risks. Such behavior may be unknown to parents, unrecorded by agencies, and unrecalled or otherwise unreported by individuals. There are also serious problems in the use of arrest records as a proxy measure of criminal behavior. Attention to the widespread practice of racial profiling has directed public attention to the ways in which members of an ethnic or social group may be at excess risk of arrest solely because they are more likely to be subjected to closer police scrutiny. Most of the officially identified victims of child maltreatment have come to the attention of the police, either because of the maltreatment itself or because of parental failure to

supervise and control the child. Thus it is possible that such children may be at excess risk of becoming a "usual suspect" by the simple fact of familiarity to the police.

In the current study we employ longitudinal data on childhood risks and adult outcomes from a sample of young people who were randomly selected from a mixed urban and rural, demographically diverse area population when they were an average of 6 years old. When children reached their majority they were asked to report a history of maltreatment. Thus, it is possible to include comparisons and controls for family risks that may lead both to maltreatment and to ultimate adult criminal behavior. In addition, it is possible to compare cases officially identified with cases in which the maltreatment is identified only by retrospective report of the young adult. However, the low rates of identified childhood victimization and adult arrests for particular charges mean that there is a deficiency of statistical power to detect elevated rates with conventional Type 1 error rates (e.g. alpha < .05). Subsequent reports will compare the findings reported here to those based on self-reported illegal and aggressive behavior.

The three goals of the current study are:

1. To identify elevation of adult arrest rates in those with a history of maltreatment,

2. To determine the extent to which elevation in arrest rates may be attributable to common risks for maltreatment and arrest,

3. To estimate the fraction of young adult arrests that may be attributable to child maltreatment and to compare that fraction to that attributable to more widely employed and sanctioned punishment in the general population.

The study sample and measures

The data employed are drawn from the Children in the Community (CIC) cohort originally sampled on the basis of residence two upstate New York counties in 1975 (Kogan, Smith, & Jenkins, 1977). The members of this cohort were born between 1965 and 1974, and data were collected by maternal interview on a range of health, behavioral, and environmental factors. Both parent and study child were interviewed separately in three follow-ups in 1983, 1985-1986, and 1991-1994. The sample as constituted in 1983 was demographically representative of the sampled areas, and family follow-up rates have been 95% since that time. Full details on the sample characteristics, protocols, and follow-up are available in earlier publications (Cohen & Cohen, 1996).

We obtained data on abuse history from the New York State Child Protection Agency, self-reports of abuse from our respondents who were 18 years or older, and employed extreme maternal responses to questions in our early interviews to assess emotional neglect. There were 35 officially identified cases, 4 cases of sexual abuse with or without other abuse or neglect, 16 cases of physical abuse with or without neglect, and 15 cases of neglect. About 1/4 of the sample had lived at least some of their childhood in one or more other states, from which we have no information on officially detected abuse or neglect. For these and other reasons the records constitute a minimum estimate of cases with official identification. The overlap between self-reported and official determinations of abuse or neglect history was only 9 cases (Brown, Cohen, Johnson, & Salzinger, 1998). The neglect self-report asked only about lack of overnight supervision before the age of 10 and yielded too few positive

responses to be analyzed separately. Self-reports of two or more sexual abuse incidents were coded as sexual abuse in order to increase the specificity of this inquiry. Because of sparsity we combined self-reported sexual abuse with official records. Maternal self-reported emotional neglect was coded from extreme responses to parenting items in the interviews completed when the children were still young.

The members of the six groups analyzed for this report were assigned hierarchically as follows: official physical abuse record (n = 16), official or self-reported sexual abuse (n = 20), official neglect record (n = 15), maternal report emotional neglect (n = 16), and self-reported physical abuse (n = 22), no detected abuse or neglect (n = 579). Numbers in analyses vary slightly depending on available data.

These groups differ on basic demographic variables. Women predominated in the self-reported abuse groups, especially in the sexually abused group. Over 1/4 of the official cases of abuse or neglect were black children while self-reported cases were proportional to the total sample, with regard to race. Official cases were more likely to be from a non-intact family, below the official US poverty line, and of very low SES on a standardized measure. Self-reported physical abuse cases were not significantly distinguishable from the non-cases with regard to demographics. Self-reported sexual abuse cases were more likely to be in poverty and non-intact families, and of somewhat lower social class background.

Arrest data were combined from New York State and FBI records. Because this is a general population sample, in order to keep numbers sufficiently large for reasonable statistical power we grouped arrests into the following charge groups regardless of severity: offenses against people, property offenses, drug offenses, DWI

and DUI offenses, weapons possession, offenses against a minor, and other miscellaneous minor offenses.

Findings

Arrests for each of the abuse and neglect groups are shown in Exhibit 1. As can be seen, although the proportion of each group ever arrested as an adult varied significantly, the effect is overwhelmingly attributable to high rates among those with an official record of physical abuse, with a lesser elevation among those with an official history of neglect. Among those arrested for a crime against a person (assault, robbery, threats), high rates are seen for the officially identified physical abuse victims and also for those with self-reported or official history of sexual abuse. The overall differences by maltreatment history in proportion arrested for a property offense, a drug offense, or for drunk driving were not statistically significant, although significantly more of those with official maltreatment records had been arrested for a property offense than any other groups. Altogether, the most substantial differences were seen in the crimes against people.

Exhibits 2 and 3 present the findings from the logistic regression analyses of the odds of being arrested for any offense or for a crime against a person, respectively. Each of the odds ratios (ORs) is a comparison with the reference (no identified maltreatment) group. OR empirically less than the expected 1.0 are indicated by dashes. The first columns of ORs estimate the effects of maltreatment, controlling only for the known difference in likelihood of arrest of males as compared to females. As we saw previously, only those with officially identified physical abuse had been more

often ever arrested, while both that group and sexual abuse victims were more at risk for arrest for a crime against a person. Some other maltreated groups also had ORs noticeably greater than the expected 1.0 but, given the low statistical power of these small samples, differences were not significant.

The next columns of ORs in Exhibits 2 and 3 add a demographic risk index to the prediction equation to determine whether it may account for the excess arrests in these groups. This demographic risk measure, developed in our study, was designed to determine whether abuse could be detected by measures generated in the early childhood data (Brown, Cohen, Johnson, & Salzinger, 1998). It includes poverty, young maternal age at first childbearing, welfare support, non-white race, large family size, and low maternal education. Additional risks reflecting parental characteristics, parenting patterns, and child characteristics that predicted one or another kind of maltreatment were not employed in these analyses as they did not influence the findings.

Adding the demographic risk index to the equations lowered the estimated effects of officially detected physically abuse, but did not change the significant predictors. On the other hand, for each additional demographic risk, the odds of ever being arrested increased by 26% (OR = 1.26), and the odds of ever being arrested for a crime against persons nearly doubled (OR = 1.93).

The final OR column includes a measure of punishment techniques reported by mothers in interviews when the children were an average age of 6 years old. 40 sample members were missing some data, so these estimates are not quite comparable to those in the other two columns. What we see is that the estimated

significant effects of childhood maltreatment were not negatively influenced by inclusion of this variable, and that each increase of one standard deviation in this measure was independently associated with a 25% increase in the odds of arrest, and a 74% increase in the odds of arrest for a crime against a person.

Exhibits 4 and 5 about here

In Exhibits 4 and 5 we combine the maltreatment groups and compare rates of arrest by maltreatment status and whether punishment in early childhood was above or below the sample mean. As can be seen, the likelihood of having been arrested was about 50% higher for those with an abuse history regardless of the punishment history (.24/.16 and .34/.22). Among those without a maltreatment history those who experienced more punishment than average had arrest histories 38% more often than those who experienced less punishment. The impact of these two variables on the total likelihood of arrest, however, gives a very different picture. If the whole sample had been equivalent to the not-maltreated sample, the arrest history would have been 6% lower. On the other hand, if the rate of the below average punishment had characterized the whole sample (in the absence of abuse, although this doesn't affect the answer), the proportion arrested would have been 21.6% lower. Thus, the attributable risk, or affect on the total population rate is very much more influenced by the much more prevalent risk of higher than average punishment than by the groups of frankly maltreated children.[1]

[1] Note, this estimate is not materially affected by restricting the abuse group to the more extreme groups (e.g. officially identified) because while the differences increase the size of the group declines.

These estimates are even more startling when we examine the rates of having been arrested for a crime against a person. The likelihood of such an arrest history was over 3 times as high among the abused whose mothers reported below average punishment, and also elevated in the higher punishment group. On the whole, the risk of having been arrested for a crime against a person attributable to a history of maltreatment is estimated at 24.5%. On the other hand, the rates of such arrest were also strongly related to maternal reports of punishment in early childhood. If the entire population who had not been abused had experienced punishment below the sample's average, the risk of arrest for a violent offense (a crime against a person) might decline 56%. It is important to note that this estimate is not made with a presumption that such punishment would entirely disappear, but only that it is equivalent to the lower half of this general population sample.

Summary and Discussion

We found that victims of officially identified physical abuse were more likely to be arrested as adults, and more likely to have been arrested for a variety of crimes, including crimes against persons ("violence"). When combined with other official cases of child maltreatment they were also more likely to have been arrested for property crimes. The most distinctive finding was that victims of sexual abuse were also more likely to have been arrested for crimes against persons, despite the fact that this group was mostly self-reported. These findings were not erased by controls for demographic risks, nor by inclusion of early childhood punishment history. The fact that other self-reported maltreatment was not related to arrests in these data may have been due to low statistical power, or may raise questions about the influence of official abuse

detection on police scrutiny of families and consequent arrest probability.

A comparison of the attributable risk of arrest associated with maltreatment history with that of simple above average use of punishment in early childhood showed the latter to be much more influential, especially on arrests for crimes against persons.

Implications for future researchers: Inclusion of data on maltreatment, both by self-report and by official record is a critical aspect of understanding the underpinnings of adult antisocial behavior, and particularly of adult interpersonal aggression. Inclusion of such data, however, does not eliminate the need to take other demographic and childhood risks into account.

Implications for practitioners. A history of physical and sexual abuse are common among those showing violent behavior as an adult, but do not account for all of the relationship between demographics and crime or between parenting and crime. These findings suggest that prevention efforts may usefully focus on the negative effects of punishment, which may be largely replaced by parental preventive interventions, clear standards for behavior, and positive reinforcement of prosocial behavior. Although frank maltreatment clearly deserves ongoing attention, punishment is so much more prevalent a risk, although less potent, that improvements in this area could potentially have an even larger positive impact on violent behavior of offspring.

Exhibit 1. Odds Ratios for any adult arrest from simultaneous logistic regression (n=662)

Predictor	OR controlling only gender	OR controlling demographic & family risks	OR controlling demographic & punishment
Physical abuse record	10.74*	7.57*	7.46*
Sexual abuse	1.27	1.27	1.01
Neglect record	2.73	1.65	1.58
Emotional neglect (MR)	< 1.0	<1.0	1.13
Physical abuse (SR)	<1.0	-<1.0	-<1.0
Gender	3.34*	3.52*	3.64*
Demographic risk index		1.26*	1.17*
Childhood punishment			1.25*

* $p < .05$

Exhibit 2. Odds Ratios for any adult arrest from simultaneous logistic regression (n=662)

Predictor	OR controlling only gender	OR controlling demographic & family risks	OR controlling demographic & punishment
Physical abuse record	10.74*	7.57*	7.46*
Sexual abuse	1.27	1.27	1.01
Neglect record	2.73	1.65	1.58
Emotional neglect (MR)	--	--	1.13
Physical abuse (SR)	--	--	--
Gender	3.34*	3.52*	3.64*
Demographic risk index		1.26*	1.17*
Childhood punishment			1.25*

* $p < .05$

Exhibit 3 Odds Ratios for adult arrest for crime against person from simultaneous logistic regression (n = 662)

Predictor	OR controlling only gender	OR controlling demographic & family risks	OR controlling demographic & punishment
Physical abuse record	9.91*	4.14*	9.53*
Sexual abuse	7.12*	7.27*	9.45*
Neglect record	3.33	--	2.10
Emotional neglect (MR)	3.24	3.79	5.03
Physical abuse (SR)	1.16	1.11	1.54
Gender	2.95*	3.05*	3.45*
Demographic risk index		1.93*	1.77*
Childhood punishment			1.74*

Exhibit 4. Percent arrested as an adult by maltreatment and punishment history.

Any abuse or neglect	Childhood punishment	
	Below average	Above average
None known	16%	22%
Present	24%	34%

Attributable risk: Maltreatment = 6%, Childhood punishment (among non-abused) = 21.6%

Exhibit 5. Percent arrested for offense against person by maltreatment and punishment history.

Any abuse or neglect	Childhood punishment		
		Below average	Above average
	None known	1.6%	14.3%
	Present	5.4%	19.1%

Attributable risk: Any abuse or neglect = 24.5%, Childhood punishment (among non-abused) = 56%

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Comment for purposes of NIJ final report: It should be noted that in contrast to case-control studies based on large samples of those identified by official records as having been victimized by childhood maltreatment, this random sample from the general population, not surprisingly, includes rather small numbers of unambiguously abused children. Thus, analyses that examine details of the maltreatment experience could not be carried out, both because the statistical power to make such discriminations was so low and because the geographical diversity of the sample made it impossible to gather such data from the original case records. We also note that these analyses were based on official records and self-reports collected prior to NIJ funding.

Study 2: Antisocial Parental Behavior, Maladaptive Parenting,and Aggressive Offspring Behavior during Adulthood

Abstract

Background: Longitudinal data were used to investigate the role of maladaptive parenting in the association between parental antisocial behavior and aggressive offspring behavior.

Method: Antisocial parental behavior and maladaptive parenting were assessed in a representative community sample of 593 biological parents from two counties in New York State in 1975, 1983, and 1985-86. In 1975, the offspring were a mean of 6 years of age. Aggressive offspring behavior was assessed in 1983, 1985-86, 1991-93, and 2000 using interview, questionnaire, and state and federal crime data.

Results: Maladaptive parenting mediated a significant association between a history of antisocial parental behavior and aggressive offspring behavior during adulthood. Parents with a history of antisocial behavior engaged in more types of maladaptive behavior in the household than did parents without a history of antisocial behavior. Maladaptive parenting, in turn, was associated with increased offspring aggression during adulthood after controlling for a history of antisocial behavior. In contrast, a history of antisocial behavior was not significantly associated with offspring aggression during adulthood when maladaptive parenting was controlled statistically.

Conclusions: Maladaptive parenting is associated with increased risk for aggressive behavior among the offspring of parents with and without a history of antisocial parental behavior. Maladaptive parental behavior appears to mediate the association between a history of antisocial parental behavior and aggressive offspring behavior.

Research has indicated that the offspring of parents with a history of antisocial behavior are at elevated risk for disruptive behavior problems, including aggressive and criminal behavior.[1] This intra-familial transmission of risk is likely to be attributable to the combined effects of genetic and environmental factors.[2 3] However, the mechanisms that govern the association between antisocial parental behavior and offspring aggression have not yet been firmly established. Poor parenting has been theorized to be an important determinant of intra-familial transmission of aggressive and antisocial behavior. There are several reasons why parenting may play a particularly important role in this process. Parents with a history of antisocial behavior may be more likely than other parents to abuse or neglect their children, to use inconsistent or harsh disciplinary methods with their children, to poorly monitor and supervise their children's activities, to spend an inadequate amount of time with their children, to act as poor role models for their children, and to tolerate antisocial behavior by their children. Maladaptive parenting may itself be influenced by offspring temperament and a history of parental behavior problems, both of which are likely to be determined in part by genetic factors.[4]lthough numerous studies have examined associations between parental behavior problems, parenting, and offspring behavior problems, few studies have included a comprehensive assessment of all three sets of factors using a multi-wave prospective longitudinal methodology. Further, no previous study has assessed antisocial parental behavior, parenting, and offspring aggression from child-rearing through the adulthood of the offspring, controlling for the effects of offspring temperament, and antisocial parental behavior on parenting. Thus, important questions remain unanswered about the role that parenting plays in the intra-familial

transmission of aggressive behavior. The nature of this association is of considerable theoretical interest, and it has important public health and public policy implications because it may be possible to reduce the likelihood that children will develop problems with antisocial and aggressive behavior by helping parents to learn more effective child-rearing techniques.[5]

Two bodies of research support the inference that maladaptive parenting plays an important role in the intra-familial transmission of aggressive and antisocial behavior. First, research has indicated that parental psychopathology is associated with increased risk for maladaptive parenting.[4] Second, research has demonstrated that maladaptive parenting is associated with increased offspring risk for behavior problems.[6,7] Thus, it has been hypothesized that maladaptive parenting is an important mediator of the association between parental and offspring behavior problems.[8]

To conduct a systematic examination of this mediational hypothesis, it is necessary to conduct prospective longitudinal research with a sizable general population sample, assessing a history of antisocial behavior and maladaptive maternal and paternal child-rearing behaviors among both biological parents, and assessing aggressive offspring behavior during adulthood. It is also necessary to control for the effects of antisocial parental behavior, and offspring temperament on parenting.[4] We report findings from such a community-based prospective longitudinal study to investigate whether maladaptive parenting mediates the association between a history of antisocial parental behavior and offspring aggression.

