Prevalence and Consequences of Child Victimization: Results from the National Survey of Adolescents

Final Report

(Revised)

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INTRODUCTION

Specific Aims

Unfortunately, violence is a substantial problem for American youth. Past research and recent governmental reports indicate that many children and adolescents have been victims of violence and that a growing number of youth are perpetrators of serious violence (Centers for Disease Control, 1990; National Center on Child Abuse and Neglect, 1994; Finkelhor & Dziuba-Leatherman, 1994, Bastian & Taylor, 1991; Elliott, 1992). Family members are often the perpetrators of violence against children and adolescents, as well as the targets of their violence. Victimization in childhood has been found to be strongly related to substance use/abuse/dependence and delinquent behavior (Huizinga, Loeber & Thornberry, 1995; Widom, 1992; Dembo, Williams, Schmeidler, Berry, Wothke, Getreu, Wish, & Christensen, 1992; Kilpatrick, Resnick, Saunders, Best, & Epstein, 1994), as well as a variety of other mental, emotional, and behavioral problems including post-traumatic stress disorder (PTSD) and depression (Browne & Finkelhor, 1986; Beitchman, Zucker, Hood, DaCosta, Akman, & Cassavia, 1992; Saunders, Villeponteaux, Lipovsky, Kilpatrick & Veronen, 1992; Murphy, Amick-McMullen, Kilpatrick, Haskett, Veronen, Best, & Saunders, 1988; Lipovsky, Saunders & Murphy, 1989). In general, studies have examined "family violence" and ignored other victimization experiences, or assessed "criminal violence" and disregarded violence perpetrated by family members. This arbitrary distinction has given rise to two separate scientific literatures, created a false dichotomy between family and non-family victimization and violence experiences, and discouraged a more complete and integrated view of assessing the etiology and consequences of victimization and violence. In response to this problem, this study assessed both familial and non-familial violence.

A substantial number of studies have examined different aspects of the relationships between childhood victimization experiences, trauma-related mental health problems, substance use/abuse/dependency, and delinquent behavior. However, many of these studies suffer from critical conceptual and methodological problems that limit their utility. More important, most studies to date have examined only selected relationships between these constructs. Some have tested the relationships between victimization and mental health effects; others the relationships between substance use/abuse/dependency and delinquency; and still others the relationships between childhood victimization and delinquency. However, none has tested a comprehensive conceptual framework linking all of these complex relationships into an explanatory model. Most studies also suffer from one or more serious methodological problems such as using nonrepresentative samples, failing to assess participants thoroughly for a history of victimization and trauma, ignoring or poorly measuring mental health problems, or not adequately examining potential gender and racial/ethnic differences. In addition, most studies use retrospective rather than longitudinal designs or rely primarily on official case records rather than directly assessing individuals.

The National Survey of Adolescents, funded by the National Institute of Justice (grant number 93-IJ-CX-0023) addressed several of these conceptual and methodological problems. The goal of this study was to test specific hypotheses generated by a theoretically and empirically constructed conceptual framework illustrating the relationships between serious victimization experiences, the mental health effects of victimization, substance use/abuse, and

delinquency behavior. In addition to demographic and important background variables, adolescents were assessed for a history of sexual assault, physical assault, harsh physical discipline, witnessing violent events, PTSD, depression, substance use/abuse/dependence, and commission of index delinquency offenses. The NSA was a telephone survey of a nationally representative sample of 4,023 American youth between the ages of 12 and 17 living in U. S. households with telephones. Data collection occurred between January and June, 1995. It should be noted that the NSA was originally proposed as a multi-wave, longitudinal study, which would have permitted analyses of causal pathways. However, funding limitations required the collection of only one cross-sectional "snapshot" of data, and this limited the ability of the analyses to address causal hypotheses.

Objectives

Objectives of the NSA were to:

1. provide descriptive information about cases of familial and non-familial violent assault, delinquent behavior, mental health problems, and substance use, abuse and dependence broken down by age, gender, family income, and racial/ethnic group among American adolescents;

2. test a risk factor model that hypothesizes relationships between violent familial and non-familial victimization in childhood and adolescence and risk of PTSD, delinquent behavior, and substance use/abuse/dependence among American adolescents; and

3. examine potential differences between gender and ethnic minority groups in the correlates and consequences of substance use/abuse/dependence and delinquent behavior among American adolescents.

Statement of Hypotheses

The primary hypothesis of this study is that victimization during childhood and/or adolescence increases the risk of developing significant psychological distress and substance use, which in turn increases risk for substance abuse or dependence, delinquent behavior, and subsequent victimization. Specific hypothesis to be tested are:

H_1: Victimized adolescents (whether by family members or others) will be more likely than nonvictimized adolescents to have high levels of psychological distress.

H_2: Victimized adolescents (whether by family members or others) will be more likely than nonvictimized adolescents to use alcohol and illicit drugs.

H_3: Victimized adolescents (whether by family members or others) with high levels of psychological distress will be more likely than victimized adolescents with low levels of psychological distress to have substance use, abuse, and dependency problems.

H_4: Victimized adolescents (whether by family members or others) will be more likely than nonvictimized adolescents to engage in delinquent behavior.

H_5: Victimization (whether by family members or others) temporally precedes initial problems with psychological distress, substance abuse, and delinquent behavior.

H_6: Lifetime and past year prevalence of sexual assault will be higher among girls than among boys; prevalence of physical assault will be higher among boys than among girls; prevalence of witnessing violence will not differ as a function of gender.

H_7: Prevalence rates of violent victimization (whether by family members or others) will not differ across ethnic/racial groups after controlling for the effects of age, gender, family income, and residential location.

H_8: Potential causal pathways for delinquent behavior, substance use, substance dependence, and substance abuse will differ as a function of gender, but will not differ by ethnic/racial status.

REVIEW OF LITERATURE

Considerable evidence exists suggesting that both family and non-family violence is a major problem for children and adolescents, both in its prevalence and consequences (National Center on Child Abuse and Neglect, 1994; Finkelhor & Dziuba-Leatherman, 1994; Kilpatrick, Edmunds, & Seymour, 1992; Bastian & Taylor, 1991; Finkelhor, Hotaling, Lewis, & Smith, 1990; Gelles & Straus, 1987; McCurdy & Daro, 1993; Saunders et al., in press; Saunders et al., 1992; Burnam et al., 1988; Whitaker & Bastian, 1991; Elliott, 1992). A history of violent assault during childhood or adolescence increases risk for a host of major mental health problems such as PTSD and depression (Ageton, 1983; Browne & Finkelhor, 1986; Beitchman et al., 1992; Burnam, Stein, Golding, Siegel, Sorenson, Forsythe, & Tefles, 1988; Saunders, in press; Saunders et al., 1992; Jaffe, Wolfe & Wilson, 1990; Lanktree, Briere, & Zaidi, 1991), and substance use/abuse/dependency problems (Ageton, 1983; Burnam et al. 1988; Gelles & Straus, 1990; Kilpatrick et al., 1997; Saunders, Kilpatrick, Lipovsky, Resnick, Best, & Sturgis, 1991; Stein, Golding, Siegel, Burnam, & Sorenson, 1988). Still other evidence suggests that youth victimization history increases risk of involvement with delinquent peers and of subsequent delinquent behavior (Ageton, 1983; Dembo et al. 1992; Straus, 1984; Widom, 1989, 1992; Huizinga et al. 1995). Some research shows that involvement with delinquent or deviant peers increases risk of victimization (e.g., Ageton, 1983), and that substance use also increases risk of victimization (e.g. Kilpatrick et al., in press; Kilpatrick et al., 1997; Kilpatrick, Resnick, Saunders, Best & Epstein, 1994; Cottler, Compton, Mager, Spitznagel, & Janca, 1992). Other research indicates that there is substantial comorbidity between PTSD and substance use, dependence, and abuse (Cottler et al., 1992; Kessler, Sonnega, Bromet, Hughes & Nelson, 1995). Therefore, the constructs of familial and non-familial victimization in childhood or adolescence, trauma-related mental health problems, substance use/abuse/dependency, and delinquent behavior are inter-related in a variety of ways.

Two lines of research with adults confirm that victimization is a risk factor for substance use/dependency/abuse and visa versa. First, epidemiological studies show that substance use disorders are more prevalent in individuals who have a history of criminal victimization (Burnam et al. 1988; Cottler et al. 1992; George & Winfield-Laird, 1986; Helzer, Robins, & McEvoy, 1987; Kilpatrick, 1990; Kulka, Schlenger, Fairbank, Hough, Jordan, Marinar, & Weiss, 1990; Sorenson, Stein, Siegel, Golding, & Burnam, 1987). For example, in a study of 3,125 Los Angeles residents, as part of the NIMH Epidemiologic Catchment Area project, rates of substance abuse or dependence (both alcohol and other drug) were significantly higher among sexual assault victims compared to non-victims (Sorenson et al., 1987).

Second, studies of women seeking treatment for substance use/abuse/dependency problems have high rates of victimization (Brady, Killeen, Saladin, Dansky & Becker, 1994; Ladwig & Anderson, 1989; Miller, Downs, Gondoli & Keil, 1987; Miller, Wieczorek & Downs, 1994; Kilpatrick & Resnick, 1994). Both these lines of research confirm that there is a relationship between victimization and substance use/abuse/dependency, but because of the cross-sectional, retrospective nature of most extant studies, it is impossible to establish the temporal or causal sequence of events.