Method

Sample and Procedure

The participants in the Children in the Community Study were 976 randomly sampled families from two upstate New York counties, originally interviewed in 1975. Follow-up interviews were conducted in 1983, 1985-86, and 1991-93.[9] [10] In 2000, questionnaires that assessed a wide range of aggressive acts in 2000 were administered to the study offspring. In 2000, data were also obtained from New York State and Federal Bureau of Investigation records regarding arrests and charges for adult criminal behavior. The current analyses were conducted with data from 593 families for whom information regarding antisocial behavior, psychopathology, and maladaptive parenting were available through 1985-86 with regard to both biological parents, and for whom data were available through 2000 regarding aggressive offspring behavior. These 593 families did not differ from the remainder of the original sample with regard to the prevalence of maladaptive parental behavior, difficult offspring temperament, or maternal psychopathology, although paternal substance abuse in 1975 was less prevalent than in the remainder of the original sample. The participating families were representative of families in the northeastern United States with regard to most demographic variables, but reflected the region regarding high proportions of Catholic (54%) and Caucasian (91%) participants.[10] The mean age of the offspring was 6 (SD=3) in 1975, 14 (SD=3) in 1983, 16 (SD=3) in 1985-86, 22 (SD=3) in 1991-93, and 30 (SD=3) in 2000. Study procedures were approved according to appropriate institutional guidelines. Written informed consent was obtained after the interview procedures were fully explained. Additional information regarding the study methodology is available from previous reports.[10, 11]

Assessment of Offspring Temperament and of Parental and Offspring Psychopathology

Ten dimensions of difficult childhood temperament were assessed during the 1975 maternal interviews: (1) Clumsiness-distractibility; (2) Nonpersistence-noncompliance; (3) Anger; (4) Aggression to peers; (5) Problem behavior; (6) Temper tantrums; (7) Hyperactivity; (8) Crying-demanding; (9) Fearful withdrawal; and (10) Moodiness. Children with severe problems in these domains were identified as having a difficult temperament.[10, 11]

The parent and youth versions of the Diagnostic Interview Schedule for Children (DISC-I)[11] were administered to assess offspring psychiatric symptoms in 1983 and 1985-86. In 1991-93, an age-appropriate version of the DISC-I was administered to the offspring, when their mean age was 22 years. Symptoms were considered present if reported by either informant. The DISC- I conduct disorder module assesses a range of aggressive acts, including arson, assault resulting in injury to another person, robbery, starting physical fights, theft, threats to injure others, use or threatened use of a weapon, and vandalism. Aggressive acts and psychiatric symptoms were considered present if reported by either informant. Research has supported the reliability and validity of the DISC-I as employed in the present study.[12] In 2000, questionnaires that assessed a range of aggressive acts, including assault resulting in injury to another person, robbery, theft, threats to injure others, and use or threatened use of a weapon during the previous 5 years were completed by the study offspring. In 2000, data were also obtained from New York State and the Federal Bureau of Investigation records regarding arrests and charges for adult criminal behavior.

Two types of interview data were used to assess parental antisocial behavior and psychopathology. Current parental antisocial behavior psychopathology was assessed during the 1975, 1983, and 1985-86 maternal interviews. Lifetime psychopathology was assessed during the 1991-93 maternal interview. Interview items used to assess current maternal antisocial behavior and anxiety, depressive, disruptive, personality, and substance use symptoms were obtained from the Disorganizing Poverty Interview (DPI),[11] the California Psychological Inventory,[13] the Hopkins Symptom Checklist (SCL-90),[14] and instruments that assessed maternal alienation,[15] rebelliousness,[16] and other dysfunctional traits.[17,18] Paternal alcohol abuse, drug abuse, and antisocial behavior were assessed using the DPI. Lifetime maternal and paternal antisocial behavior and anxiety, depressive, disruptive, personality, and substance use disorders were assessed using items adapted from the New York High Risk Study Family Interview.[19] Data regarding the onset of parental disorders permitted identification of disorders that were evident by the time that the mean age of the offspring was 16 years.

Assessment of Maladaptive Parental Behavior

A wide range of maternal and paternal behaviors were assessed during the 1975, 1983, and 1985-86 interviews. Inconsistent maternal enforcement of rules, loud arguments between the parents, low maternal educational aspirations for the child, maternal difficulty controlling anger toward the child, maternal possessiveness, maternal use of guilt to control the child, maternal verbal abuse, parental cigarette smoking, low parental supervision, low paternal assistance to the child's mother, and paternal fulfillment of the role of father in the family were assessed using items from the DPI and measures of maternal child-rearing attitudes and behaviors that were

administered during the maternal interviews.[10, 11, 20 21] Harsh maternal punishment, parental affection, parental time spent with the child, and poor parental communication with the child were assessed in the maternal and offspring interviews.[10, 21, 22] Parental home maintenance and maternal behavior during the interview were assessed by interviewer observations. Scales and items assessing each type of parental behavior were dichotomized at the maladaptive end of the scale, facilitating identification of specific types of parental behavior that were associated with antisocial parental behavior and offspring aggression. Dichotomies were established empirically to identify statistically deviant parental behaviors. Parental behavior was not defined as maladaptive unless the parent's score was at least one standard deviation from the sample mean. A body of research supports the validity of the measures that were used to assess maternal and paternal behavior.[10, 11, 21, 22, 22 23 24]

Assessment of Parental Education and Income

Parental education and parental income were assessed in 1975, 1983, and 1985-86 during the maternal interviews. The percentages of 1975, 1983, and 1985-86 U.S. Poverty Levels (USPL) were computed in 1975, 1983, and 1985-86 for each family, taking into account family size. The family was considered to have been in poverty if their average income was below 100% of the USPL. Low parental SES was considered present if neither parent completed high school and if family income was below the USPL in 1975, 1983, or 1985-86. If data regarding the father's education was not available, the mother's educational level was used.

Data Analyses

Analyses of contingency tables were conducted to investigate the association between a history of parental antisocial behavior and maladaptive parental behaviors. Analyses of covariance were conducted to investigate whether parents with a history of antisocial parental behavior behaved in a more maladaptive manner in the home and toward their offspring than did parents without a history of antisocial parental behavior. Logistic regression analyses were conducted to investigate whether maladaptive parental behavior was associated with increased offspring risk for aggressive behavior during adulthood after controlling for parental education and income, offspring age, gender, difficult childhood temperament, and a history of antisocial parental behavior. Logistic regression analyses were also conducted to investigate whether a history of antisocial parental behavior was associated with increased offspring risk for aggressive behavior during adulthood after controlling for parental education and income, offspring age, gender, difficult childhood temperament, and maladaptive parental behavior.

An established three-step procedure[25] was used to test whether parental behavior mediated the associations between a history of antisocial parental behavior and offspring aggression during adulthood. For parental behavior to mediate these associations, three conditions are required: (1) A history of antisocial parental behavior must predict offspring psychiatric disorders; (2) A history of antisocial parental behavior must predict maladaptive parental behavior; and (3) Maladaptive parental behavior must predict offspring aggression after a history of antisocial parental behavior was controlled statistically. Logistic regression analyses were also conducted to investigate whether maladaptive maternal and paternal behaviors independently predicted

offspring aggression; whether the statistical interaction of maladaptive maternal and paternal behaviors predicted offspring aggression; and whether histories of antisocial maternal and paternal behavior predicted offspring aggression.

Results

Descriptive Statistics: Forty-one mothers (6.9%) and 106 (17.9%) fathers had a history of adult antisocial behavior. Fifteen offspring (2.5%) committed robberies; 96 (16.2%) committed assaults or were involved in physical fights that resulted in injuries; 23 (3.9%) used or threatened to use a weapon; and 78 (13.2%) threatened to injure other persons during adulthood. Overall, 132 offspring (22.3%), including 37 females (12.6%) and 95 males (31.7%) committed one or more acts of aggression against other persons during adulthood.

Associations between Covariates, Maladaptive Parental Behavior, and Offspring Aggression. Difficult offspring childhood temperament at mean age 6 was associated with higher levels of maladaptive parental behavior at mean offspring age 14 ($t=3.28$; $df=591$; $p<.005$) and 16 ($t=2.37$; $df=591$; $p<.05$). Males (Odds Ratio (OR) = 3.21; 95% Confidence Interval (CI): 2.10-4.89), individuals who had a difficult childhood temperament (OR = 2.29; CI: 1.29-4.04), whose family income was below the national poverty line (OR = 2.22; CI: 1.16-4.25), and whose parents did not complete high school (OR = 2.24; CI: 1.48-3.40) were at elevated risk for aggressive behavior during adulthood.

The Association between a History of Parental Antisocial Behavior and Maladaptive Parenting: Five types of maladaptive maternal behavior and 6 types of maladaptive paternal behaviors were more prevalent among parents with a history of antisocial

behavior than among parents without a history of antisocial behavior. These associations remained significant after parental education and income, offspring age, gender, and difficult childhood temperament were controlled statistically (Tables 1 and 2). Overall, parents without a history of antisocial behavior had an adjusted mean of 2.51 maladaptive behaviors (SD=2.50). Parents with a history of antisocial behavior had an adjusted mean of 3.96 maladaptive behaviors (SD=3.36). This difference remained statistically significant after controlling for the same covariates (F=31.70; df=592).

The Association between Maladaptive Parental Behavior and Offspring Aggression.

Maladaptive parental behavior was associated with increased offspring risk for aggressive behavior during adulthood after the covariates were controlled statistically. All of these associations remained significant after a history of antisocial parental behavior was controlled statistically (Table 3). Offspring aggression increased markedly in prevalence as the number of maladaptive parental behaviors increased. Maladaptive maternal (OR = 1.30; 95% CI: 1.11-1.54) and paternal behavior (OR = 1.15; CI: 1.01-1.33) were both associated with increased offspring risk for aggressive behavior. The association between maladaptive maternal behavior and offspring aggression remained significant when maladaptive paternal behavior was controlled statistically (Adjusted Odds Ratio (AOR) = 1.27; CI: 1.05-1.54), but the association between maladaptive paternal behavior and offspring aggression did not remain significant when maladaptive maternal behavior was controlled statistically. The statistical interaction of maladaptive maternal and paternal behavior did not predict offspring aggression. Maladaptive paternal behavior was associated with aggressive

behavior among male and female offspring. Five specific types of maladaptive parental behavior were significantly associated with aggressive offspring behavior when age, sex, difficult childhood temperament, parental education and income, and a history of maladaptive parental behavior were controlled statistically (Table 4).

The Association between a History of Parental Antisocial Behavior and Offspring Aggression

A history of antisocial parental behavior was associated with overall offspring aggressive behavior during adulthood after the covariates were controlled statistically (Table 5). However, this association did not remain significant after controlling for maladaptive parental behavior. A history of antisocial parental behavior was associated with offspring robberies, threats, or weapon use before, but not after the covariates were controlled statistically. In contrast, a history of antisocial parental behavior remained significantly associated with offspring assaults or involvement in physical fights resulting in injuries after the covariates and maladaptive parental behavior were controlled statistically.

After a history of antisocial maternal behavior was controlled statistically, a history of antisocial paternal behavior was significantly associated with offspring assaults or physical fights resulting in injury (OR = 2.05; CI: 1.21-3.48), and with overall offspring risk for aggressive behavior (OR = 1.89; CI: 1.16-3.07), but not with offspring robberies, threats to injure others, or weapon use. In contrast, after a history of antisocial paternal behavior was controlled statistically, a history of antisocial maternal behavior was significantly associated with offspring robberies, threats to injure others, or weapon use (OR = 2.23; CI: 1.02-4.87), but not with offspring assaults,

physical fights resulting in injury, or overall offspring risk for aggressive behavior. A history of antisocial paternal behavior was significantly associated with aggressive behavior among the female offspring, and a similar trend was obtained among the male offspring. Neither the interaction of maternal and paternal histories of antisocial behavior nor the interaction of a parental history of antisocial behavior with maladaptive parental behavior was associated with offspring risk for aggressive behavior. As Figure 1 indicates, parallel increases in overall offspring risk for aggressive behavior were obtained as a function of maladaptive parental behavior among the offspring of parents with and without psychiatric disorders.

Discussion: The major findings of the present study are that maladaptive parenting was associated with increased risk for offspring aggression during adulthood after a history of antisocial parental behavior was controlled statistically. In contrast, antisocial parental behavior was not significantly associated with offspring aggression during adulthood after maladaptive parenting was accounted for. These findings suggest that maladaptive parenting may mediate the association between a history of antisocial parental behavior and offspring aggression. Although the offspring of parents with a history of antisocial behavior are more likely than other individuals to commit aggressive acts during adulthood, our findings are consistent with previous research suggesting that this may be due, in large measure, to the elevated prevalence of maladaptive parenting among parents with a history of antisocial behavior.

The present findings are of particular interest because maladaptive parenting predicted offspring aggression during adulthood after difficult offspring temperament was controlled statistically. This finding supports the influence that the association

between maladaptive parenting and subsequent offspring aggression is not attributable to the effects of difficult offspring temperament on parenting behavior. Although our findings suggest that difficult childhood temperament tends to increase the likelihood of maladaptive parenting, this association does not appear to explain the association between maladaptive parenting and later offspring aggression. Of further interest, our findings indicate that the association between maladaptive parenting and offspring aggression is not stronger or weaker among offspring with a difficult childhood temperament than among those who did not have a difficult temperament.

Our findings are consistent with previous findings indicating that parenting can be adversely affected by parental psychopathology and offspring temperament, both of which are likely to be determined in part by genetic factors.[4, 5] Yet, at the same time, our findings indicate that the association between maladaptive parenting and subsequent offspring aggression was not attributable to the effects of antisocial parental behavior, parental education, parental income, or offspring temperament. These findings are noteworthy because previous studies have suggested that genetic factors may play an important role in the intra-familial transmission of aggression and other disruptive behavior problems.[7] It will be of interest for future research to investigate whether genetic factors that are not expressed through antisocial parental behavior, parental education, parental income, or difficult offspring temperament may play a role in the association between maladaptive parental behavior and offspring psychopathology. It will also be of interest for future research, designed to optimize the detection of genetic influences on behavior, to investigate whether a shared genetic liability for maladaptive parental behavior and antisocial parental behavior may affect

parental behavior even when there is no history of antisocial parental behavior, and whether indirect genetic effects may adversely influence parental behavior through their association with environmental adversities.

The limitations of the present study require consideration. Because the fathers were not interviewed, data from the maternal and offspring interviews were used to assess paternal behavior. However, we believe that this consideration is outweighed by the enhanced contribution to the field that results from the inclusion of data regarding both biological parents. Confidence in the validity of the paternal data was increased because histories of antisocial behavior and maladaptive parenting by both parents were associated with offspring aggression, and because our findings regarding the estimated prevalence of antisocial parental behavior and parental psychiatric disorders are similar to the findings of major epidemiological studies.[26 27] Another limitation is that systematic observational data of parent-child interactions were not obtained. Observer ratings of parental and offspring behavior tend to yield higher estimates of the role of the environment in the association between parental and offspring behavior than are obtained when parental ratings are used.[28] In addition, because data regarding family profiling by law enforcement authorities were not obtained, it was not possible to investigate the hypothesis that family profiling tends to increase the magnitude of the association between parental and offspring behavior. Nevertheless, because of the unique methodological strengths of the present study, the present findings increase our understanding of the role of parenting in the association between antisocial parental behavior and offspring aggression.

Substantive Aim 2: To test models of the contribution of mental disorder to subsequent aggressive and criminal behavior.

Study 3. Changes in levels of psychiatric symptoms from childhood to adulthood by adult arrest histories. (First author, Patricia Cohen).

In these analyses we examined multilevel growth models for six psychiatric symptom clusters for each of five groups of study participants, identified by adult arrest history. These groups included those with no official arrest history (n = 433) data on those with adult arrests for crimes against persons (n = 41), property crimes (n = 22), or other offenses (n = 66). Models as presented here are based on normalizing transforms of the original symptom data (in order to conform with statistical model assumptions) and, for technical reasons, are based thus far on fewer subjects than will be available for the final submitted manuscript. Data were analyzed in SAS PROC MIXED, and we present here the models presenting the best fit to the data by χ^2 test of the maximum likelihood solution. The findings are summarized in Figures 1-6, where significant differences in symptom levels are graphed over the ages 10 to 25 for each of the four groups.

In Figure 1 we see that depressive symptoms tended to increase from early adolescence to about age 21 among those participants who did not have an arrest record and among those with minor and drug-related offenses, including vehicle-related offenses or DWI or DUI offenses. This represents the is the broadly replicated pattern over this age period. For those whose arrests involved crimes against persons or

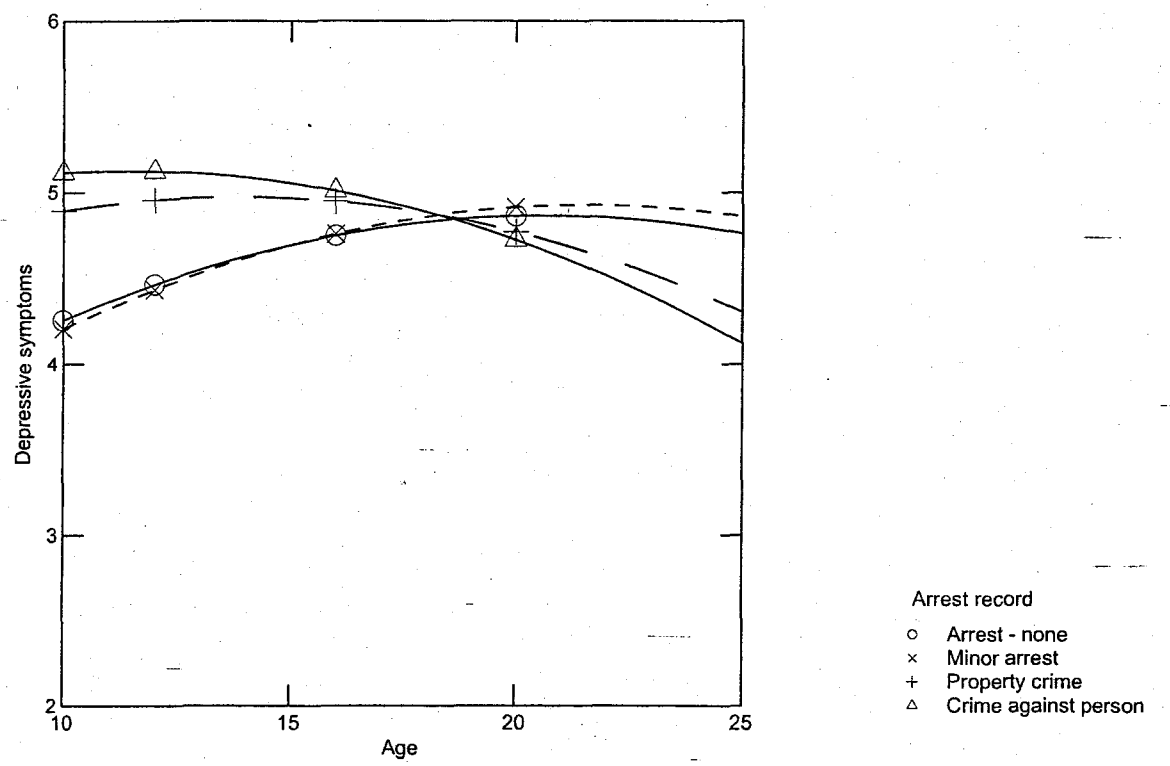


FIGURE 1: TRAJECTORY OF DEPRESSION SYMPTOMS BY ADULT ARREST

property crimes, however, this pattern was reversed, with higher depressive symptoms in early adolescence and a decline to lower levels by age 25.

In Figure 2 we see the anticipated gradual decline in anxiety symptoms over this age range for the same two groups, those without an arrest record and those with minor or substance-related offenses. Again we see that the other two groups, and especially the group who had arrests as adults for crimes against persons, had exceptionally high levels of anxiety in late childhood/ early adolescence, with a steeper

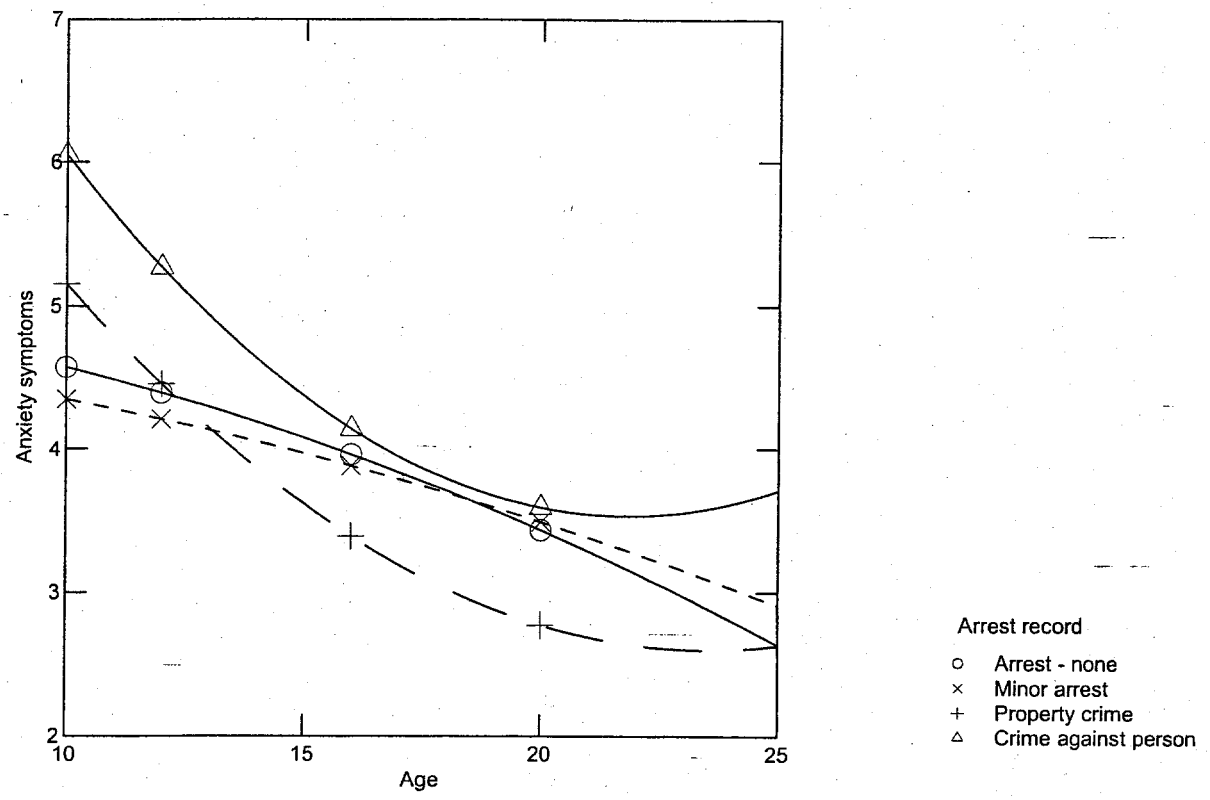
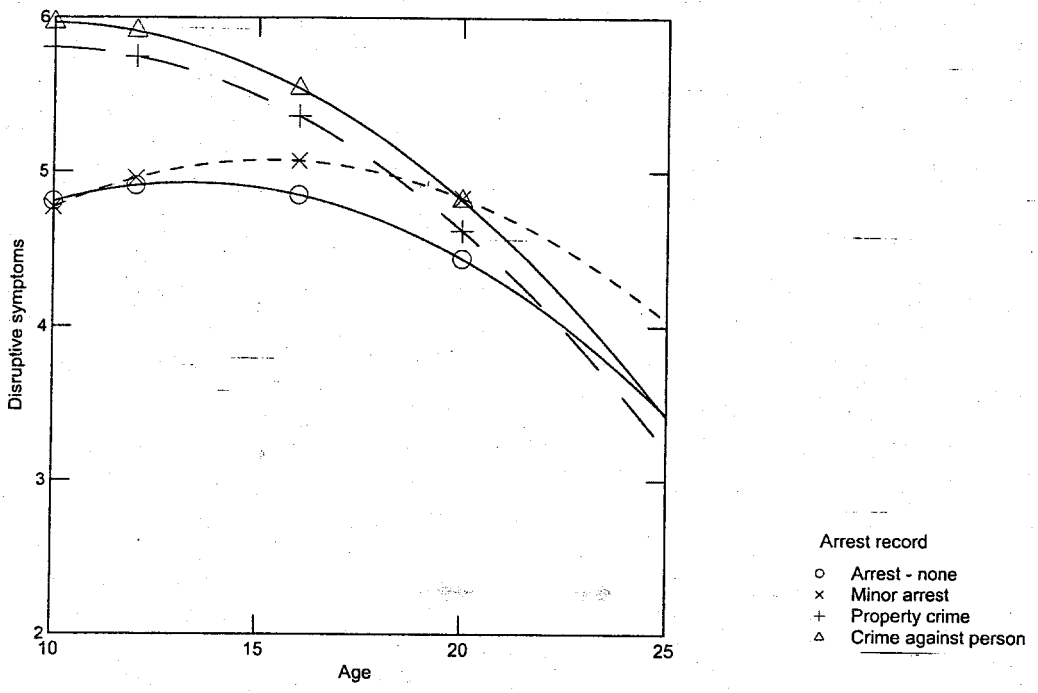


FIGURE 2: TRAJECTORY OF ANXIETY SYMPTOMS BY ADULT ARREST

decline as they moved through adolescence into young adulthood. For the small group with property offenses (but not crimes against persons) an especially low level of anxiety symptoms were apparent in adulthood.

FIGURE 3. TRAJECTORIES OF DISRUPTIVE DISORDERS BY ADULT ARREST

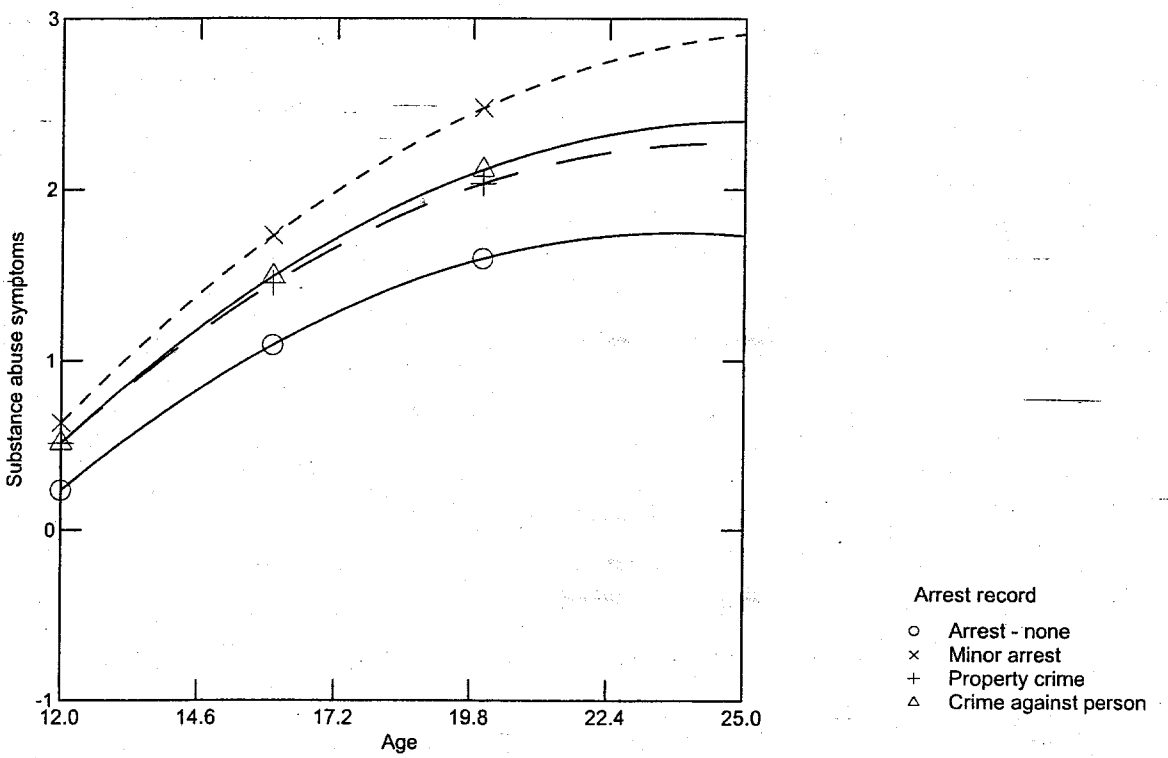
The adolescent pattern for symptoms of disruptive disorders (conduct disorder, attention deficit/hyperactivity disorder, and oppositional / defiant disorder) is approximately as expected, with very high rates for those with adult arrests for property crimes or crimes against persons (Figure 3). Here we show a decline to normal levels of these symptoms by early in their third decade of life, suggesting that most of these arrests took place in the late teen-age years or very early twenties, and represented mainly an exacerbation of the normative developmental pattern. Further analyses will investigate these issues in more detail.



The pattern of increase in substance abuse symptoms over this age range, leveling off by the early to mid-twenties was similar for all groups, but differed in average level (Figure 4). As anticipated, those with arrests for minor or substance-abuse related offenses showed the highest average level throughout, and less leveling off in the twenties than did other groups. Those with arrests for property crimes or

crimes against persons were in a middle position between the substance-related and the no-arrest group.

FIGURE 4; TRAJECTORIES OF SUBSTANCE ABUSE SYMPTOMS BY ADULT ARREST



We also investigated two clusters of personality disorders for differential development over these ages. The first cluster "A" consists of symptoms of paranoid, schizoid, and schizotypal personality disorders, characterized by wariness with regard to interpersonal relationships and atypical thought processes. The patterns of change in these symptoms also differed for the groups distinguished by adult arrest, although all groups showed the general decline in these symptoms that usually accompanies

cognitive and emotional maturation over these years (Figure 5). Here, unlike the pattern for the previously discussed "Axis I" disorders, the highest average symptoms

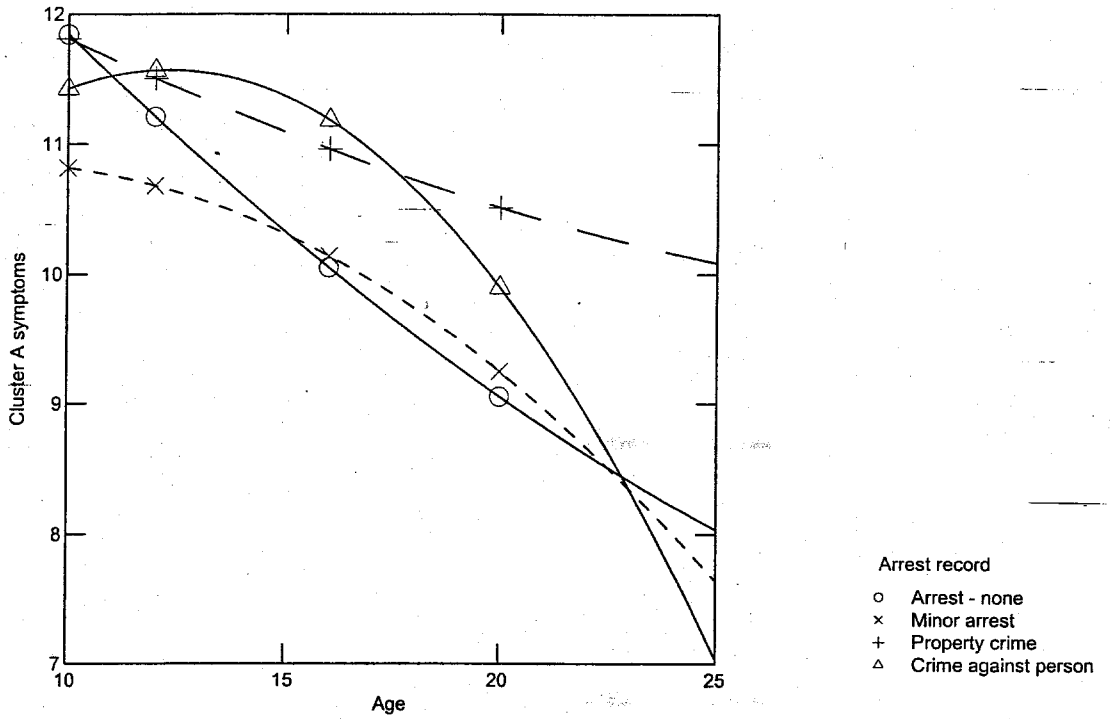
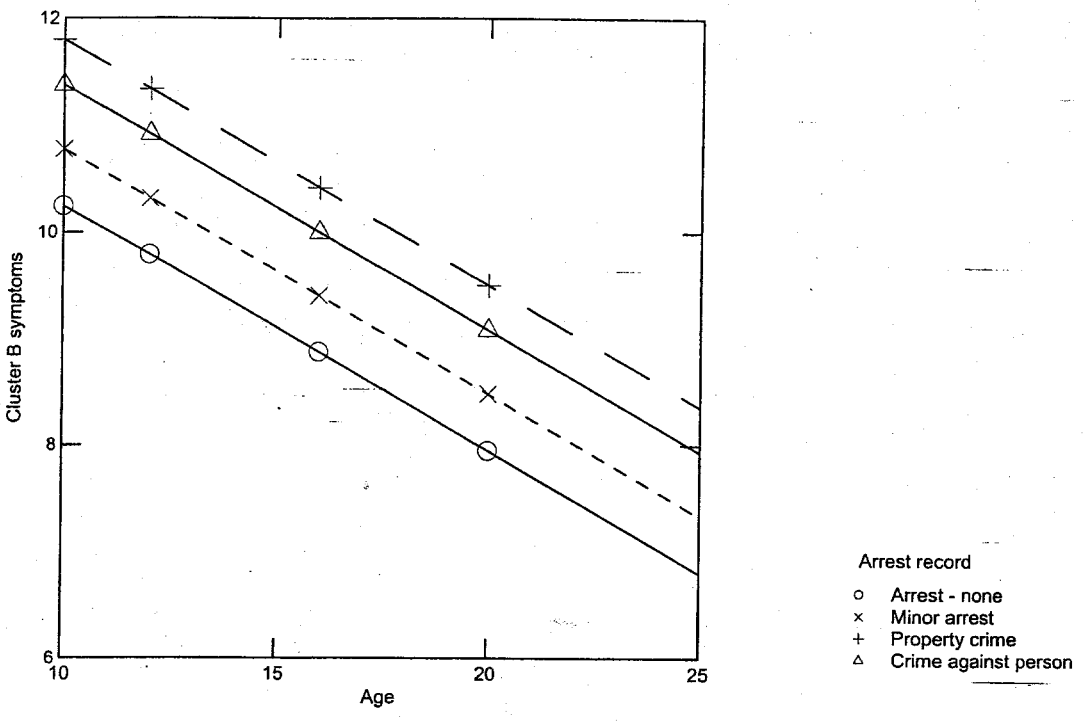


FIGURE 5: TRAJECTORIES OF CLUSTER A SYMPTOMS BY ADULT ARREST

were shown by the group who were arrested for property crimes (and not for crimes against persons). Those who were arrested as adults for crimes against persons had equally high levels of these symptoms in adolescence, but declined to normal levels in young adulthood. The other groups were not distinguishable.