Some longitudinal research has been done that addresses at least some of these issues. Kilpatrick et al. (1997) studied adult women three times over a two year follow-up period and found that drug use at Time 1 was associated with increased risk of assault at Time 3. Moreover, this relationship was independent of past history of victimization. In a longitudinal study using an epidemiological sample, Brook and her colleagues have been following a 5-10 year old cohort of mostly white children since 1975 (Brook, Nomura & Cohen, 1989). Brook et al. (1989) found that early childhood risk factors were directly associated with cigarette, alcohol, and marijuana use during adolescence. Of particular relevance to the current project, Brook, Whitman and Finch (1992) found that early childhood aggression was an antecedent to adolescent drug use and delinquency. Since anger and aggressive behavior are frequent consequences of childhood familial abuse and neglect (e.g., Browne & Finkelhor, 1986; Kendall-Tackett, Williams, & Finkelhor, 1993), it would be interesting to know whether the angry, aggressive children in the Brook et al., study had been victims of abuse. Unfortunately, information on victimization history was not collected in this study.

An important series of studies by Dembo and associates (Dembo, Dertke, La Voie, Borders, Washburn, & Schmeidler, 1987; Dembo, Williams, Wish, Dertke, Berry, Getreu, Washburn, & Schmeidler, 1988b; Dembo, Williams, La Voie, Berry, Getreu, Wish Schmeidler, & Washburn, 1989; Dembo et al. 1992) demonstrated the role of familial and non-familial physical and sexual victimization in the development of illicit drug use among two different samples of juvenile delinquents. Dembo et al., (1989) noted that both physical and sexual abuse have direct effects on illicit drug use, as well as being mediated by a psychological process of self-derogation. The findings from this study replicated those of an earlier study that investigated similar connections between childhood victimization and drug use among a sample of juvenile detainees (Dembo et al., 1987).

In an effort to overcome the methodological weaknesses inherent in conducting retrospective studies, Widom (1989) identified a large sample of substantiated/validated cases of child abuse and neglect that had occurred before age 11 and conducted a prospective, case file

review of later local, state, and federal records of juvenile/adult criminal behavior. Abused and neglected children had higher rates of arrest as juveniles (26% vs. 17%), and as adults (29% vs. 21%), and for violent offenses (11% vs. 8%) than a matched control group. Furthermore, abuse or neglect in childhood was associated with a greater number of offenses, an earlier age at first offense, and a greater likelihood of being a chronic offender. About 16% of victims of physical abuse only and 5.6% of victims of sexual abuse only were arrested for at least one violent offense (Widom, 1992). While Widom's (1989) study improves upon the methodology of other studies by utilizing a matched control group and official records rather than self/parental reports to assess both abuse and criminal behavior, significant limitations remain. Official records are limited to reported cases of abuse and detected criminal offenses (i.e., those for which the individual was arrested). Given that Widom's abuse cases were identified before mandatory child abuse reporting laws, it is likely that they reflect quite serious instances of child abuse and may underestimate the number of cases of abuse, and thus, do not represent most child abuse cases.

Using student samples and a national sample, Straus (1984) found that parental violence towards teenage children was related to children's rate of crime and violence outside the family. In addition, boys raised in families characterized by interparental violence had higher rates of delinquency and aggression towards others outside the family. Finally, witnessing violence itself appears to be associated with later violent behavior (e.g., Lewis, Shanok, Pincus, & Glaser, 1979).

One of the most methodologically sound studies examining the relationships among adolescent victimization, delinquent behavior, substance use/abuse problems, and mental health problems is the National Youth Survey (NYS) conducted by Delbert Elliott and his associates (Ageton, 1983; Elliott, Huizinga & Ageton, 1985; Elliott, Huizinga, & Menard, 1989). The NYS is a theory-driven longitudinal study of a national probability household sample of 1,725 adolescents who were between the ages of 11 and 17 at the time of the projects' onset in 1976. Most published work focuses on the first six waves of data collection. The NYS obtained annual self-report estimates of the respondent's frequency of delinquent behavior, drug and alcohol use, substance abuse-related problems, and some mental health problems (primarily major depression). Limited information was obtained about sexual assault from female respondents but not about physical and sexual assault occurring a year or more prior to the first wave of the study.

Two issues concerning the NYS findings are particularly relevant to this project. First, Ageton (1983) concluded that "engaging in delinquent behavior and being a part of a delinquent network influence the risk of being sexually assaulted." However, the study design (which did not measure sexual assaults occurring in childhood, i.e., prior to age 11) and the relatively weak sexual assault screening questions make it impossible to determine whether a history of sexual assault in childhood might have preceded the delinquent behavior and/or exposure to delinquent peers. Second, the NYS found a high degree of overlap between delinquent behavior, exposure to delinquent peers, and substance use/abuse problems (Elliott et al., 1985). In fact, common etiological pathways were found for illegal drug use and delinquency, with prior drug use and/or delinquency as well as exposure to delinquent peers being the best predictors of current drug use and/or delinquency. Results obtained with longer follow-up and adding mental health problems to the assessment were more complex (Elliott, Huizinga, & Menard, 1988). As adolescents

become young adults, mental health problems tended to increase, as did drug abuse problems, but delinquency problems tended to decrease. However, the subset of adolescents with all three problems were found to be the most likely to be arrested (Elliott et al., 1988). Given Widom's (1992) findings about child victimization increasing risk of delinquency and adult criminal behavior, the lack of good data on child victimization in the NYS is a real limitation in an otherwise exemplary study. Likewise, the NYS did not measure PTSD, a mental health problem that occurs frequently after victimization, and that has been shown to increase risk for alcohol and drug use problems (Kilpatrick, 1990; Kilpatrick et al., 1992; Kilpatrick et al., 1997).

In summary, the extant literature provides substantial support for the notion that child victimization is a risk factor for delinquency, substance use problems, and mental health problems such as PTSD and depression. However, previous studies left gaps in knowledge because they did not: 1) use a large national probability sample of adolescents of both genders with a substantial representation of ethnic minority groups; 2) measure baseline history of a broad range of familial and non-familial childhood victimization experiences; 3) assess the spectrum of substance use ranging from tobacco to hard drugs; 4) assess important potentially comorbid mental disorders such as PTSD and depression; 5) examine potential consequences of victimization and substance use such as substance abuse/dependency, delinquent behavior, and risk of revictimization; 6) test alternative pathways for development of substance use; and 8) base hypothesis and design on theory. The present study was specifically designed to fill this gap. As noted above, the original design called for longitudinal waves of data collection that would have permitted this study to address more of these limitations than is possible with a cross-sectional design.

SAMPLING STRATEGY AND PARTICIPANTS

Overview of Sample

The NSA sample consisted of two subsamples, a national probability household sample of 3,161 adolescents and a probability oversample of 862 adolescents residing in central city areas of the United States for a total sample size of 4,023. Eligible for selection were all adolescents between the ages of 12 and 17 living in households with telephones in the United States, who resided with a parent or guardian, and who could converse in English or Spanish. The only adolescents potentially excluded from the study were those residing in institutional settings, in households without a parent or guardian (e.g., emancipated minors, married adolescents living on their own) or in households without telephones; those who did not speak English or Spanish, and those whose parents did not give permission for their adolescent to be interviewed. According to the 1990 census, only 5% of all U.S. households did not have telephones at any one point in time. Based on the results of a large random digit dialing (RDD) survey of adolescents sampled using similar methodology conducted by the applicants (Boyle & Kilpatrick, 1993), less than 2% of otherwise eligible adolescents do not speak English or Spanish. Therefore, we estimate that the sampling frame provided coverage for at least 93% of U. S. adolescents living in households with parents or guardians and should be highly representative of U. S. adolescents living in households with parents or guardians.

In addition to the adolescent participants in the NSA, one parent or guardian in each household was interviewed briefly as will be described subsequently. The primary purpose of

these interviews was to establish rapport and to obtain permission to interview the targeted adolescent. Because the parent or guardian interviews were conducted prior to the adolescent interviews, the 4,023 participants in the parent sample were also selected from a national probability sample of households and a probability oversample of central city households. Like the case with adolescents, parents were eligible if they spoke English or Spanish.

All sample selection and interviewing was done by Schulman, Ronca, and Bucuvalas, Inc. (SRBI), a New York-based survey research firm.

Sample Development Strategy

To construct the initial national probability sample, the NSA used a multi-stage, stratified, area probability, RDD sampling procedure that had four steps. First, the U.S. was stratified geographically by census region and a population-based subsample allocation was developed for each geographic stratum. In other words, the number of households drawn for the sample from each geographic stratum was allocated in proportion to the actual distribution of the population residing within each stratum according to the most recent census estimates. Geographical stratification was used because the precision of sample estimates generally are improved by stratification. Hence, the population of the United States was stratified by census region. Specifically, the regional stratification of the sample was divided into the nine census regions as follows:

New England:	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.
Middle Atlantic:	New York, New Jersey, and Pennsylvania.
East North Central:	Ohio, Indiana, Illinois, Michigan, and Wisconsin.
West North Central:	Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas.
South Atlantic:	Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida.
East South Central:	Kentucky, Tennessee, Alabama, and Mississippi.
West South Central:	Arkansas, Louisiana, Oklahoma, and Texas.
Mountain:	Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, and Nevada.
Pacific:	Washington, Oregon, California, Alaska, and Hawaii.

The estimated distribution of the adolescent population by stratum was calculated on the basis of the Projections of the Population of States by Age, Sex and Race: 1988 to 2010 (*Current Population Reports*, P-25, No. 1017, 1988).