FIGURE 6: TRAJECTORIES SHOWING MEAN DIFFERENCES IN CLUSTER B PERSONALITY DISORDER The final symptom cluster we investigated was personality disorder cluster "B" sometimes called the "dramatic" cluster, including narcissistic, histrionic, and borderline disorders. In adulthood this cluster also includes antisocial personality disorder, but in these analyses



we excluded these symptoms, both because of the need to keep the data set comparable across the ages and because of the overlap in symptoms of this disorder with illegal behavior. There was no significant curvature in the age-changes in symptoms for any of the groups, all showing a linear decline pattern (Figure 6). The two groups with arrests for crimes against persons and property crimes showed higher levels of symptoms than the other two groups.

A manuscript based on these analyses is in preparation for submission for publication.

Study 4.Crime across the ages. Draft manuscript for publication based on talk given at the American Society for Criminology, November 8, 2001.

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ABSTRACT

Longitudinal data from a general population random sample studied from early childhood to mean age 30 are examined for predictors of different age patterns of antisocial behavior. Analyses examine age curves for aggressive and property offences from middle childhood to adulthood. Five trajectory groups are identified for males and females by type of offense: childhood desisters, adolescent desisters, persistent, adult onset, and non-offenders. A series of risks including family risk, childhood ADHD symptoms and anxiety symptoms, IQ, perceived peer approval of antisocial behavior, adolescent personality disorder symptoms, and adolescent educational aspirations are related to these patterns. Rates of trajectory groups raised in urban and non-urban residences are also examined. Although relationships are similar by offense and gender, risks were more strongly related to aggressive offense trajectories. Female aggressive adolescents appear to be a higher risk group than males with a similar offense pattern.

Theoretical framework

In this study we offer an elaboration and test of the theoretical model that was developed by Moffit (1993) in an attempt to explain age curves in antisocial behavior and subgroup differences in the stability of such behavior. Moffit suggested a theoretical distinction between two major groups, an early-onset life-course persistent small group of antisocial offenders and a much larger group of adolescent-limited offenders. Moffit began with several striking facts about antisocial behavior: 1) that a small proportion of those who are ever arrested or convicted for a felony account for the vast majority of all such arrests or convictions (e.g. Wolfgang); 2) that most of the general population of adolescents engages in some antisocial behavior at some time and that this is specifically true about this age group (e.g. Elliott & Huizinga, 1984); and 3) that those with persistent adult antisocial behavior virtually universally have a history of such behavior in childhood or early adolescence (Robins, 1966).

Moffit's thesis, in brief, is that the life-course persistent group begins life with neuropsychological deficits in intellectual or executive function. In the absence of a home environment that provides the necessary extra support and resources, these problems lead to behavior that is difficult to control for both the child and the adults who are in positions of authority. Such behavior is also socially alienating in childhood. These deficits make it difficult to acquire the interpersonal and academic skills that would be normative for the child's age. Antisocial behavior thus reflects out-of-control responses that substitute for these skills.

During adolescence these antisocial behaviors tend to be reinforced by age peers more generally, who see this apparent independence from adult influence as an expression of maturity. This peer reinforcement, in combination with growing adolescent alienation from the adult world and the increasingly consequential deficit in social, academic, and other life-skills, tends to set up a cycle in which this early onset group is trapped. By the time peers are no longer admiring this behavior, the life-course persistent offender's bridges have often already

been burned, with a reputation and sometimes a criminal record that makes more pro-social employment and family roles much more difficult to achieve.

The adolescent-limited group, in contrast, is caught by the long lag between their physical maturity, as indexed by puberty onset, and the availability of adult social roles. They are expected to delay sexual intimacy, romantic commitment, adult work roles, and, generally, self determination while a long period of schooling and adult supervision and direction are undergone. The resulting frustration, according to Moffit, leads them to admire those who defy such adult authority, and to see antisocial behavior as an expression of self-determination. Both in imitation of such admired antisocial peers, and as an expression of their self-directedness, they engage in a range of antisocial and adult-disapproved behaviors. Such behavior is not psychopathological in nature, argues Moffit. That minority who do not engage in such behaviors, she theorizes, are likely to be those too timid or withdrawn to engage in such risky activity.

As the adolescent onset group ages they tend to lose their motivation for antisocial behavior for two major reasons. First, their opportunities to fulfill prosocial adult roles gradually increase, so that the motivation to engage in antisocial and defiant behaviors as a substitute for such roles decreases. Second, they become increasingly aware of the negative effect that antisocial behavior has on the opportunity to assume the most attractive of such adult roles.

Previous investigations relevant to these hypotheses

Several studies have investigated certain of these predictions in longitudinal samples studied over substantial periods of their lives.

Review not complete, see references

Purpose of the current analyses

In the current study we examine these hypothesized relationships in a general population of young Americans. In addition, we seek to determine whether these relationships are consistent for two different kinds of antisocial behavior, aggression against persons and property offenses. Despite the substantial literature in which all criminal or delinquent behavior is pooled, there is reason to anticipate that these different kinds of antisocial behavior may not share the same risks. Moffit makes the argument that antisocial behavior may be thought of as reflecting heterotypic continuity. That is, different kinds of behavior, depending on age and setting, reflect the same inferred trait or attribute. She notes the literature that shows correlation among the various forms of antisocial behavior, both cross-sectionally and longitudinally. On the other hand, it may be argued that such correlations do not necessarily indicate that the behaviors have common origins, but may reflect pathways that converge as a consequence of the conceptual grouping of these behaviors in the minds and institutions within our society.

In particular, we would argue that physical interpersonal aggression may have somewhat different origins than property offenses or drug-consumption offenses. In particular, property offenses in childhood and adolescence may be more closely related to structural aspects of the family, including poverty, urbanicity, and maternal employment/low supervision. Life course persistent property offense may reflect ongoing economic problems, which would naturally be exacerbated in those whose achievement levels limited occupational success.

On the classic Miller-Dollard frustration-aggression model, we hypothesize that stable aggression may be more related to early difficult temperament and problems in verbal expression than is other antisocial behavior, reflected here in property offenses. These predictors are reflected in the Moffit hypotheses as problems in executive function and in these data as symptoms of ADHD and low IQ.

An additional question to be investigated in the current study is whether these groups and their associated risks are consistent for males and females.

Differentiation between groups based on age-pattern of engagement.

The implications of the Moffit theory are expressed as the following hypotheses:

1. Life course persistent pattern: Childhood ADHD and low verbal IQ will be related to antisocial behavior of both types. These relationships will be greater in families in which parental sociopathy or poverty is present (there will be an interaction between these early child characteristics and family setting in predicting the life-course persistent pattern in comparison to both the low antisocial and the adolescent-limited groups). They will show high levels of psychopathology in adolescence, in comparison to the not-antisocial group and to the adolescent-limited group.

2. Adolescent-limited. In early adolescence this group will show a greater belief in peer admiration of antisocial behavior, particularly in comparison with the no antisocial group. (Earlier work already shows that these variables increase in adolescence (Cohen & Cohen 1996). This group will be particularly influenced by their intention to go on to college in comparison to the persistent antisocial adolescents. They are not expected to have particular educational or intelligence or early executive control problems in comparison to the not-antisocial adolescents. They are, however, expected to be more likely to have experienced early puberty.

3. The no-antisocial group is predicted to have higher rates of anxiety disorders or symptoms in comparison to the adolescent-limited group.

Method

Study sample: The subjects come from a residence-based random sample originally drawn in 1975 when one child between the age of 1 and 10 was randomly selected from each household (see Cohen & Cohen 1996 for a detailed description of sampling plan, recruitment

and retention rates). The original and 1983 samples, which included 54 newly sampled families from urban poverty areas from which original subjects had been excessively lost, were closely similar to the household census characteristics of the two sampled counties for children of these ages. They were living roughly equally in rural or semi-rural, suburban or small city, and large city areas. The sample was 8 % black and had no Latino families. Data were collected by maternal interview in 1975, by maternal and offspring interview in 1983, 1986, and 1992, and by offspring questionnaire in 1999. Interviews were carried out in respondents' homes simultaneously by two separate interviewers.

Study measures:

Aggressive behavior was measured by maternal report in the 1975 (for 5 to 9 year olds only), 1983, and 1986 interviews, by youth report in the 1983, 1986, 1992, and 1999 interviews and questionnaire, and by official arrest record for an aggressive crime when the study participants were adults[2]. Reports in the maternal interviews included fighting with peers or siblings (1975), and fighting with peers or siblings, getting into many fights, having been in a fight resulting in serious injury, or having threatened someone with a weapon (1983 and 1986). Self report included many physical fights, having injured someone, or having threatened with a weapon by age of onset and most recent age, permitting four ages based on the 1983 interviews, the same questions in 1986 referred to the intervening period. In 1992 and 1999 the questions referred more specifically to (lay language describing) legal offense categories:serious fights, fights with a weapon, robbery. The principal charge on each official arrest record was classified as aggression (the above categories). Figure 1 illustrates the mean age at which each of these data sources were available.

[2] Subjects who did not give us permission to use these data are not included in this report. Exclusion of this group did not bias the findings reported here.

Property offenses: In 1975, 1983, and 1986 mothers reported offspring stealing or vandalism. As above, the 1983 interviews included age of onset and age of most recent. Youth interviews included essentially the same information except the 1992, interviews which further differentiated automobile theft and the value of the stolen object or objects.

Although the original variables included more detail (e.g., frequency, seriousness), the fact that the scales were not constant over time or sources led us to reduce the information at each available time point to a dichotomy indicating whether the aggressive or property offense behavior was reported to be present. We took a report of presence from any source as reflecting a positive indication of the behavior.

Because this longitudinal study is based on a panel born between 1965 and 1974, we had up to 12 reports between the ages of 5 and 30, depending on the number of official record reports and birth year. However, the birth-year range of the study participants also meant that these reports covered different ages for different subjects. Figure 2 presents illustrative data for 6 actual subjects. The line drawn distinguishes the periods before and after age 18.

Risks examined here include the following measures of the Moffit-hypothesized discriminators of antisocial pattern:

Urbanicity of residence was determined by home interviewers when the youth were an average age of 16 years.

Family risk was measured as the number of three potential risks: family below the US official poverty income level at one or more assessments, high mother-reported parental conflict at one or more assessments, and mother-reported father or mother problems with alcohol, drugs, or the police at one or more assessments.

Neuropsychiatric risk: The two indicators employed here were ADHD symptoms, assessed by independent Diagnostic Interview Schedule for Children (DISC) interviews of mother and child (Costello & Edelbrock, 1984) at child mean age 13. Symptom measures

employ combined reports according to previously reported standard procedures (Cohen et al, 1987). Verbal IQ was measured by a picture vocabulary test (Quick Test, Ammons & Ammons, 1962) and averaged over the two assessments of different forms at mean age 13 and mean age 16.

Early puberty was measured in two ways: retrospectively in young adulthood when each respondent was asked whether s/he matured much earlier, earlier, about the same, later, or much later than others of the same age. In addition to this variable we examined age of menarche (females) and age of voice change/growth of body hair (males) reported in the adolescent age interviews of mother and youth, for which findings were comparable. Anxiety symptoms, hypothesized to be protective, were measured by a combination of youth and parent DISC-based reports of symptoms of overanxiety disorder, separation anxiety, and social phobia at a mean age of 13.5.

Adolescent psychiatric problems: For this study we focused on the Cluster A and B personality disorder symptoms as indicated in combined youth and parent reports when youth were a mean age of 15. We used this combination, rather than the Axis I disorders, for two reasons. First, the Axis 1 symptoms either reflect anxiety (examined separately) or disruptive symptoms, including ADHD symptoms (examined separately) and symptoms of conduct disorder and oppositional/defiant disorder which overlap with the antisocial trajectory measures. The other major Axis 1 disorder, major depressive disorder, is rare, and is often comorbid with anxiety disorders as well as with the personality disorders. Cluster A includes symptoms of schizoid, schizotypal, and paranoid personality disorders, and generally reflects a wariness and distrust of others and a tendency to bizarre beliefs and experiences. Cluster B includes symptoms of narcissistic, histrionic, and borderline personality disorders and generally reflects dramatization of experiences and relationships, extreme reactivity to interpersonal problems, and self-focus. In adults antisocial personality disorder is also clustered with this group, on the

basis of comorbidity and correlations among symptoms. We hypothesize that these symptoms may reflect the most discriminating patterns in adolescence with regard to the trajectory of antisocial behavior. Our analyses age-adjusted this measure to reflect an expected age 15 level of symptoms (see Johnson, Cohen, Kasen, & Brook, 2000 for an analysis of age trends in symptoms).

Peer admiration of antisocial behavior was assessed at mean age 13.5. Six items reflecting antisocial behavior (defiance, aggression, successful theft, etc) were rated by respondents on the extent to which their peers disapproved or admired the behavior.

Educational aspirations were a combination of level of education that the youth hoped and level expected to achieve, age-adjusted to reflect an expected age 15 level.

Analyses

In the first analyses we employed the entire data set in a multilevel logistic regression analysis to determine the point of maximum antisocial behavior and shape of the age curve for males and females and for property offenses and aggression separately. These analyses, however, do not unambiguously represent the groups hypothesized by Moffit. Therefore, in the second set of analyses we discriminated the sample subjects into no antisocial behavior, childhood-limited (under age 13 only), adolescent-limited (not after age 18), persistent (before and after age 18), and adult- onset groups (after age 18 only), separately for aggression and property offenses. The second and final groups were not specifically in Moffit's classification but appeared in our empirical data.[3] These groups were then compared on the following risks theoretically discriminating them: early problems in executive function reflected in ADHD symptoms and IQ, late adolescent educational aspirations, early adolescent beliefs about peer

[3] An effort to empirically determine groups representing modal patterns using Nagin's (2000) syntax for the SAS program was not successful, basically reflecting level only, perhaps because of the varied ages of data for different subjects.

admiration of antisocial behavior, early sexual maturity, adolescent symptoms of Cluster A and B personality disorder, urbanicity of residence, and risk status of family environment as indexed by a combination of poverty, parental sociopathy, and parental conflict, . All comparisons were carried out separately for males and females and included controls for age and environmental risks as necessary. Analyses first examined these risks individually as related to membership in the 5 "trajectory" groups, by sex and type of antisocial behavior, with follow-up tests of specifically hypothesized differences. Discriminant function analyses then examined the risks collectively to determine their ability to discriminate trajectory groups and to identify the independent predictors.

Findings

Prevalence by age.

Figure 13 presents the age curves for aggressive behavior of males and females. We note that the age curve for both males and females reaches its maximum at about age 13, perhaps because we picked up less serious violent behavior than did other studies using self-report or record data that report a somewhat later maximum violence age. At the maximum point 30% of the males were showing aggressive behavior while aggression characterized under 10% of the females. By the late 20's about 10% of the males were still reported as aggressive. This may be a modest overestimate due to the shortage of negative reports in the data for this period, most data coming from the arrest records.

Figure 1. Aggression rate by age and sex

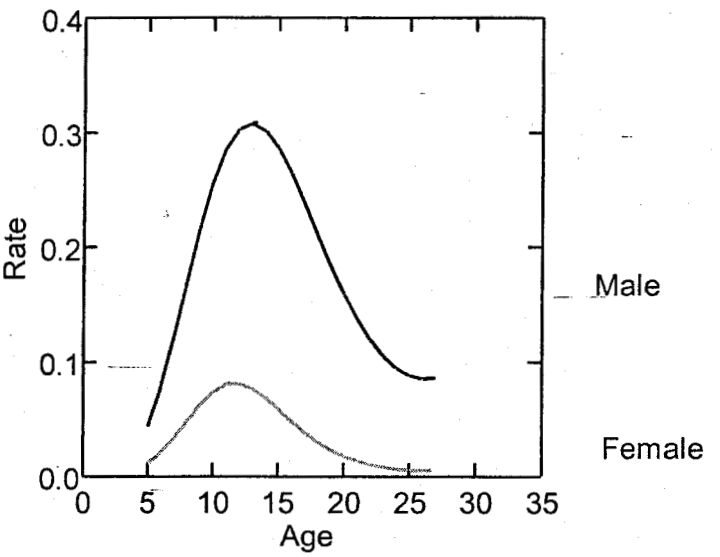
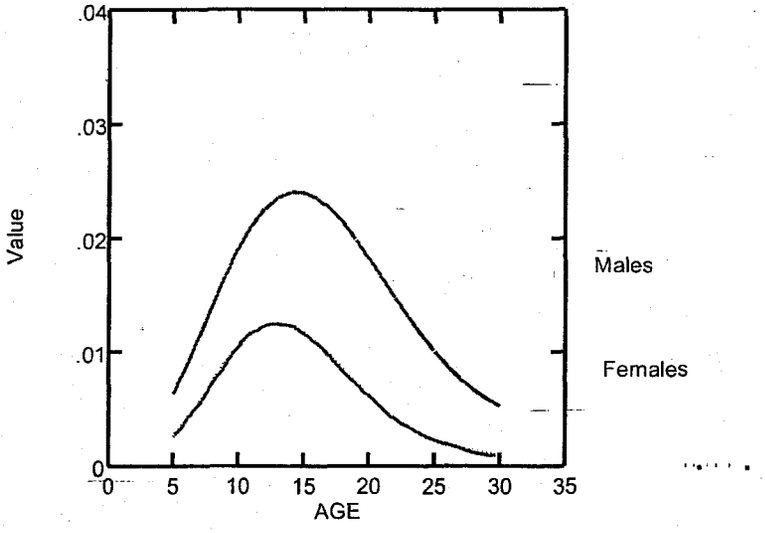


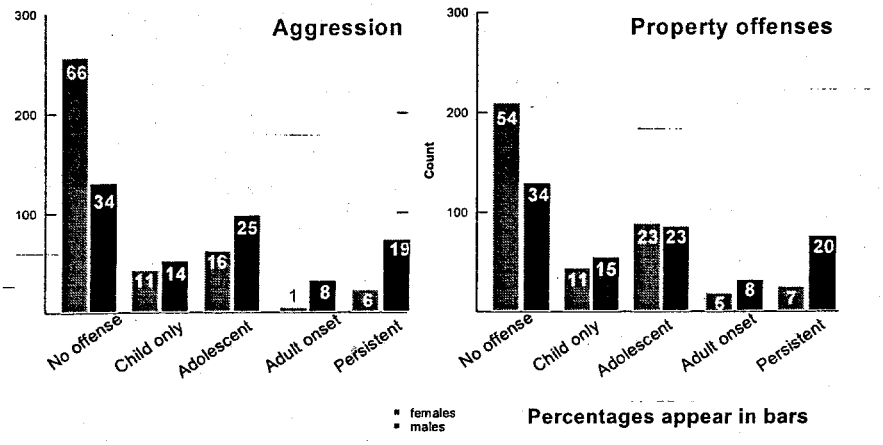
Figure 2 presents the age curves for property offenses by males and females. The prevalence peaked at a slightly older age than aggression, and the peak levels were less dramatically different between males and females. Nevertheless, the peak rate for males of about 24% was twice that of females at 12%. The rate of property offense for females in their late 20's was very low (1%), while the rate for males was roughly equivalent to the rate of aggression (about 6 to 8%).

Figure 2. Property offense rate by age and s



Trajectory groups. In Figure 3 we present the sample proportions in each aggression group by sex. As anticipated, the largest number of respondents were in the "no aggression" group, and a larger proportion of the females were in this group. Two groups not discussed in the literature, a childhood limited group and an adult onset group appeared among both the male and female respondents, although the adult onset group of females was very small (n = 5, < 2%). We investigated the possibility that these respondents were reluctant to admit aggressive behavior, and that all adult reports came from official arrest records, suggesting an under-report of earlier aggression. However, we found this not to be the case, about ½ of the positive adult reports being self-reported and the other ½ consisting of official records of aggressive offenses.

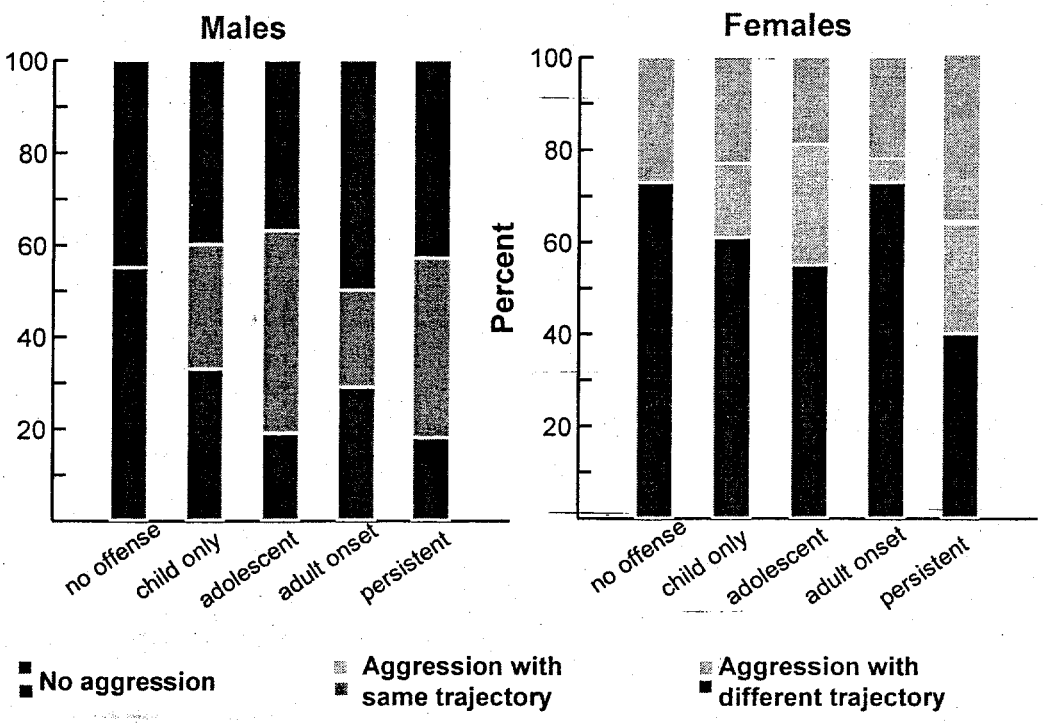
Figure 3. Patterns of aggression and property offenses



In Figure 3 we also present the male and female rates of each longitudinal pattern of property offenses, including theft, burglary, and vandalism. Again we see all five patterns appear for each gender, although the adult onset group of women is much higher for property offense than for aggression.

In Figure 4 we examine the correspondence between the property offense data and the aggression data for each sex separately. Membership in the longitudinal course patterns for aggression and property crimes was significant for both males (χ^2 = and females, but much smaller among the females (kappa = .14, se = .035) than among the males (kappa = .25, se = .032). This indicates the proportion of each property offense group that was in the corresponding aggression group, and the bottom proportions indicate the proportion of each group that was in any of the groups showing aggression during any observed period. Thus, for

Property offense group overlap with aggression groups



males, 55% of those with no reported property offense also had no reported aggression. The proportion in any aggressive group rose as the property pattern went from child limited to adolescent limited to persistent. The adult onset property offense group was about as likely to be in the no aggression group as was the childhood limited group. In each case the observed number of persons in the same trajectory category was larger than the expected number. For females we see a pattern that is similar in certain respects. The overlap between the no aggression and no property offense was greater because a larger proportion of the females was in this group. The proportion of the group that was in the no aggression group declined as one moves from the childhood limited to the adolescent limited to the persistent property

offenders, but the proportion in adult onset aggression was similar to the proportion in the no property offense group. Each frequency in the corresponding trajectory group was higher than the expected value except for the adult onset group, where the tiny number of aggressive females (5) makes any estimate unreliable.

Mean and adjusted mean risk differences among trajectory groups

We report unadjusted means without consideration of family risk except where the hypothesized interactions were statistically significant. We limit our discussion of the small groups of adult-onset antisocial behavior, although we report the mean differences, because the very small size of these groups makes the statistical power for discriminating them from other patterns inadequate.

Environmental risk: According to Moffit's hypotheses environmental risk may operate to increase the power of neuropsychological risk, measured here as ADHD symptoms and low verbal intelligence. This is because high risk families will not have the personal or other resources to overcome the effects of these risks by offering special educational or other programs, close supervision and assistance, and avoidance of high risk settings and situations. For both property and aggressive antisocial behavior, all trajectory groups were significantly higher on family risk than was the no-antisocial group ($F = 5.22$, $p < .01$, see Table 1). As hypothesized, the child limited group showed lower family risk than did the persistent property offense group ($t = 2.50$, $p < .05$). For females on the child and adolescent-limited trajectory groups had lower levels of family risk than did the persistently aggressive ($t = 3.19$* and 2.94*). We included high familial risk (2 or more) as a factor in the ANOVA analyses that we used to test the hypotheses with regard to other factors, thus effectively including it as a control. We also tested the hypothesis that the differences among the groups may vary as a function of family risk status. In general there were few significant interactions involving family and other

risks. We report these findings in the course of reports on the relationship of trajectory groups to the other risks.

Table 1. Mean number of family risks by trajectory of aggressive and property offenses for females and males

Property offense trajectory	Females	Males	F
No offense	.75 (.06)	.51 (.07)	F♀= 3.36 **
Childhood limited	1.00 (.13)	.96 (.11)	
Adolescent limited	1.00 (.09)	.80 (.09)	
Adult onset	.58 (.19)	.94 (.14)	F♂= 4.17 **
Persistent	1.20 (.17)	.71 (.09)	
Aggressive offense trajectory			
No offense	.70 (.05)	.50 (.07)	F♀= 9.43 **
Childhood limited	.98 (.125)	.84 (.11)	
Adolescent limited	1.06 (.104)	.75 (.08)	
Adult onset	1.40 (.37)	.68 (.15)	F♂= 3.71 **
Persistent	1.65 (.17)	.92 (.10)	

The other external risk, urban residence as contrasted to rural, measured here in childhood, was not significantly different among the property offense groups for either sex separately or for the combined sex groups, although urban residence appeared higher for the childhood limited pattern (Table 1a), and was statistically different from combined other groups in a follow-up test (OR = 1.81; CI 1.14-2.88). The proportions of the sample raised in urban

Table 1A. Rates of urban adolescent residence by trajectory of aggressive and property offenses

Property offense trajectory	% Urban residence	X^2
No offense	56	6.39, p = .17
Childhood limited	66	
Adolescent limited	57	
Adult onset	69	
Persistent	52	
Aggressive offense trajectory		
No offense	58	13.50, p < .01
Childhood limited	68	
Adolescent limited	49	
Adult onset	51	
Persistent	67	

homes did differ significantly for aggressive offenses. Again there was an association between urbanicity and the childhood limited pattern, perhaps because of supervision inadequacy for young urban children when away from home. In addition, however, we found a higher rate of persistent aggression among urban youth. This association was not due to differences in family socioeconomic status; its OR in an equation predicting urban residence and including family SES was 1.81 (CI 1.14-2.88).

Neuropsychological deficits: Mean ADHD symptoms differed significantly among trajectory groups in all four analyses with F = 19.31 and 7.36 (*df* 4/376) for the female aggressive and property offense trajectory groups respectively and F = 8.94 and 4.84 (*df* 4/375) for the male aggressive and property offense trajectory groups. The means of the groups are shown in Table 2. Follow-up tests indicated that each trajectory group was significantly higher on ADHD symptoms than the no-antisocial group for both property (t = 2.40 - 4.36, $p < .05$) and aggressive offenses.

Table 2 Mean symptoms of ADHD by trajectory of aggressive and property offenses for females and males

Property offense trajectory	Females	Males	F
No offense	65.00 (0.89)	67.48 (1.23)	F♀ = 12.98 *
Childhood limited	67.50 (1.78)	73.12 (1.78)	
Adolescent limited	74.45 (1.27)	74.39 (1.42)	
Adult onset	65.06 (2.86)	70.98 (2.63)	
Persistent	76.23 (2.36)	78.37 (1.54)	F♂ = 8.36 **
Aggressive offense trajectory			
No offense	64.45 (.71)	66.03 (1.21)	F♀ = 25.19 **
Childhood limited	71.60 (1.72)	76.21 (1.79)	
Adolescent limited	77.12 (1.43)	73.67 (1.31)	
Adult onset	60.80 (4.98)	73.23 (2.43)	
Persistent	80.50 (2.32)	78.84 (1.55)	F♂ = 12.60 **

Early Adolescent anxiety: Aggressive trajectories were significantly discriminated among both males and females (F = 8.14 and 4.61) and in both cases the no-aggression group showed the lowest level of anxiety (see Figure 10) in contrast to the hypothesized higher level. The adult-onset aggressive group showed low anxiety symptoms compared to the persistent group (t - 2.44*); other differences among the aggression groups were not statistically significant. Family risk interacted with aggressive trajectory in their relationship with anxiety, although in different directions in a theoretically unclear fashion in each sex group. Among high family risk males

Table 3. Means score on anxiety symptoms in late childhood by trajectory of aggressive and property offenses for females and males

Property offense trajectory	Females	Males	F
No offense	37.64 (1.30)	33.58 (1.65)	F♀ = 3.09 *
Childhood limited	40.93 (2.82)	37.28 (2.53)	
Adolescent limited	44.64 (1.98)	34.76 (2.03)	
Adult onset	34.38 (4.41)	38.66 (3.32)	
Persistent	45.06 (3.74)	35.21 (2.15)	F♂ = .69 NS
Aggressive offense trajectory			
No offense	36.80 (1.15)	30.25 (1.56)	F♀ = 8.01 **
Childhood limited	43.92 (2.80)	46.07 (2.48)	
Adolescent limited	47.74 (2.33)	32.64 (1.80)	
Adult onset	37.60 (8.22)	30.70 (3.16)	
Persistent	46.98 (3.83)	39.81 (2.09)	F♂ = 9.52 **

Differences among the property offense trajectory groups were not statistically significant for either males or females (F = .49 and1.99 respectively with 4/375+df).

Physical maturity: Early puberty tended to characterize all aggression trajectories for males, although the overall F test was marginal (2.33, 4/375 df, p = .056). Age of puberty was particularly young for the childhood limited (age 10.98), but also for the adolescent-limited (12.60) and persistent (12.21) in contrast to the expected age shown by the no aggression males (13.36). The interaction of male puberty with family risk was statistically significant (F = 3.66, 4/375 df, p = .006). Early puberty especially characterized aggressive males in all groups in high risk families. For females, early menarche was not related to aggressive trajectory (F < 1.0). However, it was related to self-reported early female maturity (F = 2.54). In this analysis the adolescent limited group was not different from the no aggressive females, but both childhood limited and persistent aggressive females reported later maturation than other groups. Early male or female puberty was not related significantly to property offense trajectory.

The second presumed indicator of executive function, Verbal IQ showed significant group differences in aggression trajectory were for both males and females (F = 2.87 and 6.11) and follow up tests showed three aggression groups to have lower IQ than the no aggression group for the females, and for the persistent aggression group to have lower IQ than the adolescent limited group (Table 4). For males, as hypothesized, the adolescent-limited aggression group was not significantly different from the no aggression group, and IQ in this group was significantly higher than in the persistently aggressive (and the adult-onset) groups. For females the adolescent-limited aggression group and the persistent groups were lower than the no-aggression group (t = 2.45 and 3.56 respectively) and the difference between the adolescent limited and persistent groups (4.55 IQ points) was nearly significant (t = 1.98, p = .074). IQ also differed significantly among the property offense trajectory groups, being especially low in the persistent group, but this difference was not independent of family risks.

TABLE 4. Mean Verbal IQ scores by trajectory of aggressive and property offenses for females and males

Property offense trajectory	Females	Males	F
No offense	100.04 (.90)	103.97 (1.11)	F♀ = 2.34 * (P = .055)
Childhood limited	96.07 (1.96)	101.78 (1.71)	
Adolescent limited	97.43 (1.38)	100.82 (1.37)	
Adult onset	102.90 (3.07)	98.56 (2.23)	F♂ = 2.02 (P = .09)
Persistent	94.38 (2.66)	99.90 (1.46)	
Aggressive offense trajectory			
No offense	100.53 (.81)	103.78 (1.12)	F♀ = 5.82 **
Childhood limited	96.97 (1.96)	99.87 (1.79)	
Adolescent limited	95.54 (1.63)	102.91 (1.28)	
Adult onset	102.07 (5.74)	99.45 (2.39)	F♂
Persistent	88.72 (2.74)	97.92 (1.49)	

Peer admiration of antisocial behavior differed across trajectory groups for both males and females, and in both cases the lowest ratings were for the no-offense group. The adolescent-limited and persistent groups showed particularly high levels of rated peer approval of antisocial behavior, without notable differences between them (t = 0.40 and t = 1.31, NS) for aggressive and property offense groups, respectively.

Table 5. Mean ratings of peer admiration of antisocial behavior by trajectory of aggressive and property offenses for females and males

Property offense trajectory	Females	Males	F
No offense	3.09 (.09)	2.12 (.06)	F♀= 4.14 **
Childhood limited	2.67 (.19)	2.25 (.09)	
Adolescent limited	2.67 (.13)	2.42 (.07)	
Adult onset	3.73 (.29)	2.12 (.12)	F♂ = 3.30 **
Persistent	3.03 (.25)	2.32 (.07)	
Aggressive offense trajectory			
No offense	2.21 (.04)	2.10 (.06)	F♀ = 4.62 **
Childhood limited	2.24 (.11)	2.02 (.09)	
Adolescent limited	2.62 (.09)	2.40 (.06)	
Adult onset	1.98 (.32)	2.10 (.11)	F♂ = 7.80 **
Persistent	2.38 (.15)	2.48 (.07)	

Psychopathology: Adolescent PD cluster A and B symptoms showed significant differences among the male aggression groups (F = 10.87), for whom all aggressive groups showed higher psychopathology than did the no-aggression group and all other aggression trajectories showed lower psychopathology than did the persistently aggressive. For females psychopathology was very similar in the adolescent-limited and persistently aggressive groups (t =0.49, N.S.), both of which were significantly higher than the no-aggression group. Differences in CLAB among the aggression trajectory groups were significant in both sexes (F = 12.08 and 6.30 for females and males respectively).

Differences in psychopathology pattern among male and female property offense groups were similar and significant (F = 14.59, 5, 749 df). All offense groups were higher than

the no-offense group and other trajectories showed significantly lower levels of psychopathology than did the persistent property offenders (t = 2.43*, 1.22 NS, and 2.17* for the childhood limited, adolescent limited, and adult onset groups, respectively).

Table 6. Mean number of symptoms of personality disorder in adolescence by trajectory of aggressive and property offenses for females and males

Property offense trajectory	Females	Males	F
No offense	8.71 (.38)	7.39 (.43)	F♀ = 4.66 **
Childhood limited	9.87 (.83)	9.63 (.66)	
Adolescent limited	11.44 (.59)	9.78 (.52)	
Adult onset	9.00 (1.27)	9.59 (.86)	
Persistent	11.59 (1.11)	11.25 (.56)	F♂ = 8.33 **
Aggressive offense trajectory			
No offense	8.20 (.32)	7.04 (.43)	F♀ = 21.27 **
Childhood limited	9.84 (.78)	8.93 (.69)	
Adolescent limited	14.09 (.65)	9.65 (.50)	
Adult onset	7.25 (2.29)	8.66 (.88)	
Persistent	14.05 (1.07)	11.93 (.58)	F♂ = 12.18 **

Educational aspirations of the youth were significantly related to trajectories for females (F = 4.16 and 2.63 for aggression and property offenses respectively) but not for males (F = 1.02 and 1.22), although there was a tendency for all aggressive groups of males to have lower aspirations than the no-aggression group. Adolescent-limited female property offenders had lower aspirations than did the persistent offenders, and much lower aspirations than did the

adult-onset offenders. The direction of the aspiration difference, with higher aspirations among the adolescent-limited aggressive girls, was consistent with theory but not statistically significant.