In the second step, telephone banks within each geographic stratum were systematically selected utilizing the comprehensive database of working telephone banks maintained by SRBI. Third, random digit dialing (RDD) was used to sample telephone households within the telephone banks selected in the second stage. RDD was used to locate currently working, residential household telephone numbers with eligible respondents. Non-working numbers and non-household (e.g., business) numbers were immediately replaced by other RDD numbers selected within the same stratum in the same fashion as the initial number. Non-answering

numbers were recalled four times before being replaced. In the fourth step, an adult respondent in each household was screened to determine if there were any adolescents, 12 to 17, currently living in the household or if any other adolescent had lived in the household at least four months within the previous year.

In households with multiple eligible adolescents, a systematic selection was made to determine which eligible individual would be designated as the respondent. These procedures yielded a relatively unbiased sample of 3,161 adolescents from which valid generalizations can be made to the total population, within specified limits of expected sampling variability.

Construction of the central city oversample followed these same procedures except for the initial geographical stratification step. This step was replaced by using the Census classification of counties by types of place (i.e., central city) and specifying our target population as households located within these urban counties. These were then systematically sampled. The SRBI database of working telephone exchanges and banks of telephone numbers includes county designation. These then were systematically sampled within the selected urban counties. The RDD step was limited to these selected exchanges and banks within the selected urban counties. The third and fourth stages of the sampling procedure (for eligible households and adolescents) for the central city oversample were the same used in the national probability sample.

Sampling Results and Participation Rates

The sampling procedure identified 5,367 eligible households (i.e., households that contained one or more adolescents between the ages of 12 and 17 years old. Out of these 5,367 eligible households:

- 4,836 parents completed interviews (90.1% of eligible households)
- 4,236 parents gave permission for their adolescent to be interviewed (78.9% of eligible households; 87.6% of cases with completed parent interviews)
- 4,023 adolescent interviews were completed (75.0% of eligible households; 83.2% of households with completed parent interviews; 95.0% of households with parental permission).

The recruitment strategy required completing interviews with parents, then getting permission to interview the adolescent, then obtaining permission from the adolescent prior to actually completing the adolescent interview. The 75.0% completion/eligible rate compares is equal to or better that similar national surveys (e.g., the National Youth Survey) and indicates that the sampling and interview procedure was successful in producing a sample representative of the intended national population.

Demographic Characteristics of Parent and Adolescent Samples

Parent Sample. The sampling strategy permitted the interviewer to interview either parent or guardian in eligible households, so the parent sample (N=4,023) was not a strict probability sample *per se* because parents were not selected randomly within households.

Demographic characteristics of the parent sample are presented in Table 1. As inspection of Table 1 reveals, this sample had more women (71.8%) than men (28.2%). The majority of respondents were the adolescents' biological parents (90.0%). In 61.1% of the cases, the target adolescent's other biological parent lived in the same household. Over three quarters were married, and almost eight out of 10 were employed full-time. Slightly more than a third of this sample had annual household incomes greater than $50,000, more than four out of ten had household incomes between $20,000 and $50,000, and nearly 12% had household incomes below $20,000. With respect to the highest educational achievement attained, 30.2% were college graduates, 59.4% were high school graduates, and 10.4% had less than a high school education.

With respect to ethnicity, 6.7% identified themselves as Hispanic; 92.9% said they were non-Hispanic, and 0.4% refused to answer this question. Non-Hispanic Caucasians were, as expected, the most prevalent racial group. Non-Hispanic African-Americans were nearly 15% of the sample. Non-Hispanic Native Americans and Asians were, in this sample, each less than 1%. Less than 1% of the sample did not give a racial identification.

Adolescent Sample. In order to better generalize to the U.S. adolescent population, the full sample was weighted to conform to 1995 Census estimates for American adolescents on age, race, and gender. Demographic characteristics for both the unweighted and weighted sample of N = 4,023 are presented in Table 2. The strategy of oversampling central city residents resulted in a slightly higher proportion of minority respondents than in the 1995 U.S. Census Bureau population estimates for adolescents. Also, the unweighted NSA sample age cohorts of 12 and 17 year-olds were somewhat under-represented, according to census estimates. The weighted sample included slightly more males than females and was composed primarily of non-Hispanic Whites. African Americans accounted for nearly 15% of the sample, and Hispanics were nearly 8%. Native Americans were 3.5%, Asians were 1.1%, and Other racial or ethnic identifications were 2% of the sample. Only 28 respondents refused to give or did not know their racial/ethnic identification. The sample was divided fairly evenly across the 12 to 17 age cohorts, with each cohort having approximately 16-17% of the sample. Only 8 respondents refused or did not know their age. Grade level was a bit more diverse, with 8.2% of the sample in the fifth or sixth grades and only 8.2% in the twelfth grade. Other grades ranged from 13.9% to 18.5% of the sample. Only 43 (1.1%) of the respondents did not attend school, and only three refused to give or did not know their school grade.

PARTICIPANT RECRUITMENT AND INTERVIEW PROCEDURES

Initial interview with the parent or guardian

After determining that the household contained one or more eligible adolescents, interviewers asked to speak to a parent or a guardian. Interviews with adolescents were attempted only after a parent or guardian was interviewed and agreed to permit the designated adolescent to be interviewed. If the person with whom the household screening was conducted was not the parent or guardian, then the parent/guardian portion of the interview began with a recap of the general introduction. Then, the parent or guardian was provided with additional relevant information about the study, including:

- How their household was been selected (as part of a national random sample of households with children);

- The length of the parent/guardian portion of the interview (about 10 minutes)

- The sponsorship of the study;

- The general purpose of the study;

- The voluntary nature of the study, and the confidentiality of their responses.

Parent/guardians were provided the opportunity to call a toll-free number to confirm the authenticity of the study. Finally, parents/guardians were asked to grant permission for their adolescent to be interviewed.

The primary objectives of the parent/guardian interview were to inform the parent about the study, secure permission to interview the designated adolescent, and to ensure the collection of comparative data to examine potential non-response bias from households without adolescent participation. In addition to demographics, adult respondents were asked about their concerns with the safety of and potential violence toward their children; their child's past experience with violence; and their (parent's) experience with violence.

All interviews with both parents and adolescents were conducted using Computer-Assisted Telephone Interviewing (CATI) technology. All interviews were transcribed into the SRBI CATI system, and all interviewers used the CATI system. This technology has several advantages. It is better able to handle complex skip patterns and question ordering in complicated interview schedules such as those used in the NSA. It insures that all questions will be asked since interviewers cannot proceed without making responses. CATI interviews typically take less time and result in less respondent fatigue, increasing compliance and reducing termination rates. It also greatly reduces the time for data reduction and cleaning.

Selection of the Adolescent Respondent within Households

The sample construction described earlier yields a population-based sample of households with adolescent children. During the parent guardian section of the interview, the parent was asked to enumerate the ages and sex of all eligible children in the household. In the case of households with multiple adolescent children, the adolescent with the most recent birthday was selected for interview. The "most recent birthday" technique is a common and accepted one for randomly selecting respondents within eligible age cohorts of household members. This method has been demonstrated to be technically equivalent or superior to other respondent selection techniques, and involves less respondent burden.

Interviewing the Designated Adolescent

Whenever possible, adolescents were interviewed immediately following the parent/guardian interviews. Otherwise, appointments were scheduled when possible or blind callbacks at different times of day and days of the week were made. Unlimited callbacks were

made throughout the field period before a case was abandoned. The introduction of the study to the designated adolescent included the following:

- What the survey is about (dangerous things that happen in their school, neighborhood, and family);
- Why the survey is being conducted;
- How they had been selected (by dialing random phone numbers);
- The types of questions they would be asked (dangerous situations they may have been faced with and personal situations where they may have been threatened);
- Assurance of confidentiality (nothing they said would be told to their parents, school, or anyone else);
- How long the interview would take (about half an hour);
- They don't have to answer any question that they don't want to answer;
- They can terminate the interview at anytime by simply hanging up.

Assent to proceed with the interview was obtained from each adolescent after the explanation.

An important concern was whether the adolescent could answer interview questions freely and in private. Two steps were taken to increase the likelihood that adolescents could answer questions in an open and honest manner with a reasonable degree of privacy. First, the interviewer specifically asked if the adolescent was in a situation where they could be assured of privacy and could answer in an open manner. If the adolescent indicated they could not, the interviewer offered to call back at another time when privacy was more likely. Second, the interview schedule was designed primarily with closed-ended questions. Therefore, the adolescent could respond to questions with a simple "yes" or "no", a number (as in age), the role of a person (e.g., "a neighbor"), or other one word or phrase answer. Therefore, even if someone were listening to the adolescents' answers, they would hear nothing but simple answers such as this. This strategy appears to have been successful since terminated interviews were very low and consistent with rates found with nonsensitive topics and the large majority, over 99% of the adolescents agreed to answer the most sensitive questions (e.g., sexual assault history).

Verification of Survey Authenticity

Interviewers offered respondents the chance to call a toll-free number to SRBI to verify the authenticity of the survey. Interviewers also offered to send a letter before the interview, if the parent/guardian requested one. These follow-up letters were sent to any parent/guardian who requested one, prior to attempting a child interview. Letters explained the sponsorship of the study, the general survey purpose, the method by which their household had been selected, and the confidentiality of responses. The concerns of most respondents were relieved by this procedure. However, in cases where further information was desired, respondents were given

the telephone number of the Co-Principal Investigators at the MUSC National Crime Victims Research and Treatment Center for further verification. If they still had concerns, they were given the telephone number of the project officer at NIJ. Out of nearly 10,000 parent/guardian and adolescent interviews conducted, there were only two calls to the project Co-Principal Investigators and only one to the NIJ project officer. Most important, no human subject incidents were experienced during the field period of the NSA.

Incentives

As an incentive for participation, adolescent participants received a certificate of participation in the "National Survey of Adolescents" and a check for five dollars as compensation for their time.

Training of Interviewers

Interviewers were employees of SRBI who are highly skilled and experienced in conducting this type of sensitive inquiry. The NCVC and SRBI have successfully completed several similar surveys in the past using many of these same interviewers. In addition to the excellent training and experience that these interviewers have received from SRBI, the investigators provided additional training to the interviewers prior to the onset of the field period. The training was specific to the interviews used in this project and focused on the special needs of adolescent respondents.

Rationale for Conducting the Study by Telephone

Telephone survey methods offer a valid and efficient method for collecting information from large representative samples of respondents at a relatively low cost with nonsignificant response bias or detection of critical variables of interest as compared to in-person interview approaches (Weeks, Kulka, Lessler, & Whitmore, 1983; Bradburn, 1984). These issues have been looked at specifically in terms of detection of rates of victimization observed using in-person versus telephone interview methods (Catlin & Murray, 1979). Based on objective police report data, no differences in rates of detection of victimization were observed, supporting both the reliability and validity of the telephone method. One recent study (Paulsen, Crowe, Noyes, & Phohl, 1988) compared telephone and in person assessment of DSM-III Axis I disorders, including anxiety disorder, affective disorders, alcoholism, and no mental disorder using a structured diagnostic interview (Paulsen et al., 1988). Kappa's ranging from .69 to .84 were obtained, even with a delay between in-person and telephone methods of 12 to 19 months (Paulsen et al., 1988). The RDD telephone survey method has also been routinely used to complete the Centers for Disease Control Behavioral Risk Factor Surveillance System which assesses risk behaviors within the adult population. Telephone interviewing is also being used with approximately two-thirds of the sample within the National Youth Survey being conducted by Dr. Delbert Elliott (D. Elliott, 1994, personal communication). No differences have been noted between telephone and in-person interview procedures in assessed rates of delinquent and/or criminal behavior and substance use or abuse.

SURVEY INSTRUMENTS AND MEASUREMENT OF KEY CONSTRUCTS

Two survey instruments were used in the NSA, a parent survey schedule and an adolescent survey schedule, the latter of which is included in Appendix A. The primary purpose of the parent interview was to obtain permission to interview the adolescents. While parents were asked questions about their family history, knowledge of their adolescents' victimization history and current functioning, the main purpose of these questions were to inform the parent of the nature of the study and familiarize them with the types of questions that would be asked of their adolescents. The major focus of the National Survey of Adolescents was obtaining data from adolescents. Thus, the adolescent survey instrument will be described in detail.

Most components of the adolescent survey were selected on the basis of three factors: a) they had been used before in prior telephone interviews, often with adolescents and often by our research team; b) they had good reliability and validity; and c) they measured key constructs in the hypothetical model we wanted to test. Researchers who study the impact of traumatic events in general population samples face a significant test construction problem in that they lack captive samples of patients or college students that are generally available for use in instrument construction and validation. Moreover, funding agencies are reluctant to support extensive pilot work for instrument development. Therefore, it is often impossible to develop psychometric data for revised telephone versions. However, in most cases, there is every reason to believe that well-developed instruments maintain their psychometric properties in revised telephone versions. Our own work has demonstrated that most of these versions maintain internal consistency reliability and construct validity. However, the nature of the constructs measured often means that the state-of-the-art measurement techniques have few known psychometric properties.

This report focuses on data from the following sections of the NSA adolescent survey:

Biographic/Demographic Characteristics

The interview collected standard biographic information about respondents, including age, gender, educational achievement, racial status, household income, family composition and structure, and residential location (central city, SMSA remainder, rural).

Family History of Substance Abuse

This section utilized questions from our *National Women's Study* telephone survey regarding a family history of substance abuse. Information obtained included the number of biological parents having substance abuse-related problems, and the types of substance abuse-related social, occupational, or legal problems experienced by biological parents.

Victimization History

This section measures lifetime history of completed rape, other sexual assault (i.e., molestation, but not attempted sexual assault), aggravated assault, other physical assault including physically abusive punishment, and witnessing violence in family, school, and neighborhood settings. See the survey instrument in Appendix A for the precise wording of the items.

Sexual Assault. There is general agreement that sexual assault is the most difficult type of victimization to screen for, and that screening questions must be explicit, capture the full range of sexual assaults (e.g., not just stranger assaults), and permit determination of whether assaults could be legally defined as forcible rape (Kilpatrick, 1983; Koss, 1993; Von, Kilpatrick, Burgess & Hartman, 1991). Following a procedure we used successfully in the *National Women's Study* (Resnick et al., 1993; Saunders et al., in press) and the DSM-IV PTSD Field Trial Study (Kilpatrick et al., 1994), we identified and obtained descriptive information about up to three sexual assaults per respondents: the *first* sexual assault, the *most recent* sexual assault, and the *worst* sexual assault if other than the first or most recent. Descriptive information about each sexual assault included: series or single event, age at onset, frequency, duration, relationship to the perpetrator, extent of physical injuries sustained, did victim think she/he would be killed or seriously injured, did victim ever tell anyone about the assault, if so, who and when, was it reported to police or other authorities, and outcome variables of the social service or criminal justice process. Extensive pilot testing was done to develop the sexual assault screening questions.

Aggravated Assault and Other Physical Assault. Aggravated assault screening questions were identical to those used in the *National Women's Study* and the PTSD Field Trial study and assessed experiences of being attacked with a weapon, or without a weapon but with intent to injure seriously or kill. As is the case with sexual assault, descriptive information was obtained about the first, most recent, and worst physical assaults. Other physical assault questions were similar to those used by Dembo et al. (1992) and assessed not only serious physical assaults that did not meet legal criteria for aggravated assault, but also familial discipline that was serious enough to leave marks or to warrant medical attention.

Witnessing Violence. Observation of serious incidents of violence in home, neighborhood, and school settings were measured using selected questions from our NIMH-funded Los Angeles Civil Disturbance study (Hanson, Freedy, Kilpatrick, & Saunders, 1993) and others that were developed for this project. Questions assessed witnessing someone shot or stabbed, mugged, sexually assaulted, robbed, or threatened with a weapon.

Posttraumatic Stress Disorder (PTSD)

The PTSD measure is a modified version of the DIS measure of PTSD using DSM-III-R criteria that we developed and have used in three major telephone survey projects including those which have assessed adolescent respondents. It has been updated to measure PTSD using DSM-IV criteria. This National Women's Study PTSD Module asks respondents if they have ever had a period of a month or more during which they have experienced each PTSD symptom. When symptoms are content specific, respondents are asked to specify the context of that symptom. This method prevents the exclusion of subjects from the PTSD assessment based on the interviewer's judgment of whether or not a particular event meets Criterion A and allows for the assessment of symptom presence in association with a wide variety of events. Information is then gathered about onset age and recurrence of all symptoms. The PTSD Field Trial Study evaluated the degree of reliability between our structured PTSD measure administered by nonclinicians and the Structure Clinical Interview for DSM-III-R (SCID), the "gold standard" of PTSD measures which is administered by clinicians. The *Kappa* coefficient of agreement between the two measures at the diagnostic level was .77 for lifetime PTSD and .71 for current

PTSD (PTSD within the past six months). See Resnick, et al., (1993) for a more thorough description of the NWS PTSD Module and Kilpatrick et al. (1994) for a description of the DSM-IV Field Trial Study.

Information was obtained regarding the age of onset and age at most recent occurrence of in order to assess both lifetime and current disorder. Such information permits investigation of 1) the relationship between a history of PTSD and subsequent risk of adolescent victimization and 2) the association between victimization experiences and subsequent risk of the development of PTSD.

Substance Use

The substance use section of the interview was structured to gather the following information. *Has the respondent ever consumed any of the following substances*: a) alcohol, b) marijuana, c) cocaine, d) heroin or other opiates, e) hallucinogens, f) PCP, steroids, g) inhalants or the following prescription drugs used nonmedical, h) tranquilizers, i) barbiturates, j) amphetamines, or k) prescription pain killers. Next, for each substance used, respondents were classified as nonexperimental users if they had ever used the substance four or more times. Next, nonexperimental users were asked several questions about each substance including: a) age of onset, b) frequency of use within the past year, c) recency of use, d) if appropriate, whether they had used the drug IV, and e) if appropriate, if they had driven a car while high or intoxicated from the substance. Information was also obtained about whether substance use ever produced troubles at school, difficulties with friends, criticism by family members, troubles with police, accidents in a car or accidents at home, or health problems. DSM-IV questions were asked that permitted assessment of whether respondents met diagnostic criteria for alcohol or drug dependency or abuse.

Substance Dependence and Abuse

In addition to this information about use of alcohol and drugs, the interview also gathered information that would permit classification into the following diagnostic criteria:

Lifetime Substance Dependence. Closed ended questions following DSM-IV criteria (APA, 1994) were asked to determine whether abuse or dependence criteria were met for each type of substance (alcohol, marijuana, and other drugs). Dependence was defined by presence of three or more of the following symptoms: (1) Tolerance, defined by endorsement of either a need for markedly increased amounts of the substance to become intoxicated/high or to have the desired effect or markedly diminished effect with continued use of the same amount of the substance; (2) Withdrawal, manifested by report of two or more reactions including tachycardia, trembling, sleep disturbance, nausea, increased anxiety, seizures, hallucinations, or marked agitation upon suddenly stopping intake to prevent or stop hangover or other withdrawal symptoms; (3) Report of substance use in larger amounts or over a longer period that was intended; (4) Persistent desire or unsuccessful efforts to cut down or stop substance use; (5) Report of spending a lot of time to get or use substance, or to recover from use; (6) Report that specific substance use caused a reduction or elimination of school, work, social, family or recreational activities; (7) Reports of continued use of substance despite the psychological or physical problems that it caused.