Table 7. Mean adolescent educational aspirations by trajectory of aggressive and property offenses for females and males

Property offense trajectory	Females	Males	F
No offense	3.09 (.09)	3.03 (.10)	F♀ = 4.14 **
Childhood limited	2.66 (.19)	3.06 (.16)	
Adolescent limited	2.67 (.13)	2.69 (.13)	
Adult onset	3.73 (.29)	2.87 (.21)	F♂ = 1.61 (P = .17)
Persistent	3.03 (.25)	2.74 (.14)	
Aggressive offense trajectory			
No offense	3.17 (.08)	3.11 (.10)	F♀ = 5.50 **
Childhood limited	2.88 (.19)	3.00 (.16)	
Adolescent limited	2.52 (.16)	2.71 (.12)	
Adult onset	2.57 (.56)	2.68 (.21)	F♂ = 2.28 (P = .06)
Persistent	2.28 (.26)	2.74 (.14)	

Discriminant function analysis

Having examined these predictors of differential trajectories of antisocial behavior, we wished to determine the independence of their effects, and also the level of discrimination among the trajectory groups that they could jointly produce. In these analyses we employed the following nine predictors of trajectory group: Family risk, urban residence, anxiety symptoms,

ADHD symptoms, Cluster A and B personality disorder symptoms (CLAB), early puberty, IQ, educational aspirations, and belief in peer admiration of antisocial behavior.

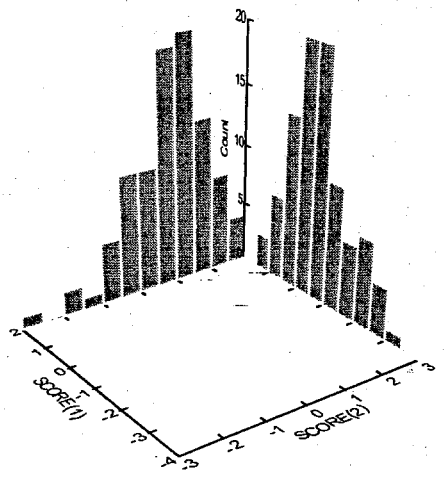
Female aggression trajectory: The discriminant function analysis significantly discriminated each trajectory group from each of the others with the exception of the adult onset group (n = 5). There were three predictors which showed independence in this prediction, namely ADHD, family risk, and CLAB. The first discriminant function reflected a contrast between the no aggression group and the persistent aggression group, with the other aggression groups arrayed in between, the adolescent group being quite close to the persistent group. The significant discriminators (standardized loadings over .4) were ADHD and CLAB, both characteristic of the higher aggression groups. The second discriminant function contrasted the adolescent-limited with the persistent aggression groups and showed urbanicity, family risk, and low adolescent CLAB to characterize the persistent group more.

The jack-knifed estimate[4] of the percent correct classification was 44% for the sample as a whole and 50% for the no-aggression group.

Male aggression trajectory: The discriminant function analysis also discriminated significantly between each pair of trajectory groups except for the no-aggression comparison with the adult-onset group. Independent predictors in this analysis included ADHD, Anxiety, CLAB, and belief in peer admiration of antisocial behavior. The first discriminant function arrayed the groups from no aggression to persistent aggression, with approximately equivalent intermediate values for the other aggression groups. The persistent aggression end of this continuum reflected high ADHD, high CLAB, and high peer admire scores. The second function contrasted the childhood limited with the adolescent limited trajectories. The significant loading predictors were (in the childhood limited direction) high anxiety and low CLAB. A third vector,

[4] Jack-knifed estimates are employed to avoid the capitalization on chance that would occur if the same sample were employed to generate the estimates and to test their efficacy in a new sample. These calculations were carried out by the SYSTAT statistical computer package.

discriminating (weakly) the adolescent-limited group from the persistent and adult onset groups, showed higher IQ and fewer CLAB symptoms in the adolescent-limited group.



Note: This figure is incomplete: other groups need to be included.

On the whole the jack-knifed estimates of correct group assignment on the basis of these predictors was 36%, and correct assignment to the no-aggression group was 47%.

Female property offense trajectories: The discriminant function analysis significantly discriminated the no offense group from the adolescent-limited and persistent groups, and the adult onset group from the adolescent limited and persistent groups. It did not significantly discriminate the adolescent-limited from the persistent property offense group. Significant independent predictors were ADHD, aspirations, and belief in peer admiration of antisocial behavior.

The first function discriminated the adolescent and persistent groups from the no offense and adult onset groups. ADHD and peer admiration were higher in the offense groups. The second function weakly discriminated the adult onset group from the remainder, especially

the childhood limited. Higher ADHD and higher aspirations were characteristic of the adult onset group. On the whole the jackknife estimate of correct assignment of group membership was 24%, with 27% correctly assigned in the no-offense group.

Male property offense trajectories: This analysis significantly discriminated the no-offense group from other groups except the adult onset group, and the persistent group from the childhood limited and adult onset groups. It did not discriminate the adolescent limited group from the persistent group. Significant predictors included ADHD, family risk, anxiety, SLAB, and peer admiration. The first discriminant function contrasted the no-offense group with the persistent group, other groups being arrayed between. Variables characterizing the persistent end of the scale were ADHD, CLAB, and low anxiety. The second function discriminated child-limited and adult onset from the remaining groups and was characterized by high family risk. The third, weak vector contrasted childhood-limited with adolescent-limited. The adolescent-limited end of the dimension was lower on aspirations and higher on peer admiration of antisocial behavior.

The jackknifed estimate of correct classification on the basis of these functions was 30%, with 47% for the no-offense group and very low percentages for the other groups.

Summary

Findings by trajectory group across risks

The no-antisocial groups differed from aggressive and property offense trajectory groups in aggregate on most risks, including on anxiety symptoms which was hypothesized to be protective. These findings were fairly consistent for males and females, but generally of smaller magnitude for property offense than for aggressive behavior. An exception was early puberty, where the no-aggression males were later than the aggression trajectory groups and differences were not significantly in the predicted direction for females or for property offenders.

Early onset groups, including both the childhood-limited and the persistent groups were elevated on family risk and low on the measures of executive function, as predicted.

Adolescent-limited antisocial trajectory groups showed increased risk as compared to the no-offense group with regard to ADHD and peer admiration for antisocial behavior. They were, however, less likely to live in urban settings. Other differences, however, were limited to aggressive females, who showed lower IQ, more anxiety and Cluster AB personality disorder symptoms, and later puberty.

Differences between the persistent and adolescent limited offense trajectories were less consistent. The hypothesized greater psychopathology in the former group was apparent only for aggressive males from high risk families. Differences in IQ were apparent only with regard to aggressive offenses, although differences in ADHD were present for both offense patterns.

Findings by risk factor

Youth with childhood-limited, adolescent limited and persistent antisocial behavior of both aggressive and property types were elevated on ADHD symptoms. Differences between these groups were not statistically significant. IQ was generally lower in all antisocial groups, but the hypothesized higher IQ in the adolescent-limited as compared to the persistent antisocial was also supported for female property offenses. Thus, the hypothesized low risk on executive function for the adolescent-limited group, thus, was not generally supported in these data. The effects of low executive function did not vary by family risk.

Similar trajectory group differences were found for anxiety and for adolescent symptoms of Cluster A and B personality disorder. In general all antisocial trajectory groups were elevated on these indices of psychopathology, and there were few significant differences among them. An exception was male aggression, where the persistent group showed more Cluster AB PD symptoms than did the adolescent-limited group.

The adolescent-limited group reported more peer admiration of antisocial behavior than did the no-antisocial group for both aggression and property offenses. All aggressive trajectory groups reported lower adolescent levels of educational aspiration than did the no aggression group. However, the hypothesized difference between the adolescent-limited and persistent groups was not apparent. Females with adolescent-limited trajectories of property crimes showed particularly low levels of educational aspiration.

Discussion

On the whole, we found similar associations of risks with trajectories for males and females. However, several findings suggest that adolescent-limited aggression is not entirely benign for either sex, and particularly not for females. Adolescent-limited girls showed about as much psychopathology as did the persistently aggressive girls, as well as

We found trajectory group differences for property offenses were generally smaller than for aggressive offenses, with a pattern that suggests more influence of external circumstance for property offenses and more individual-based risks in proclivity for aggressive offenses, a series of findings consistent with the Pittsburgh study of males (Loeber, Farrington, Stouthamer-Loeber et al in press).

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Wolfgang

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Figures for Crime across the Ages Paper are in the attached powerpoint file.

Substantive Aim 3: To combine models of intergenerational transmission and mental disorders as predictors to determine the independence of their effects on adult aggressive and criminal behavior.

Study 5: Intergenerational Transmission of Partner Violence. Miriam K. Ehrensaft, Patricia Cohen, Jocelyn Brown, Elizabeth Smailes, Henian Chen, & Jeffrey G. Johnson

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Abstract

This study followed an unselected sample of 543 children over 20 years to test the independent effects of childhood disruptive behavior disorders, parenting behaviors, childhood maltreatment, and parent-to-parent violence on the risk of violence to and from an adult partner. In a consolidated model, Conduct Disorder was the strongest risk for perpetrating partner violence for both sexes (AOR= 3.84, 1.18-12.44), followed by parent-to-parent violence (AOR = 2.67, 1.51-4.75), and punishment for girls (AOR = 3.38, CI = 1.45-7.91), but not boys (AOR = .54 CI = .18-1.60). The effect of childhood maltreatment was attributable to these three risks (AOR = 1.03, .53-1.99). Findings for receiving any partner violence were similar, except here an interaction of sex with maltreatment showed a heightened risk in boys but not girls (AOR = 4.91, 1.71-27.65). Risks for injury via partner violence were similar. Implications for prevention are highlighted.

Rationale for Investigating Partner Violence Risk Factors:

Violent behavior towards a romantic partner is highly resistant to treatment (McCord, 1992), yet preventive services for partner violence remain largely undeveloped (Chalk & King, 1998). Research on risk factors for partner violence has had methodological problems, including cross sectional design, and unrepresentative sampling that invalidate causal inferences about measured risk factors. The present study used a longitudinal design to investigate the relative risk of clinically relevant developmental risk factors for partner violence, to inform preventive programs.

Developmental Pathways to Partner Abuse:

Maltreatment may be one pathway to involvement in abusive romantic relationships. Rejecting, disrupted relationships with caregivers in maltreated children may result in interpersonal difficulties across the lifespan including peer rejection, higher odds of selecting mates from a deviant peer group as romantic partners (Feiring and Furman, 2000), and conflictual romantic relationships (Downey & Feldman, 1996),. This may be due to. Indeed, Wolfe, Wekerle, Reitzel-Jaffe & Levebvre (1998) found that a history of childhood maltreatment predicts both perpetration of violence and victimization by an intimate partner in adolescence.

Alternatively, childhood maltreatment per se may not be a crucial ingredient for partner abuse, rather a more generally hostile, maladaptive parenting history may create a risk for partner abuse. In particular, punishment that is excessively physical, power assertive, and inconsistent may increase the risk for behavior problems, aggression and interpersonal difficulties (Cohen & Brook, 1995; Ehrensaft, Wasserman, Verdeli, Greenwald, Miller, & Davies, 2001; Loeber & Stouthaemer-Loeber, 1986). Perhaps excessive punishment serves as model for coercive conflict resolution that is generalized from the parent-child relationship to the romantic partner relationship.

Yet a third possibility is that exposure to violence between parents teaches youth that violence is an acceptable or effective means of resolving conflict with partners. This social learning model has been argued effectively by O'Leary (1988) and by Jouriles and

colleagues, who have developed a program of research studying developmental problems in children of battered women (e.g. Jouriles, Norwood, McDonald & Peters, 2000). The contribution of exposure to domestic violence has only been tested in unrepresentative samples, most notably samples of children presenting to domestic violence shelters with their mothers. There is a need for research using unselected samples to test the link of childhood exposure to domestic violence to the risk for abusive relationships in adulthood (Jouriles, McDonald, Norwood, & Ezell, 2001).

Finally, the continuity of oppositional, aggressive behavior from peers to romantic partners may account for the relationships of child maltreatment and punishment with partner abuse. In a longitudinal study of boys at risk for antisocial behavior, Capaldi and Clark (1998) reported a path model in which unskilled parenting predicts childhood antisocial behavior, which in turn predicts partner violence. Further support for this path comes from Magdol et al.'s (1998) findings about the robust prospective contribution of childhood behavior problems to the risk for partner violence, and from Holtzworth-Munroe & Stuart's (1994) identification of a subtype of 'antisocial/generally violent' male batterers. However, the path between childhood maltreatment, childhood conduct problems, and partner violence in adulthood has not been prospectively tested.

On the one hand, the emergence of these different developmental models of risks for partner abuse has resulted in a major step forward for its prevention. On the other hand, each model has posed unanswered questions about the risks for partner violence, and an integration of findings about different types of developmental risk factors is lacking. In their review of existing prevention and intervention programs for family violence, the National Research Council identified fragmentation of the field of family violence research as one of the greatest impediments to designing empirically informed interventions (Chalk & King, 1998). Studies of the effect of child maltreatment have typically not included measures of conduct problems, so it is unclear whether the risk for partner violence comes directly from a history of childhood maltreatment, or whether maltreatment is really a marker for some other, more direct causal variable. Similarly, studies identifying conduct problems and parenting practices as risk factors have not controlled for childhood

maltreatment. Further, most studies investigating current couple behaviors such as communication skills, conflict resolution strategies, and attitudes towards the use of partner violence have typically omitted prospective assessments of developmental psychopathology (see Capaldi & Clark, 1998 for exception).

An integrated model of partner violence should inform us about the key target populations, and about modifiable risk factors to facilitate prevention. Should programs target youth with any history of disruptive behavior problems (Attention Deficit Disorder (ADD), Conduct Disorder (CD) or Oppositional Defiant Disorder (ODD)), or are there particular types of behavior problems that are more predictive of partner violence than others? What is the relative importance of parenting practices, such as the use of excessive punishment, in predicting partner violence? How does this relate to exposure to domestic violence during childhood or adolescence? Does child maltreatment place youth at risk for violent conflict with partners, as argued by Wolfe et al. (1998), and others, or is a history of aggressive, antisocial or impulsive behavior disorder more important? Is early substance abuse (SUB) history as important as disruptive behavior disorders? In short, we seek to determine examine the independent effects of major potential risk factors for partner abuse, ways in which they may interact with one another, and whether there are important sex differences in the operation of these risk factors.

With the Children in the Community study, a large epidemiological sample of children tracked and assessed at multiple time points for over 20 years, we tested a model of partner abuse integrating the effects of family violence (childhood maltreatment and exposure to domestic violence), conduct problems, and substance abuse. We expected that child maltreatment, excessive punishment, parent-to-parent violence, and disruptive behavior disorders would be risks for partner violence in early adulthood. But, since excessive punishment, ADD, ODD (Cohen & Brook, 1995) and family violence increase the odds of CD, we expected that a diagnosis of CD would explain the associations between partner violence these other risk factors. Finally, we anticipated that adolescent substance abuse (SUB), which presumably lowers inhibitions and self-constraint during conflict, would increase the odds of perpetrating and receiving adult partner abuse.

However, as SUB and CD are highly comorbid (Brook, Cohen & Brook, 1998), we anticipated that adolescent SUB would not be a significant risk once we controlled for CD. Although developmental studies have not generally found sex differences in predictors of partner abuse, we thought it worthwhile to test whether a history of child maltreatment, conduct problems, or SUB interact with sex.

Method

Participants and Procedure:

Participants were 543 youths and their parents (Kogan, Smith & Jensen, 1977; Cohen & Cohen, 1996). The participating families were a subset of 976 randomly sampled families from two upstate New York counties, with children ranging in age from 1 to 10 years, with whom maternal interviews had been conducted in 1975. The youths and their mothers were assessed in three follow-up interviews (1983, 1985-86, 1991-93) to assess demographic, psychiatric, and other psychosocial factors. Interviews were conducted in the home by intensively trained and supervised lay interviewers. In 1999, a questionnaire on recent life changes, work history, aggressive behavior, intimate partner history, and partner violence was mailed out to 815 participants known to the study at that time, as part of a study on childhood antecedents of violence. Of these, 582 (71%) returned this questionnaire, 61 (7%) refused to participate, 9 participants are deceased, we were unable to locate 62 (8%) participants, and 101 (12%) did not return their questionnaires despite repeated requests (nor did they refuse to participate). Within this sub-sample of 582 respondents, 543 said that they had an intimate partner during the past 12 months. The remaining 39 responded that they did not have a partner during this period, and were excluded from subsequent analyses.

At the wave 2 interviews in 1983, the mean age of youths was 13.8 years (SD=2.6, range=9-19). At wave 3 in 1985-86, mean age was 16.2 (SD=2.8, range=11-22) and at wave 4 in 1991-93, mean age was 22.1 (SD=2.7, range=17-28). Respondents who returned the questionnaire were a mean age of 31 (SD = 2.7, range 26-35). The area sampled for this study was selected to be generally representative of

the United States on socioeconomic status and the majority of demographic variables, but reflected the sampled region with regard to high proportions of Catholic (54%) and Caucasian (91%) participants.