Current Substance Dependence. Positive if lifetime criteria for substance dependence were not met and the person reported several of these problems within the year prior to interview.

Lifetime Substance Abuse. Determined separately for alcohol, marijuana, and other drugs. Abuse was defined as a maladaptive pattern of substance use leading to impairment as evidenced by one or more of the following problems specific to that substance: (1) Report that use ever caused major problems with family, friends, school or work; (2) Report of substance use in hazardous situations including driving a car or boat, swimming, crossing the street in heavy traffic, or other situations in which the individual might get hurt; (3) Arrests or problems with the police because of substance use, including driving while intoxicated, drunk and disorderly, or stealing to obtain drugs; (4) Report of continued use of substance despite problems with family or friends about the substance use, including fights, arguments, or other relationship problems. In addition to meeting these criteria, the individual must not have met lifetime substance dependence criteria for that particular drug or alcohol;

Current Substance Abuse. One or more of the problems listed above (a-d) for determination of lifetime abuse, occurring within the year prior to the interview and specific to each type of substance. In addition, the individual must not have met lifetime substance dependence criteria for that particular drug or alcohol.

Delinquent Behaviors

Information was obtained regarding the frequency with which respondents had committed Index Offenses as defined within the National Youth Survey (Elliott et al., 1985), including assessment of aggravated assault, sexual assault, gang fights, theft of a motor vehicle, theft of items greater than $50 in value, breaking into a building/motor vehicle, and aggressive behavior towards students, teachers or others. In addition to whether respondents had committed such offenses during the past year, information was also gathered regarding the frequency of delinquent behaviors, the age at which delinquent involvement began was determined. According to Ageton (1983), the test-retest reliability index for types of offenses reported at a four week retest was .87.

RESULTS

Overview of Data Analytic Strategy

Analyses were conducted in three stages. In the first stage, analyses were conducted to provide descriptive information about the prevalence and descriptive characteristics of major study variables. As part of these descriptive analyses, major personal victimization, mental health, substance use, and delinquency variables were broken down by gender, age, and race/ethnicity to permit evaluation of these demographic variables as risk. These results are reported in Tables 3 through 6, Figures 1 through 11, and in the text if this section. In the second stage, the previously outlined hypotheses were tested. In the third stage, follow-up analyses were conducted to investigate interesting findings and research questions that had not been hypothesized previously.

Family Problem Substance Use Variables

Overall, 528 adolescents, or 13.1% of the sample, reported that a family member or someone who lived with the adolescent drank alcohol so much they got into fights with other people, beat the children, couldn't get our of bed the next day, or had difficulty holding a job. The prevalence of having a family member with a alcohol problem was significantly related to the adolescent's age. For 12, 13, 14, 15, 16, and 17 years old, respective prevalence rates were 9.3%, 9.9%, 12.4%, 14.1%, 15.4%, and 17.9%. Thus, older adolescents were more likely than young adolescents to report family alcohol problems. Female adolescents were significantly more likely than male adolescents to report family alcohol problems (15.0% vs 11.3%). With the exception of Asians, White adolescents were significantly less likely to report family alcohol problems compared to all other racial/ethnic groups (see Table 3).

With respect to having a family member who used hard drugs or had a drug problem, 8.9% of all adolescents (n=358) reported having a family member with such problems. This variable was significantly related to age, with respective prevalence rates for 12, 13, 14, 15, 16, and 17 years old being 5.7%, 7.2%, 9.0%, 11.7%, 11.5%, and 9.4%. Female adolescents were more likely to report such family problems than male adolescents (7.0% vs 10.8%). Again, with the exception of Asian adolescents, White adolescents were significantly less likely to report family problems with drugs than nonwhite adolescents (see Table 3).

Personal Victimization

Sexual Assault

A total of 326 adolescents, or 8.1% of the sample, reported having experienced at least one sexual assault prior to the interview. Of those who reported having experienced at least one sexual assault, 58.3% had experienced only one, and 41.7% had experienced more than one. As noted in Table 3, Native American adolescents had the largest prevalence rate for sexual assault and Whites and Asians reported the lowest. Table 4 presents the types of assaults experienced.

Age at Time of the Assault. The 326 adolescents reporting having ever been sexually assaulted had experienced 462 cases of sexual assault. When asked about their age at the time they were assault, 29.9% said they were less than age 11; 16.3% said they were 11 or 12; 20.8% said they were 13 or 14; 20.8% said they were 15 or 16; 1.7% said they were 17, and the remaining 8.7% said they were not sure or refused to answer.

Relationship to the Perpetrator. Presented in Figure 1 is a breakdown of the relationship between the victim and the perpetrator in the 462 sexual assault cases. Almost one third of sexual assault cases (32.5%) involved perpetrators who were friends, and 23.2% of perpetrators were strangers, defined as someone the victims had never seen before or who they had seen before but did not know well. Other types of perpetrators included fathers, stepfathers, brothers or stepbrothers, sisters or stepsisters, grandparents, other adult relatives, other child relatives, neighbors, coworkers, other children, or other adults. These percentages may total more than 100% because some sexual assaults including more than one perpetrator.

Location of Assault. Victims were asked the location in which the sexual assault occurred. As depicted in Figure 2, the most frequent locations were the victim's house or neighborhood, the victim's school, or a friend's house.

Life Threat and Physical Injury. Slightly more than one in four sexual assault victims (28.1%) said they feared death or serious injury during their sexual assault. However, the majority (69.5%) said they had no such fears (69.5%). A small percentage (2.4%) were not sure or refused to answer the question. With respect to physical injuries, only 1.3% of sexual assault cases resulted in serious injuries, and 11% resulted in minor injuries. The remaining sexual assault cases either produced no physical injuries (85.5%) or the victim was not sure of the degree of injury or refused to answer (2.2%).

Reporting of Cases to Authorities. Victims were asked if their sexual assault had ever been reported to police or other authorities. The vast majority of sexual assault cases were never reported to police or other authorities (85.7%). However, 13% of cases were reported to police, 5.8% to child protective services, 5% to school authorities, and 1.3% to other authorities. In four percent of the cases, victims were not sure whether cases were reported or they refused to answer this question.

Physical Assault

A total of 701 adolescents, or 17.4% of the sample, had been victims of at least one physical assault. Of these adolescents, 44.9% had experienced more than one physical assault. In total, the 701 adolescents reported 1054 cases of physical assault. Native Americans, African Americans, and Hispanics reported the largest prevalence of physical assaults with one of five to one of four of these racial/ethnic groups reporting experiencing at least one assault. Asians reported the lowest prevalence rate of one out of 15. Table 4 presents the types of assaults experienced.

Age at Time of Assault. At the time of these physical assault cases, 21.3% of victims were under the age of 11; 21.3% were 11 or 12; 27.1% were 13 or 14; 21.7% were 15 or 16; 4.1% were 17, and 4.2% were not sure or refused to answer this question.

Relationship to the Perpetrator. As Figure 3 indicates, perpetrators were strangers in slightly more than one-third of the cases (36.4%), and 20.5% were identified as friends. Less commonly reported perpetrators included family members, other adult or child relatives, neighbors, or coworkers. Victims were unable to identify the perpetrator or refused to answer in only 1.7% of cases.

Location of Assault. Presented in Figure 4 is a breakdown of the location in which physical assault cases occurred. Assaults were most likely to have occurred near the victim's neighborhood, in the victim's house, and at school. Assaults were less likely to occur outside the victim's neighborhood, at a friend's house, at a relative's house, or somewhere else.

Life Threat and Physical Injury. Over half of physically assaulted adolescents (52.4%) said they feared being seriously injured or killed. However, most victims reported that they had

not sustained any physical injuries (47.5%), with close to half reporting minor injuries (45.1%), and only a small percentage (4.5%) reporting serious injuries (4.5%). Only a few victims were unsure about the extent of injuries or refused to answer (2.9%).

Reporting to Police or Other Authorities. The majority of physical assault cases (65%)were never reported to any authorities. Adolescents in 2.8% of cases were not sure if reports had been made, or refused to answer the question. Of the cases that were reported, most were reported to police (16.9%) or school authorities (16.3%). The remaining cases included reports to other authorities (3.8%) or child protection agencies (2.8%).

Physically Abusive Punishment

Almost one out of ten adolescents (9.4%) had been victims of at least one incident of severely physically abusive punishment prior to the interview. Native Americans and African Americans reported the largest prevalence of approximately one of six children. Asians, Whites and Hispanics reported the lowest prevalence of approximately one in 12 children. Table 4 presents the types of punishment experienced.

Witnessing Violence

Overall, 39.4% of the sample of adolescents reported having witnessed one or more serious incidents of violence. Nearly one in 20 adolescents actually had seen someone shot with a gun, and one in 10 actually had seen someone stabbed or cut with a knife. One in 25 girls had witnessed a sexual assault. One out of three children actually had seen someone threatened with a weapon of some type.

Posttraumatic Stress Disorder

Among this sample of adolescents, 8.1% had met DSM-IV diagnostic criteria for PTSD at some time during their lifetime (labeled in future analyses as “Lifetime PTSD”). A total of 4.9% of these adolescents met diagnostic criteria for PTSD at the time of the interview (labeled in future analyses as “Current PTSD”). African American and Hispanic youth had a lifetime prevalence rate of PTSD that was nearly twice that of Asian, White and Native American teenagers.

Substance Use/Abuse Dependence

Past-Year and Lifetime Alcohol, Marijuana, and Hard Drug Use

The rate of past year alcohol use was 39.8% in the total sample, and 53.9% of the sample indicated that they had used alcohol at least once during their lives (recall that the sample includes children aged 12-17 years). The rates of past-year and lifetime and marijuana use were 8.6% and 14.5%, respectively; and the rates of past year and lifetime hard drug use were 2.2% and 9.6%.

Past-Year and Lifetime Alcohol, Marijuana, and Hard Drug Abuse or Dependence

Utilizing DSM-IV diagnostic criteria, the rate of past year alcohol abuse or dependence in the total sample was 3.9%. The lifetime alcohol abuse/dependence rate was 5.6%. Similarly, the rate of past-year marijuana abuse or dependence was 3.7%, with a lifetime abuse or dependence rate of 4.5%. Finally, the rate of past year hard drug abuse or dependence was 0.9%, whereas the rate of lifetime hard drug problem use was 1.2%.

Past-Year and Lifetime Abuse or Dependence of Any Substance

Overall, 6.2% of the sample met DSM-IV diagnostic criteria for past year abuse of a substance (alcohol, marijuana, or hard drugs); 0.7% met criteria for past-year substance dependence and 6.89% met criteria for past year substance abuse or dependence.

Delinquent Behavior

Among these adolescents, one of eight (12.3%) reported having committed at least one index offense sometime during their life prior to the interview, and nearly one in ten (9.5%) reported having committed at least one index offense during the year prior to the interview. As noted in Table 3, Native Americans had a lifetime index offense rate that was three times that of Asian adolescents. African Americans had a rate that was twice that of Whites.

Rates of Personal Victimization, Witnessing Violence, PTSD, Substance Use/Abuse/Dependence, and Delinquency Variables by Demographic Characteristics

One advantage of the NSA sample is that it included large numbers of male and female adolescents, different age cohorts, and adolescents of different racial/ethnic groups. This permits analysis on how various demographic groups differ with respect to major variables of interest. Such comparisons also permit testing of several project hypotheses that there will be gender differences in rates of personal victimization, PTSD, substance use/abuse/dependence, and delinquent behavior.

Sexual Assault

Gender. As inspection of Table 4 indicates, the hypothesis that female adolescents would have significantly higher prevalence rates of sexual assault than males was supported. Overall, the lifetime prevalence of any sexual assault was 13.0% for girls and 3.4% for boys ($X^2 = 123.0$, $p<.001$). Of the types of sexual assault, all were more prevalent among girls except oral contact. Only boys were asked if they had ever been forced to penetrate others against their will.

Age. Prevalence of sexual assault was positively associated with age as is depicted in Figure 5. For example, lifetime prevalence rates for 12 and 13 year olds were 3.6% and 4.6%, whereas those for 16 and 17 year olds were 13.7% and 11.9%.

Race/Ethnicity. The lifetime prevalence of sexual assault significantly differed across racial/ethnic groups, with Whites and Asians reporting the lowest rates (see Table 3).

Physical Assault

Gender. As hypothesized, male adolescents had higher prevalence rates of any physical assault than female adolescents (21.3% vs 13.4%)($\underline{X}^2 = 43.4$, $\underline{p}<.001$). Rates of individual types of physical assault broken down by gender are presented in Table 4. All were more prevalent among boys.

Age. As was the case for sexual assault, the prevalence of physical assault increased significantly over age cohorts (see Figure 5). It is noteworthy that almost one in four 17 year olds had experienced a physical assault (24.1%).

Race/Ethnicity. Similar to sexual assault, the lifetime prevalence of physical assault significantly differed among racial/ethnic groups, with Whites and Asians reporting the lowest rates (see Table 3).

Physically Abusive Punishment

Gender. As inspection of Table 4 indicates, male and female adolescents did not differ significantly in the overall prevalence of physically abusive punishment. However, girls were more likely than boys to be spanked so hard they had to see a doctor ($X^{2=} 6.1$, $\underline{p}<.05$).

Age. Figure 5 presents the lifetime prevalence of physically abusive punishment broken down by age cohorts. Older adolescents were significantly more likely to have experienced physically abusive punishment than younger adolescents.

Race/Ethnicity. As indicated in Table 3, African American and Native American reported the highest rates of physically abusive punishment, with Whites and Asians reporting the lowest.

Witnessing Violence

Gender. Male adolescents were significantly more likely than female adolescents to have ever witnessed violence (see Table 4). All forms of violence were more likely to be witnessed by boys than girls, with the exception of witnessing a sexual assault. Girls were twice as likely as boys to have witnessed a sexual assault.

Age. As is evident from inspection of Figure 6, the percentage of adolescents who had ever witnessed violence increased significantly over age cohorts. Approximately one in four 12 year olds had witnessed violence (26.9%), but nearly half of 17 year olds had (49.5%).

Race/Ethnicity. Significant differences in witnessing violence were found across racial/ethnic groups, with Whites and Asians again reporting the lowest rates (see Table 3).

PTSD

Gender. Female adolescents were significantly more likely than male adolescents to have lifetime (10.1% vs 6.2%) or current PTSD (6.2% vs 3.7%).

Age. The prevalence rates of lifetime and current PTSD by age cohorts are presented in Figure 7 and clearly document that rates of PTSD increase significantly with increasing age. It is noteworthy that the rates of lifetime and current PTSD among 17 year olds were 13.1% and 8.4% respectively.

Race/Ethnicity. As seen in Table 3, rates for both current and lifetime PTSD differed significantly across racial ethnic groups. For current PTSD, Whites and Native Americans reported the lowest rates. However, for lifetime PTSD, Whites, Native Americans and Asians had significantly lower rates than African American and Hispanic adolescents.

Substance Use

Gender. There was no significant difference in the percentage of male and female adolescents who had ever used alcohol (54.1% vs 53.7%). However, the prevalence of heavy alcohol use during the past year was significantly higher among male than among female adolescents (16.9% vs 13.4%). Rates of lifetime non-experimental use of illicit drugs did not differ significantly among male and female adolescents (10.2% vs 10.4%). Past year drug use also did not differ as a function of gender (9.4% vs 8.3%, male and female adolescents, respectively)

Age. Presented in Figure 8 is a breakdown of rates of lifetime alcohol use and past year heavy alcohol use by age cohort. For both of these variables, there was a significant relationship between age and increased likelihood of alcohol use. For example, nearly one in four 12 year olds had used alcohol (24.7%), compared to almost three-quarters of 17 year olds (73.9%). Only 2.8% of 12 year olds had past year heavy alcohol use, but almost one-third of 17 years olds reported heavy use of alcohol (31.2%).

A similar pattern emerged for lifetime and past year use of illicit drugs, as is depicted in Figure 9. Whereas only 0.6% of 12 year olds had used illicit drugs, 20.6% of 17 year olds reported such use. Likewise, only 0.4% of 12 year olds reported past year drug use, but 17.8% of 17 year olds did. As depicted in Figure 9, past year illicit drug use closely tracks lifetime use. This trend indicated that most teenagers who begin to use illicit drugs continue to do so.

Race/Ethnicity. As seen in Table 3, neither lifetime nor past year alcohol use significantly differed across racial/ethnic groups. The only racial/ethnic differences in substance use was for lifetime marijuana use with African American and Asian adolescents reporting the lowest use (see Table 3).

Current Substance Abuse/Dependence

Gender. Male adolescents were significantly more likely than female adolescents to have met DSM-IV diagnostic criteria for alcohol abuse or dependence. They were also significantly more likely to have met diagnostic criteria for marijuana abuse or dependence (4.3% vs 3.0%), but the rates of past year hard drug abuse or dependence were identical for male and female adolescents (0.9% vs 0.9%).

Age. Depicted in Figure 10 are the past year rates of alcohol, marijuana, and hard drug abuse/dependence broken down by age cohort. Each type of abuse/dependence was significantly related to age. These findings reflect the extent to which risk of alcohol and drug problems increase dramatically over the period of adolescence. For example, rates of alcohol, marijuana, and hard drug abuse/dependence among 12 year olds were 0.3%, 0.2%, and 0.0% respectively. Corresponding rates among 17 year olds were 10.4%, 6.9%, and 2.1%.

Race/Ethnicity. There were no significant differences between non-whites and whites in terms of alcohol abuse/dependence (3.0% vs. 4.2%, respectively), marijuana abuse/dependence (3.0% vs. 3.9%), or hard drug abuse/dependence (0.7% vs. 1.0%).

Delinquent Behaviors

Gender. As hypothesized, male adolescents were significantly more likely than female adolescents to have ever committed an index offense (17.7% vs 6.7%) (X^2 =111.0, p<.001) and to have committed one during the past year (13.8% vs 5.0%) (X^2 = 90.8, p<.001). As seen in Table 6, male adolescents were more likely than female adolescents to have committed each type of offense.

Age. The proportion of adolescents who had ever committed an index delinquent offense and those who had committed one during the past year increased significantly with age, as is depicted in Figure 11.