Study procedures met approval by institutional guidelines. Informed consent was obtained from all participants after the interview procedures were explained. Children and mothers were interviewed separately, and each interviewer was blind to the other informant's responses. Further details about the study methodology are provided in previous reports (Cohen & Cohen, 1996; Kogan et al., 1977).

Materials

Socioeconomic Status. Parental socioeconomic status (SES) was assessed in 1975, 1983, and 1985-86, and summed standardized measure of: (a) maternal and paternal years of education, (b) maternal and paternal occupational status, and (c) family income (Hollingshead & Reidlich, 1958). In this study, we employed the SES score from 1985-86, when offspring were an average of age 16.

Assessment of Disorders. The parent and youth versions of the Diagnostic Interview Schedule for Children (Costello, Edelbrock, Duncan, & Kalas, 1984) were administered in 1983, and 1985-1986 for disruptive disorders (Attention Deficit Disorder (ADD), Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), and Alcohol Abuse (AA) & Marijuana Abuse (MA). In 1991-93, young adults were interviewed with a version modified for age appropriateness. Assessments of anxiety, eating, and mood disorders were also made, though we do not report on these for the purpose of the present study. The use of multiple informants increases the reliability and validity of psychiatric diagnoses (Bird, Gould & Staghezza, 1992; Piacentini, Cohen, & Cohen, 1992). We combined mother and youth reports, so that symptoms were considered present if endorsed on either the parent or the child report. This 'or' rule is based on empirical evidence that both the child and parent contribute unique information to the diagnosis (Loeber, Green, Lahey, & Stouthamer-Loeber, 1990; Zahner, Leckman, Benedict & Leo-Summers, 1989). To improve on the specificity of the resulting diagnoses, we created a scale for each syndrome based on all the relevant items,

including associated impairment, and gave 'severe' diagnoses to children who scored at least two standard deviations above the population mean. This approach generates better construct validity and prevalences consistent with clinical practice (Cohen, Velez, Kohn, Schwab-Stone, & Johnson, 1987; Cohen, Cohen, Kasen, et al., 1993; Piacentini et al., 1992). We pooled diagnoses from wave 2 and 3 interviews.

Because of the low incidence of each type of substance abuse (SUB) diagnosis (Cohen et al., 1993), a dichotomous SUB variable was used to count the presence of any SUB disorder, of which most were alcohol abuse. A diagnosis at either adolescent assessment was counted as positive.

Assessment of Parenting Practices. Excessive maternal punishment (Kogan et al., 1977), low maternal availability, low maternal communication with the child (Shaefer, 1965), and inconsistent maternal rule enforcement were assessed in the maternal and offspring interviews using scales of punishment methods, parental warmth, parent-child communication, and parental support and availability (Avgar, Bronfenbrenner, & Henderson, 1977; Kogan et al., 1977; Shaefer, 1965). Maternal verbal abuse was derived from items from the Disorganizing Poverty Interview and from measures of maternal child rearing attitudes and behaviors administered in the maternal interviews (Johnson, Cohen, Kasen, Smailes & Brook, 2001). To identify consistently statistically deviant parenting styles, scores were dichotomized, coding those that were at least one standard deviation above the sample mean, at both waves 2 and 3, as 'maladaptive', as described by either the parent or child. The validity of these measures has been described in a number of studies (Avgar et al., 1977; Cohen & Brook, 1995; Cohen & Cohen, 1996; Johnson et al., 2001; Kogan et al., 1977; Shaefer, 1965).

Assessment of Child Maltreatment. Data on child maltreatment were obtained by combining maternal prospective reports, offspring retrospective reports, and official record gathering. We examined maternal reports of emotional and supervision neglect, as the two subscales have distinct associations with children's developmental outcomes (Brown & Cohen, 2001). For each subscale, childhood neglect was

considered to be present if two different conditions were met: (1) the subscale score was at least two standard deviations above the sample mean; and (2) at least one extreme answer was made in response to an item that was judged, through consensus between a clinical psychologist and a counseling psychologist, to be central to the subscale construct. Examples of such extreme responses include: (1) "I frequently show my love for my child" {Emotional Neglect response = "Not at all like me"; 12 items, 2.2%; a= .77}; (2) "When you tell your child s/he is not allowed to do certain things or that s/he will be punished for something, how often do you follow through on what you say?" {Supervision Neglect response = "Never make such limits or statements", 2.5%; 10 items; a = .67}. We only considered mothers' extreme maternal responses as neglectful when the offspring were 18 years old or younger; as a result, the total number of cases was reduced to 764. To maximize the total number of cases used in the analyses, a missing data variable was created and included in equations assessing the effects of neglect.

In 1992, offspring were asked to report a retrospective history of maltreatment when they reached majority age. They were asked whether, during childhood, (1) someone with whom they lived hurt them physically so that they were still injured or bruised the next day, could not go to school or needed medical attention, and if so, how often; (2) any older person (not a boyfriend/girlfriend) ever touched them or played with them sexually or forced them to touch the older person before age 18. Sexual abuse was considered to have occurred when two or more such experiences were reported. The self-report of neglect only asked about lack of overnight supervision before age 10, and was not analyzed due to the small number of positive responses.

Official records were obtained on abuse history from the New York State Central Registry (NYSCR). In accordance with state guidelines at the time of the study, the registry retains only those cases reported to official agencies and determined to be valid cases of abuse or neglect. NYSCR staff determined whether records pertaining to the families participating in this study were included in the NYSCR files. Information regarding the source of the report, type of abuse, and the perpetrator's relationship to

the child was abstracted by one of the authors. The names were matched to study identification numbers and then removed from the files to maintain participants' confidentiality. There were 35 officially identified cases of maltreatment, including 4 cases of sexual abuse with or without other abuse or neglect, 16 cases of physical abuse with or without neglect, and 15 cases of neglect only. We lack official data on the approximately 25% of the sample who lived during at least part of their childhood outside of New York State. Thus, the current data are considered a minimum estimate of officially identified cases.

We then combined the various sources of data for child maltreatment history to classify the youth into mutually exclusive groups, based on the following hierarchy [2]. Youth with either an official or a self-reported history of sexual abuse were included in the sexual abuse group (n = 20). Youth without sexual abuse but with an official or self-reported history of physical abuse were in the physical abuse group (n = 39). Of the remaining youth, those with an official record or maternal report of emotional neglect were in the emotional neglect group (n = 16). Youth with an official or self-report of supervisory neglect without any of the above were in the supervisory neglect group (n = 32). The 711 remaining youth were considered a normal comparison group. With this method of identification, the study groups did not overlap. The groups comprised about equal proportions of males and females, except for the sexual abuse group, in which 15 of the 20 youth were female. Overall, 107 youth (3% of the sample of 830) were classified in one of these types of maltreatment.

Assessment of Parent-to-Parent Violence. Within a section on partner violence, the questionnaire mailed to respondents in 1999 asked whether the respondent had seen or heard as a child physical fights between his or her parents or between a parent and their partner (never, once, or two or more times). One hundred and forty-nine (26% of those who returned the questionnaire) reported some childhood exposure to parent-to-parent physical fights, of which 80 (14% of respondents) reported exposure to two or more incidents.

We conducted two reliability checks for this retrospective self-report on parent-to-parent violence. First, we tested its association with a question asked of a subset of respondents' mothers (n = 627, 61% of the sample) when subjects were a mean of 22 years old, about whether any parent (biological or step) had ever badly injured a romantic partner; 5% (n = 33) of the subset of mothers answered affirmatively. The association between these two questions was moderate (Spearman's r = .27, X^2 (1) = 35.52, p < .001). Of mothers who reported that a parent had ever seriously injured a romantic partner, 67% also had an offspring who recalled seeing or hearing a physical fight between parents as a child in the 1999 questionnaire. (The retrospective question about seeing or hearing physical fights between parents was deemed a better measure of exposure to parent-to-parent violence since: a) The question to mothers about injury would have excluded fights recalled by offspring in which physical aggression took place but did not result in injury, and included cases before the child's birth, and, b) the n for the mothers' injury question would have seriously limited the sample size for our other analyses).

As a second reliability check for the exposure measure, we tested its association with mothers' responses, pooled across waves 2, 3, and 4, to a query describing discussions of differences in opinion with the child's father figure. The most extreme choice category of that query was, ' Things get pretty rough between us'; the response choice preceding this one was 'We often yell at each other', so the more extreme response may be an index of physically violent conflict resolution. The association between mothers' 'rough conflict resolution' response in at least one interview (n = 26, 3%) and retrospective offspring reports of seeing/hearing any parents' physical fights was significant but low (r = .14, p < .01), but improved when we limited the definition of the retrospective exposure to those who saw/heard physical fights at least twice (r = .24, p < .01).

We thus chose the retrospective measure of exposure to at least two incidents of seeing/hearing parents' physical fights in our final analyses, because the wording of the item provided a more exact measurement of exposure to parents' partner violence.

Assessment of Partner Abuse. The questionnaire mailed in 1999 asked respondents whether they had a romantic partner during the last 12 months, and, if so, to answer a series of questions about violence to and from a partner, drawn from the Conflict Tactics Scale (Straus, 1979). Response rates are listed in Table 1.Participants who denied having a partner during the past year were excluded from the analyses. The scale had good internal consistency (Chronbach's alpha = .89).

Using factors analytic methods that are sensitive to the impact of infrequently endorsed items, the traditional two factor solution is reduced to a unitary abusiveness construct (e.g. TenVergert, Kingma, & Gillespie, 1990; Wolfe, Scott, Reitzel-Jaffe, Wekerle, Grasley & Pittman, in press). Subtler forms of abuse, such as threatening, may be less physically injurious than more serious acts, such as beating up, but are important from a measurement point of view, since they typically precede and co-occur with more serious forms of abuse (O'Leary, Barling, Arias, Rosenbaum, Malone, & Tyree, 1989). We thus tested the risk for perpetrating and receiving any partner violence, without differentiating severity and frequency. We collapsed across all types of partner violence and frequency levels, counting an individual as perpetrating partner violence if he or she endorsed any act of partner abuse perpetration in the past year (22%), or as being a victim of partner abuse if he or she endorsed any act of partner abuse victimization during the past year (19%). These rates are consistent with those from other community samples (Magdol et al., 1998; Straus, 1979; Straus, Gelles, & Steinmetz, 1980).

To examine more serious partner abuse seen by clinicians, we also tested a model of risks for perpetrating (n = 34, 6%) and receiving (n = 35, 6%) injury by the use of any act during the past year. Injury included any bruises, cuts and broken bones.

Results

Descriptive Statistics

Table 1 shows the percent of men and women who reported each type of partner violence act and injury. The overlap of perpetrators and victims was high but not perfect; 28% (n = 34) of those who perpetrated partner violence said that their

partner did not. When respondents denied perpetrating abuse, they rarely reported receiving abuse (only 4% received without perpetrating).

The prevalence of juvenile disorders was: ADD, 3.7% of females (n = 15), 6% of males (n = 25); ODD, 7.0% of females (n = 28), 6.5% of males (n = 27); CD, 2.5% of females (n = 10), 8.4% of males (n = 35); SUB, 6.2% of females (n = 25), 11.5% of males (n = 48). Males had higher rates of CD ($X^2(1) = 13.67$. $p < .001$), and SUB ($X^2(1) = 7.00$, $p < .01$), but no sex differences were obtained in rates of ODD ($X^2(1) = .08$, $p > .10$) or ADD ($X^2(1) = 2.23$, $p > .10$).

Blacks had lower SES, and higher rates of parent-to-parent violence, excessive punishment, verbal abuse and conduct disorder (r's ranged from .13 - .21, $p < .01$). Participants with low SES had higher rates of excessive punishment, maltreatment (any type of abuse or neglect), parent-to-parent violence, and disruptive behavior disorders (r ranged .08 -.25, $p < .01$). There were moderate relationships among disorders, maltreatment and parent-to-parent violence.

Model Results

Perpetrating Any Partner Abuse. Using logistic regression, we first obtained unadjusted odds ratios (UOR) and confidence intervals (CI) for each risk factor. That is, we regressed any partner violence perpetration in the past year on age, parental socioeconomic status, sex, parenting (maternal inconsistency, low communication, unavailability, and low nurturance), excessive punishment, verbal abuse, four types of maltreatment (physical abuse, sexual abuse, emotional neglect, supervisory neglect), ADD, ODD, CD, SUB, interactions by sex, and interactions of CD with maltreatment, exposure to parent-to-parent violence, and SUB. We limited analyses to those with a partner in the past year. When testing the effects of the four maltreatment types, we entered them simultaneously so that the contribution of each type would control for the effects of the other three types. Similar odds ratios emerged for partner violence perpetration for each type: physical abuse – UOR = 2.46 (CI = .99 – 6.15); sexual abuse – UOR = 1.76 (CI = .59 – 5.23); emotional neglect – 1.76 (CI = .45 – 6.98); supervisory neglect – 1.37 (CI = .43 – 4.37). As the effects appeared to be in the same

direction for all four types, but the data for each specific type were sparse, we combined these to form a general 'maltreatment' variable. We included a dichotomous variable indicating missing data on childhood abuse/neglect in the model block with maltreatment, to adjust for the effect of missing data for those under age 18 at the time self-report data were collected.

The unadjusted odds ratios for perpetrating any partner abuse revealed several noteworthy points (Table 2). First, SES was the only significant demographic risk factor, with about a 20% decline in the risk for partner violence for each SD increase in SES. Second, the parenting variables were non-significant, except excessive punishment. Third, the only disruptive behavior disorder that did not predict partner violence was ADD; a diagnosis of CD was the greatest risk, increasing the odds of perpetrating partner violence by six times. Fourth, juvenile SUB was not a significant risk factor for any adult partner violence. Fifth, childhood maltreatment doubled the odds of any violence to partner. Exposure to parent-to-parent violence tripled the odds for any abuse to partner. Finally, the only significant sex difference in relationships between risk factors and partner violence was for punishment; the association was significant for girls but not for boys.

Next, we estimated a consolidated logistic regression model including only those main effects and interactions that were statistically significant ($p < .05$). The model summary, regression coefficients, odds ratios, confidence intervals are described in Table 2. CD, excessive punishment, and exposure to violence between parents each made significant, independent contributions to the risk for partner violence. Social class differences were apparently mediated by differences in these risks. Maltreatment was no longer significant after controlling for CD, excessive punishment, and violence between parents. Excessive punishment still interacted significantly with sex; it was a significant risk for girls, but not for boys.

Receiving Any Partner Abuse. For risk of receiving any partner abuse, the results were similar, with a few noteworthy differences. In unadjusted regressions, low mother-child communication and adolescent substance abuse emerged as additional

risks, and sex interacted with maltreatment to produce an increased risk for boys, but not for girls. However, in the consolidated model (see Table 3), independent contributions were made only by excessive punishment, a simple effect of maltreatment for boys, and violence between parents. The independent effect of CD remained significant until the addition of ODD and SUB were added to the model (not shown due to space limitations), at which time CD was no longer significant (see Table 3), although odds ratios for these correlated risks remained elevated.

Injury to Partner. Logistic regression of the above risk factors on perpetrating injury to a partner (n = 34) yielded similar results, shown in Table 4. The unadjusted odds of perpetrating injury were significant for SES, excessive punishment, parent-to-parent violence, ODD and CD. However, when these were entered simultaneously, the effect of SES and maltreatment disappeared with the inclusion and CD. (Though not shown due to space limitations, CD remained significant until SUB and ODD were added to the model, most likely due to high comorbidity). There was no sex interaction with excessive punishment.

Injury By Partner. Unadjusted odds for receiving injury (n = 35) were significant for SES, verbal abuse, excessive punishment, and maltreatment, but Table 5 shows that the consolidated model yielded significant effects only for punishment, ODD, CD and SUB. The greatest effect was for CD. Interactions of sex with punishment and maltreatment paralleled the findings for 'any violence to partner'; the interactions approached significance, and the zero-order plots would be similar.

Discussion

This study employed a community sample to test the relative contribution of childhood disruptive behavior disorders, child maltreatment, parenting behaviors, and parent-to-parent violence, to the risk for partner violence in early adulthood. Results support and extend Magdol et al.'s (1998) findings that childhood behavior problems are among the most robust predictors of violence to and from a partner. Juvenile CD and ODD predict partner violence, but ADD does not. However, the effect of ODD is mediated by a diagnosis of CD. Juvenile SUB is not a risk for perpetrating adult

partner violence, and CD accounts for the risk for victimization. Thus, the risk posed by SUB found in studies of adults in abusive relationships (see Chalk & King, 1998 for review) may be a more proximal, adult risk factor, rather than a childhood risk.

The odds of perpetrating any partner violence were over three times as high for girls who received excessive parental punishment in childhood and adolescence, but there was no effect for boys. What might explain this sex difference? Perhaps excessive punishment with girls is a marker of more serious rejection of social conventions in these families. Or, punishment from mothers may serve as a model for physical expression of anger to female offspring in a way not generalized to sons. This acceptance of coercive, antisocial norms as ways of regulating conflict may have direct implications for girls' means of conflict resolution with partners, independent of a disruptive behavior disorder. Or, as many females who do direct physical violence towards a partner also are victims of such violence from these partners (Ehrensaft & Vivian, 1996), parental excessive punishment in childhood or adolescence may predispose females to involvement with physically punitive romantic partners. Our finding that excessive punishment predicts injury to partner by both sexes supports this view. The other parenting factors, including verbal abuse, low maternal nurturance, and low mother-child communication, have shown strong effects on the risk for childhood disruptive disorders in other studies with this sample (Johnson et al., 2001), but were not directly associated with partner violence. Antisocial behavior and partner violence appear to be partially overlapping but distinct phenomena, consistent with others' recent findings (Moffitt, Krueger, Caspi, & Fagan, 2000).