Race/Ethnicity. Non-Caucasians had significantly higher rates of lifetime index delinquent offenses than did Caucasians (18.1% vs 9.9%). This was also the case for past year delinquent offenses (14.5% vs 7.4%). Specifically, white and Asian adolescents were significantly less likely to report past year or lifetime delinquent offenses (see Table 3).

Univariate Relationships Between Victimization Variables and Dependent Variables

Posttraumatic Stress Disorder (Current and Lifetime)

Sexual Assault and PTSD. Of male adolescents with one sexual assault, 17.3% met criteria for current PTSD, and 19.4% met lifetime criteria for PTSD; 37.9% of boys who experienced more than one sexual assault were positive for current PTSD, and 40.6% were positive for lifetime PTSD. Rates of current and lifetime PTSD in boys who had not been sexually assaulted were 2.9% and 5.4%, respectively.

For girls, one sexual assault was associated with a current rate of PTSD of 16.7% and a lifetime rate of 27.0%. Girls experiencing multiple sexual assaults were at greater risk, with 19.5% presenting with current PTSD, and 33.9% having lifetime PTSD. Comparatively, 4.4% of female adolescents with no assaults met criteria for current PTSD and 7.1% met criteria for lifetime PTSD.

Physical Assault or Physically Abusive Punishment and PTSD. For male respondents, 6.9% who experienced one instance of physical assault or abusive punishment had

current PTSD, and 11.9% had lifetime PTSD. Two episodes of physical assault resulted in current and lifetime rates of PTSD equal to 13.5% and 20.0%, respectively. The current rate of PTSD in boys who had not been physically assaulted or abused was 1.7%, and the lifetime rate was 3.2%.

In female adolescents, the rate of current PTSD associated with one episode of physical assault or abusive punishment was 13.9%, and the rate of lifetime PTSD was 21.3%. In girls with multiple physical assaults, 23.4% had current PTSD, and 39.5% had lifetime PTSD. By contrast, among girls with no physical assault history, 3.6% had current and 6.0% had lifetime PTSD.

Witnessed Violence and PTSD. Approximately 3.4% of male adolescents who witnessed violence presented with current PTSD, and 7.5% reported lifetime PTSD. The rate of current PTSD in boys who had witnessed more than one act of violence was 12.2%, and the lifetime rate of PTSD was 16.8%. Boys who reported never witnessing violence had a current PTSD rate of 1.2% and a lifetime rate of 2.3%.

Girls who witnessed one act of violence had a current PTSD rate of 9.8% and a lifetime rate of 17.2%. Female adolescents who witnessed multiple acts of violence also had higher rates of PTSD (17.4% current; and 27.3% lifetime). Only 2.8% of female adolescents who reported no history of witnessed violence met current criteria for PTSD, and 4.3% met criteria for lifetime PTSD.

Any Substance Abuse/Dependence (Current and Lifetime)

Sexual Assault and any Substance Abuse/Dependence. More than one-fourth (27.3%) of boys who had been sexually assaulted demonstrated current problematic substance use, and 34.4% of sexually abused boys had problem substance use during their lifetimes. Rates of current and lifetime substance abuse/dependence in boys who had not been sexually assaulted were 7.1% and 9.0%, respectively.

For girls, sexual assault was associated with a current substance use/abuse rate of 21.0%, and a lifetime rate of 27.5%. Comparatively, 3.6% of female adolescents who had not been sexually assaulted were current substance abusers and 5.4% were lifetime substance abusers.

Physical Assault and any Substance Abuse/Dependence. Rates of problematic substance use in boys following physical assault were also high, with 19.4% of male respondents reporting current substance abuse/dependence and 24.0% reporting lifetime abuse/dependence. Only 4.7% of boys who were not physically assaulted were current substance abusers, and 6.1% were lifetime abusers.

Rates for girls mirrored those of boys. Physical assault was associated with a current substance abuse/dependence rate of 20.1% and a lifetime rate of 26.4% in female adolescents. Girls who were not physically assaulted had lower rates of current and lifetime use (3.7% and 5.5%, respectively).

Physically Abusive Punishment and any Substance Abuse/Dependence. Physically abusive punishment produced rates of problematic substance use similar to those produced by physical assault in boys, but produced somewhat less pronounced effects in girls. Specifically, 19.7% of boys who experienced physically abusive punishment reported current substance abuse/dependence, and 23.4% reported lifetime problematic substance use. By contrast, 6.7% of boys who were not abused reported current problematic substance use, and 8.6% reported problematic substance use at some time during their life.

Approximately 12.4% of female adolescents who were physically abused reported that they were currently substance abusers/dependent, and 17.3% were lifetime problem substance users. Five percent of girls who did not experience physically abusive punishment were current substance abusers and 7.2% reported lifetime substance abuse/dependence.

Witnessed Violence and any Substance Abuse/Dependence. Approximately 13.9% of boys who witnessed violence were current substance abusers, and 17.0% were lifetime abusers. However, only 3.2% of boys who did not witness violence reported current substance abuse/dependence, and 4.4% reported lifetime problematic substance use.

Rates for girls again paralleled those of boys. About 13.2% of female adolescents who had witnessed violence were current substance abusers/dependent, and 17.8% had lifetime substance abuse/dependence. By contrast, only 2.0% of girls who did not witness violence evinced current, and 3.1% evinced lifetime substance abuser or dependence.

Past-Year Delinquency

Sexual Assault and Past Year Delinquency. Fully 41% of the sexually assaulted males reported engaging in delinquent acts, compared to 13% of those not sexually assaulted. Fewer (15%) sexually assaulted females reported engaging in delinquent acts, but this rate was five times higher than that for girls who were not sexually assaulted (3%) (see Figure 12).

Physical Assault and Past Year Delinquency. The proportion of physically assaulted boys who engaged in past year delinquent acts was 36.9%, compared to 7.5% of non-assaulted boys. Similarly, 23.5% of physically assaulted female adolescents reported past year delinquent acts compared to 2.1% of non-assaulted girls (see Figure 12).

Physically Abusive Punishment and Past Year Delinquency. The results for physically abusive punishment resembled those of assault in that 35.8% of abused boys engaged in delinquent acts compared to 11.7% of non-abused boys. Approximately 15.4% of abused girls participated in past-year delinquent activities, relative to 3.8% of non-abused girls (see Figure 12).

Witnessed Violence and Past Year Delinquency. About a fourth (25%) of males who witnessed violence reported engaging in delinquent acts, compared to only 5% of boys who did not witness violence. About 13% of girls who witnessed violence reported delinquency, compared to 1% of girls who did not witness violence (see Figure 12).

Multivariate Analyses of the Relationship Between Violence Exposure and Posttraumatic Stress Disorder

Overview of Analyses

The primary objective of this set of analyses was to test the hypothesis that exposure to sexual assault, physical assault, and witnessing violent events increases risk of PTSD after controlling for the effects of other variables that might be expected to influences risk of PTSD such as demographic characteristics and family environment.

Three types of data analyses were conducted:

1. Rates of violence exposure were compared by gender

2. Analyses were conducted to determine whether demographic, family environment, and violence exposure variables were risk factors for lifetime PTSD.

3. Multivariate logistic regression analyses were used to test the hypothesis that exposure to violence increases risk of PTSD after controlling for the effects of demographic and family violence variables.

Results of Univariate Analyses

As has been described previously, rates of each type of violence differed significantly by gender as well as by race in most cases. Presented in Figure 13 are results of analyses comparing rates of PTSD among male and female adolescents with and without family members with alcohol or drug problems. As inspection of this figure illustrates, female adolescents had higher rates of PTSD than male adolescents, and adolescents with family members who had alcohol or drug problems had higher rates of PTSD than those who did not.

Results of Multivariate Logistic Regression Analysis

To test the hypothesis that extent of multiple exposure to violence would increase risk of PTSD after controlling for the effects of other variables, a hierarchical multivariate logistic regression analysis was conducted using lifetime PTSD as the dependent variable. Multivariate logistic regression analyses are employed to determine the odds of a dichotomous dependent variable (i.e., PTSD) based upon the level of one or more variables of interest.

In Step 1 of this analysis, the demographic variables age, gender, and race were entered simultaneously. Four race groups were represented as three indicator variables: African American, Hispanic, and Native American, with White/Caucasian as the reference category. For these analyses, Asians were combined with the white, non-Hispanic group, the group they most closely approximated in terms of victimization and substance abuse variables (i.e., there were no significant differences between these groups in rates of sexual assault, witnessing violence, alcohol, marijuana, or hard drug use). In the second step, family alcohol problems and family drug problems were entered. In the third step,

personal victimization (i.e., sexual assault, physical assault/physically abusive punishment) was entered and in the final step, the witnessing violence variable was entered.

Table 7 includes the results of this analysis. Odds ratios (OR) in the Step OR column represent the increase in odds of PTSD, controlling for the effects of variables entered at the same or previous steps. Odds ratios in the Final OR column represent the unique increase in odds of PTSD when controlling for the effects of all other variables in the final model. To interpret ORs, the range of the variable must be considered. For example, if a variable has a one unit range (i.e., 0 to 1), an OR of 2.0 would indicate that the risk of group membership (e.g., PTSD diagnosis) is twice as great for those with a score of 1 than for those with a score of 0. For variables with more than a one unit range and the same OR of 2.0, there is an exponential increase in risk for each additional unit change in the variable, regardless of the baseline level of the variable. Thus, individuals with a score of two would have odds four times greater than those with a score of zero of having the dependent variable.