As expected, childhood maltreatment was a risk for violence to partner, but its effect was completely attributable to CD, excessive punishment, and recall of childhood exposure to violence between parents. This was true both for any violence to partner and injury to partner. Childhood maltreatment may have a direct effect on the risk for receiving any partner violence for males only. Among those who were injured by a partner, however, the effect of maltreatment was attributable to CD, SUB and

excessive punishment. Finally, parent-to-parent violence was a direct risk factor for violence to and from a partner, with or without injury, independent of CD.

In summary, perpetrating partner violence may be driven by several developmental paths. One path is by a juvenile history of CD (often preceded by ADD or ODD). This path seems to be the strongest of the ones tested here, although its effect is reduced partially by excessive punishment, exposure to violence between parents, maltreatment, and SES. A second pathway is via maternal excessive punishment, possibly more so for girls. A third pathway is through the exposure to violence between parents during childhood.

Receiving any partner violence is predicted independently by excessive maternal punishment (boys and girls), exposure to violence between parents (boys and girls), or a history of maltreatment (only boys). Here, the effect of CD seems to be attributable to the above risks, SES and adolescent SUB. However, the risk for receiving injury is augmented by ODD, CD SUB, and punishment, whereas maltreatment and exposure to parental violence do not add to this risk.

Prevention Implications

Who should be targeted? Secondary partner violence prevention programs may be warranted for children with CD, those exposed to parents' violence, or those who receive excessive punishment, each for different reasons. Children with a history of maltreatment may benefit from interventions targeting the escalation of any behavior problems, as the development of CD increases the risk for involvement in violent intimate relationships. Children exposed to violence between parents are good candidates for prevention, as they may be especially vulnerable to social learning of the effectiveness of violence as a means of influence and conflict management in close relationships (Jouriles et al., 2000; O'Leary, 1988). Prevention programs for children could be tied to services offered in battered women's shelters, to police intervention for domestic violence calls, or family court orders of protection for domestic violence.

What age range? Some suggest that partner violence prevention should begin as early as adolescence (Magdol et al., 1998; Avery-Leaf, Cascardi, O'Leary & Cano,

1997). Our results support starting even earlier. By targeting families before children reach late childhood, patterns of excessive punishment may be prevented from becoming entrenched and later reproduced in adolescents' fledgling romantic relationships. Clinical experience indicates that parents' patterns of excessive punishment are very difficult to change by the time children reach adolescence. Parents who resort to such punishment experience high levels of conflict, hostility and hopelessness. Also, by adolescence, parents who use such extreme punishment may have trained their adolescents to respond only to extreme forms of punishment, to the exclusion of less excessive tactics.

What should be included in prevention programs? The few tested prevention programs have targeted middle or high school students' attitudes towards partner violence and help-seeking behaviors, stressing males' exclusive responsibility for abusive behavior (e.g. Avery-Leaf, et al., 1997; Wolfe, Wekerle, & Scott, 1997). Our findings and others' indicate that males and females who were conduct disordered as adolescents are also at risk for partner violence. Preventing and treating conduct disorder may be a major key to preventing partner violence. Preventing females' partner violence as well as men's may be necessary to prevent adverse consequences of partner violence for women (Moffitt et al., in press). Also, focusing exclusively on youth's behavior will probably not be enough to prevent partner violence. Instead, our results support the inclusion of parent training, starting when children are young, with a strong emphasis on changing patterns of excessive punishment. Also, conflict resolution training among parents may reduce interparent violence, and children's exposure to it. Early intervention for violence between young parents may aid its prevention in future generations.

Study Strengths and Limitations:

The study is strengthened by its use of an unselected sample of young men and women, followed for over 20 years, and assessed at multiple time points on a wide range of measures. Also, this study represents just the type of cross-problem research requested by the National Research Council (Chalk & King, 1998), with its integrated

examination of partner violence, childhood maltreatment, disruptive behavior disorders, and childhood exposure to domestic violence. Limitations include use of a single informant for partner violence assessment, over a limited time period, perhaps resulting in underreporting of these events, although we were careful to include only individuals who were in a relationship in the time frame of interest. Also, retrospective measures of parent-to-parent violence may limit the validity and reliability of these reports. The data could not differentiate levels of exposure (e.g. frequency or severity of acts witnessed, age at exposure), but support further prospective research in this area, with unselected samples of youth.

In sum, the physical, economic and social consequences of partner violence may best be prevented by targeting families with histories of the risks identified in this study. Research should continue to investigate processes by which these factors act as risks for partner violence, to inform the content of such prevention programs.

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Table 1

Number (%) of Males and Females Reporting Specific Types of Partner Violence Perpetration and Victimization

Type of Act	Females[a]	Males[b]
Physically Threaten		
Done By Me	20 (6%)	28 (11%)
Done By Partner	29 (10%)	26 (11%)
Push, Grab, or Shove		
Done By Me	56 (19%)	46 (19%)
Done By Partner	49 (16%)	41 (17%)
Kick, Bit, or Hit with Fist		
Done by Me	27 (9%)	11 (5%)
Done by Partner	14 (5%)	23 (9%)
Hit or Try to Hit with Object	21 (7%)	6 (2%)
Done by Me	13 (4%)	21 (9%)
Done by Partner		
Force to Have Sex		
Done by Me	0	4 (2%)
Done by Partner	6 (2%)	1 (.4%)
Injury		
Done by Me	22 (7%)	12 (5%)
Done by Partner	20 (7%)	15 (6%)

[a]N = 298. [b]N = 243.

Table 2 Odds Ratios for Violence to Partner Before and After Consideration of Other Risks

Risk Factor	Any Violence to Partner: No (N= 423)	Any Violence to Partner: Yes (N=118)	Odds Ratio (95% CI): Unadjusted	Odds Ratio (95% CI): Adjusted Risk Factor
Demographic Factors				
Sex [a]			.92 (.61 - 1.38)	1.19 (.74-1.90)
Female	78%	22%		
Male	79%	21%		
SES mean	10.14 (1.00)	9.91 (.90)	.78 (.63 - .97)*	.99 (.78-1.25)
Maladaptive Parenting of Adolescent				
Excessive Punishment	8%[b,c]	17%	2.19 (1.22-3.96)**	
Females	6%	22%		3.23 (1.45-.91)**
Males	11%	10%		.64 (.21-1.89)
Family Violence				
Childhood Maltreatment	10%	18%	2.01 (1.13 - 3.56)*	1.03 (.53-1.99)
Exposure to Violence Between Parents	19%	46%	3.56 (2.31-5.49)**	2.67 (1.51-4.75)**
Adolescent Psychiatric Disorders				
CD	2%	9%	6.08 (2.30 - 16.06)**	3.66 (1.16-11.55)*
ODD	4%	12%	3.41 (1.61 - 7.21)**	1.54 (.61-3.89)

Note: Continuous variables represented by means (SD), categorical variables by percentages. [a]Reference category is female. [b]Percent within each level of the dependent variable who had the risk factor. [c]The interaction of sex and excessive punishment (net of main effects) was significant (AOR=.16, .04-.65).

* $p < .05$. ** $p < .01$.

Table 3

Odds Ratios (Confidence Intervals) for Any Violence From Partner Before and After Adjusting for Other Risk Factors in a Consolidated Model

	Any Violence From Partner		Odds Ratio (95% CI)	
Risk Factor	No (N= 423)	Yes (N=118)	Unadjusted	Adjusted
Demographic Factors				
Sex [a]			1.16 (.75 - 1.80)	.93 (.56-1.55)
Female	83%	17%		
Male	80%	20%		
SES	10.15 (1.00)	9.84 (.85)	.78 (.63 - .97)*	.85 (.66-1.10)
Maladaptive Parenting of Adolescent				
Low Communication	20% [b]	29%	1.69 (1.03-2.76)*	1.38 (.81-2.35)
Excessive Punishment	8%	19%	2.56 (1.40-4.68)**	2.11 (1.08-4.13)*
Family Violence				
Childhood Maltreatment			4.93 (1.40-17.39)**	6.88 (1.71-27.65)**
Females	13%	12%	.82 (.33-2.01)	.36 (.12-1.06)

Males	7%	25%	4.16 (1.86-9.30)*	2.51 (.98-6.14)^
Exposure to Violence				
Between Parents	11%	28%	3.22 (1.89-5.46)**	2.67 (1.46-4.87)**
Adolescent Psychiatric Disorders				
CD	2%	9%	4.72 (1.821 – 12.23)**	2.67 (.78-9.12)
ODD	4%	12%	3.19 (1.48 – 6.86)**	1.15 (.42-3.11)
SUB	9%	16%	1.95 (1.04-3.66)*	1.42 (.68-2.96)

Note: Continuous variables represented by means (SD), categorical variables by percentages.

[a]Reference category is female. [b]Percent within each level of the dependent variable who had the risk factor. [c]The interaction of sex and maltreatment (net of main effects) was significant (AOR=6.88, 1.71-27.65).

* p < .05. ** p < .01. ^ p < .10.

Table 4

Odds Ratios (Confidence Intervals) for Injury to Partner Before and After Adjusting for Other Risk Factors in a Consolidated Model

	Injury to Partner		Odds Ratio (95% CI)	
Risk Factor	No (N= 507)	Yes (N=34)	Unadjusted	Adjusted
Demographic Factors				
Sex [a]			.65 (.32 - 1.34)	.69 (.32-1.49)
Female	93%	7%		

Male	95%	5%		
SES	10.12 (.98)	9.63 (.87)	.56 (.40 - .85)**	.76 (.50-1.15)
Maladaptive Parenting of Adolescent				
Excessive Punishment	9%[b]	32%	4.91 (2.25-10.72)**	3.35 (1.43-7.85)**
Family Violence				
Childhood Maltreatment	11%	26%	2.96 (1.30 - 6.74)*	1.03 (.53-1.99)
Exposure to Violence Between Parents	12%	35%	3.85 (1.82-8.17)**	2.67 (1.51-4.75)**
Adolescent Psychiatric Disorders				
CD	2%	9%	6.52 (2.18 - 19.55)**	3.66 (1.16-11.55)*
ODD	4%	12%	3.31 (1.18 - 9.28)**	1.54 (.61-3.89)

Note: Continuous variables represented by means (SD), categorical variables by percentages.

[a]Reference category is female. [b]Percent within each level of the dependent variable who had the risk factor.

* $p < .05$. ** $p < .01$.

Table 5.

Odds Ratios for Injury by a Partner with and without other risk Adjustment

	Injury by Partner		Odds Ratio (95% CI)	
Risk Factor	No (N= 506)	Yes (N=35)	Unadjusted	Adjusted
Demographic Factors				
Sex [a]			.92 (.46-1.83)	.94 (.45-1.97)
Female	93%	7%		
Male	94%	6%		
SES	10.12 (.98)	9.67 (.88)	.61 (.42-.89)*	.76 (.50-1.15).
Maladaptive Parenting of Adolescent				
Excessive Punishment	9%[b]	29%	4.00 (1.81-8.84)**	3.27 (1.27-8.40)*
Verbal Abuse	8%	20%	2.84 (1.176.89)*	.96 (.32-2.87)
Family Violence				
Childhood Maltreatment	11%	23%	2.54 (1.08-5.94)*	.94 (.35-2.54)
Parental Violence	12%	33%	3.52 (1.68-7.38)**	2.02 (.86-4.78)
Adolescent Psychiatric Disorders				
CD	3%	14 %	6.30 (2.11-18.82)**	1.78 (.44-7.15)[c]
ODD	4%	20%	5.23 (2.07-13.22)**	2.28 (.70-7.44)
SUB	9%	23%	2.88 (1.24-6.70)*	2.22 (.79-6.19)

[a]Reference category is female. [b]Percent within each level of the dependent variable who had the risk factor. [c]Adjusted OR for CD before adding ODD and SUB was 3.85 (1.13-13.07)*. * $p < .05$. ** $p < .01$.

Figure Caption

Figure 1. Rates of Any Violence to Partner and Excessive Punishment in Adolescence
Figure 2. Rates of Any Violence By Partner for Maltreated and Nonmaltreated Males and Females.

Substantive Aim 4: To determine the generality of these models to urban and rural settings.

Study 6. The influence of urbanicity of environment on the rate of adult arrest and on the demographic predictors of adult arrest. Tentative authors: Patricia Cohen and Jeffrey Fagan.

In these analyses we took advantage of the availability of information on the type of area in which the subject was raised, and the fact that the sample came from a residentially and socioeconomically diverse area. This means that our findings are not influenced by the possibility that individuals who are predisposed toward committing crimes may move to different types of areas, and may also have a lower adult SES than would be expected from the SES of their families of origin.

A number of findings were not related linearly to the population density of the area as reflected in our 7-level measure, either because the suburban areas and large towns were similar to the rural areas or because there were distinctive patterns in such areas. Therefore we grouped the areas into three types: rural and small towns (labelled "rural", suburban and larger towns (labelled "suburban", and city including central city (labelled "city"). Analyses were by logistic and OLS regression methods The three major questions addressed here are as follows: 1. Are there differences between areas in which these young adults had spent their childhood years in the risk for adult arrests? 2. Do these differences vary by the type of crime for which they have been arrested? 3. Are these differences accounted for by racial or socioeconomic status differences in the families of origin?

In Table 4 we see that there were differences in area of origin with regard to arrest as an adult, categorized by type of charge. The overall pattern showed a higher proportion of those raised in the city were likely to be arrested for all charges except DWI, where, perhaps not surprisingly, there was a higher rate in the rural areas. In general differences between rural and suburban areas, although intriguing, were not significant, perhaps because of the low statistical power in this general population sample.

In Table 5 we switch from the number of persons arrested to the number of arrests by charge. Here we see that the mean number of arrests by residence of

upbringing showed the same pattern seen in Table 7. When, however, we look at the mean number of arrests among those arrested at least once for a given charge category, the differences do not reach conventional levels of statistical significance. (Again, we caution against strong negative inferences in these data given the relatively poor statistical power associated with the small sample sizes for this test.) Thus it appears that there are not very substantially discrepant rates of rearrest associated with area of upbringing.

In Table 6 we look at some of the correlates of area differences. Because the primary differences were between city and non-city, in order to keep these tests as powerful as possible we have used this dichotomy as a predictor.

In the first equation we have added sex of the subject as a covariate, and are not surprised to see that males had over 3 times the odds of being arrested that females had. The odds of arrest were twice as high for those who had been raised in the city.

In the second equation we had added socioeconomic status of the family of origin (SES) to the equation, with the expected little effect on the estimated effect of sex but a decline in the effect of city upbringing to 1.54, of marginal statistical significance.

In the third equation we substituted race of the subject for SES, and found a very large effect (odds for Black respondents of arrest were 3.62 times as large as the odds for White respondents), and the effect of city upbringing was reduced, not only to non-significance but also to near 1.0.

In the final equation we included both race and SES, and see all trace of an effect of city upbringing disappear. About 20% of the effect of race was apparently attributable to the effect of SES of family of origin, as measured here by a combination of standardized measures of parental education, occupational status, and family income. The effect of SES was not influenced by the inclusion of race in the equation.

We have done a number of additional exploratory analyses on race and residence issues, including examination of dropped or dismissed charges, and interactions between race and residence, without notable effects thus far.

Table 4: Percent of persons arrested by residence of upbringing.

Any adult arrest	Rural	Suburban	City	Σ^2 (2 df)	P
Any charge	24	19	35	11.9	< .01
For crime against person	4.8	5.0	17.1	23.3	< .01
For property crime	7.1	5.3	12.0	5.8	< .05
For drug offense	2.7	3.7	14.6	26.0	< .01
For DWI	15.7	9.3	9.4	6.9	< .05
For other charge	16.0	10.9	23.1	10.5	< .01

Table 5. Number of arrests by charge category per person by residence of upbringing

	Rural	Suburban	City	F	P
For any charge					
In population	.67	.51	1.43	14.2	< .01
Among those with any arrest	2.91	2.55	4.08	2.99	< .10
For crime against person					
In population	.08	.09	.25	8.7	>.05
Among those with any arrest	1.67	1.56	1.45	0.2	NS
For property crime					
In population	.12	.09	.16	4.5	>.05
Among those with any arrest	1.68	1.71	1.46	.15	NS
For drug-related crime					
In population	.08	.04	.38	6.0	>.05
Among those with any arrest	2.67	1.18	2.65	2.6	>.10
DWI					
In population	.21	.13	.11	6.9	<.05
Among those with any arrest	1.35	1.37	1.18	.37	NS
Other charges					
In population	.13	.07	.26	8.1	.01
Among those with any arrest	1.60	1.35	1.58	.46	NS

Table 6: Adjusted odds ratios for any adult arrest associated with city upbringing.

Predictors in equation	Odds ratios (Confidence interval), P
Sex of subject	3.25 (2.24-4.71) < .01
City upbringing	2.04 (1.31-3.17) < .01
Sex of subject	3.42 (2.34-5.00) < .01
City upbringing	1.54 (.97 -2.4) = .07
High SES of family of origin (standardized)	.58 (.48-.71) < .01
Sex of subject	3.33 (2.28-4.87) < .01
City upbringing	1.13 (.65 - 1.96) NS
Race of subject = Black	3.62 (1.90 - 6.90) < .01
Sex of subject	3.51 (2.38 - 5.16) < .01
City upbringing	.95 (.54 - 1.67) NS
Race of subject = Black	2.90 (1.49 - 5.62) < .01
High SES of family of origin	.61 (.50 - .74) < .01

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