As seen in Table 7, at Step 1, age, gender, and all three racial/ethnic groups each significantly increased the odds of PTSD after controlling for the effects of the other demographic variables. Since age was a multilevel variable with six values (i.e., 12, 13, 14, 15, 16, 17 years old), the risk of PTSD with each increase in age was exponential. Thus, 15 year olds are twice as likely to develop PTSD as 12 year olds ($OR=1.28^3$ **= 2.1). In Step 2 of the analyses, both family alcohol problems and family drug problems were significantly related to odds of PTSD. In Step 3 of the analyses, each of the personal victimization variables increased odds of PTSD significantly after controlling for each other and all other variables in the model. Step 4 indicated that witnessing violence significantly increased odds of PTSD after controlling for the other variables in the model.**

Inspection of the final odds ratio in Table 7 reveals several interesting findings. First, being Hispanic or Native American no longer increased the odds for PTSD. Second, the effects of age and gender remained significant, but effects of age were reduced in magnitude, suggesting that its effect on odds of PTSD were at least partially mediated by the effect of family alcohol or drug problems and exposure to violence. Third, the effects of family alcohol or drug problems also remained significant, but were reduced in magnitude after controlling for violence exposure, suggesting that the effects of these variables also appear to be at least partially mediated by violence exposure.

These findings supported the hypothesis that extent of exposure to violence is an important risk factor for PTSD even after controlling for a host of other relevant variables. This finding is further illustrated in Figures 14-16, which depict rates of lifetime PTSD as a function of the number of violent incidents adolescents had experienced or witnessed.

Multivariate Analyses of the Relationship Between Violence Exposure and Past Year Substance Abuse/dependence

Overview of Analyses

The major objective of this set of analyses was to test key project hypotheses about the relationships between exposure to violence and likelihood of developing substance abuse and dependence. The first hypothesis is that exposure to violence will increase likelihood of substance abuse and dependence. A second hypothesis is that PTSD will increase risk of substance abuse and dependence. The final hypothesis is that exposure to violence and developing PTSD will increase risk of substance abuse/dependence after controlling for relevant demographic and family history variables.

These analyses focused on substance abuse/dependence rather than substance use. Adolescents who meet DSM-IV diagnostic criteria for substance abuse or dependence are clearly experiencing major problems associated with their use of alcohol or other drugs, and it is important to understand factors associated with those adolescents who are having the most problems associated with their substance use. Analyses were conducted separately for past year alcohol abuse/dependence, past year marijuana abuse/dependence, and hard drug abuse/dependence. DSM IV criteria were used to determine whether each adolescent had met criteria for alcohol, marijuana, or hard drug abuse or dependence within the past year.

Multivariate logistic regression analyses tested the hypothesis that exposure to violence and having current PTSD will increase risk of alcohol, marijuana, and hard drug abuse/dependence after controlling for the effects of demographic and family history variables. For these analyses, demographic variables were entered on the first step, followed by family alcohol and drug problems on Step 2, personal victimization variables on Step 3, witnessing violence on Step 4, and current PTSD on Step 5.

Results of Multivariate Logistic Regression Analyses

Alcohol Abuse/Dependence. Table 8 includes the results of the multivariate logistic regression analyses examining risk of alcohol abuse/dependence. In the first step of this analysis, age and gender significantly increased odds of alcohol abuse/dependence. In Step 2, family alcohol, but not family drug, problems increased odds significantly. In Step 3, sexual assault and physical assault/abuse each increased odds of alcohol abuse/dependence. Witnessing violence increased odds of PTSD after controlling for all other previously entered variables. When current PTSD was entered in the last step, it did not increase odds of alcohol abuse/dependence after controlling for the effects of all other variables.

Inspection of the OR's in the final model reveals several interesting findings. First, when the effects of all other variables were controlled, the demographic variables of age, gender, and being African American all had a significant relationship to alcohol abuse/dependence. Odds of alcohol abuse/dependence increased substantially with age, as might be expected. Odds were higher among male adolescents than among female adolescents and lower among African Americans compared to Whites. Second, the effect of family alcohol problems remained significant after controlling for the effects of all other variables, although odds were reduced in magnitude. Third, exposure to violence increased odds of alcohol abuse/dependence substantially and continued to do so after controlling for other variables, as had been

hypothesized. Fourth, current PTSD did not significantly increase odds of alcohol abuse/dependence after controlling for the effects of all other variables as was hypothesized.

Marijuana Abuse/Dependence. Depicted in Table 9 are the results of the multivariate logistic regression analyses examining odds of marijuana abuse/dependence. In Step 1, age and male gender increased odds significantly whereas being African American reduced the odds of marijuana abuse/dependence. In Step 2, family alcohol problems and family drug problems increased odds significantly. In Step 3, adolescents who were sexually assaulted and those who were physically assaulted had significantly higher odds of marijuana abuse/dependence than their counterparts who had never been assaulted. In Step 4, having witnessed violence significantly increased odds of marijuana abuse/dependence after controlling for effects of all other previously entered variables. In Step 5, odds increased significantly among adolescents with current PTSD vs. those who did not after controlling for the effects of all other variables.

In the final model, age and male gender were associated with higher odds of marijuana abuse/dependence, whereas African American race reduced the likelihood. Family drug problems, but not family alcohol problems, also increased odds of marijuana abuse/dependence. Physical assault, but not sexual assault, significantly increased odds for marijuana abuse/dependence. As hypothesized, witnessing violence significantly increased odds of marijuana abuse/dependence after controlling for the effects of demographic variables and family drug problems. Also as hypothesized, current PTSD increased odds of marijuana abuse/dependence after controlling for the effects of demographic variables, family drug problems and exposure to violence.

Hard Drug Abuse/Dependence. As described in Table 10, age was the only demographic variable found to increase the odds of hard drug abuse/dependence. Family alcohol problems and family drug abuse problems both significantly increased odds of hard drug abuse/dependence. Sexual assault, physical assault/physically abusive punishment and witnessing violence all significantly increased odds of hard drug abuse/dependence. In contrast, current PTSD did not significantly increase odds of hard drug abuse/dependence.

In the final model, age increased the odds, but being African American significantly reduced the likelihood of hard drug abuse/dependence. Both family alcohol and family drug problems significantly increased odds. As hypothesized, exposure to violence increased odds of hard drug abuse/dependence after controlling for the effects of demographic and family alcohol and drug problems. Finally, the hypothesis that current PTSD would increase odds after controlling for effects of all other variables was supported.

Timing of Exposure to Violence and First Use of Alcohol or Drug

Given the aforementioned strong relationships between exposure to violence and odds of alcohol abuse/dependence, marijuana abuse/dependence, and hard drug abuse/dependence, an obvious question arises as to whether use of substances preceded the violent assaults or visa versa. To examine this timing issue, we examined data from 318 adolescents who reported having been a victim of physical or sexual assault and who reported having ever used alcohol,

marijuana, or hard drugs. Based on information they provided about the year they were first assaulted and the year they first consumed alcohol, marijuana, and hard drugs, they were classified into three groups for each substance:

- First substance use preceded year of first assault
- First assault preceded year of first substance use.
- First substance use and first assault occurred during the same year

Next, the proportion of the 318 adolescents falling into each of the three groups for each of the three substances was determined. About one out of four adolescent victims who had ever used substances said they had used them in a year prior to the year they were assaulted (25.6% for alcohol use, 31.0% for marijuana use, and 19.8% for hard drug use). One out of five adolescents said that their first substance use and first assault occurred during the same year (20.6% for alcohol, 21.2% for marijuana, and 16.7% for hard drugs). However, over one half of adolescent victims said that their first use of substances occurred *after* the year they were first assaulted (53.8% for alcohol, 47.8% for marijuana, and 63.5% for hard drugs). Unfortunately, within a given year, it was not possible to determine the order in which the assault or the substance use occurred (i.e., which came first within a given year). Also, information was not asked about the year in which incidents of witnessed violence or physically abusive punishment occurred, thereby precluding an analysis of the timing of these events *vis a vis* first use of substances. Nevertheless, it appears that more adolescent assault victims were assaulted before they ever used alcohol or drugs than visa versa.

Multivariate Analyses of the Relationship Between Violence Exposure and Past Year Delinquency

Initial multivariate models were developed for predicting the commission of at least one index offense within the year prior to the survey by dividing the sample by gender. Results of the univariate analyses reported above provide the rationale for developing separate models for boys and girls. Specifically, gender differences were found for prevalence of past year delinquent acts (boys higher than girls), prevalence of sexual assault (girls higher than boys), and prevalence of physical assault (boys higher than girls). These univariate analyses suggest that victimization may play different roles in the development of delinquent behavior for male and female adolescents.

Tables 11 and 12 presents results from two hierarchical logistical regressions predicting the commission of at least one index offense in the past year, one for male adolescents and one for female adolescents. Similar to the previous models, demographic variables were entered in step 1, family history of substance use in step 2, personal victimization variables in step 3, witnessing violence in step 4, lifetime PTSD in step 5 and problem substance use in step 6. Odds ratios for each variable at the time of entry into the model (step) and for the final model are presented.

Examination of the final model for female adolescents indicates that being African American tripled the odds of past year delinquency. None of the other demographic variables

were significant. Familial substance use more than doubled the likelihood of delinquency. Surprisingly, sexual assault history, while significant in the step entry, was not significant in the final mode.. However, physical assault and witnessing violence significantly increased the odds of past year delinquency. Findings indicated that adolescent females with a history of witnessing violence were more than four times as likely to commit delinquent acts in the past year, even after controlling for other significant variables. History of PTSD was significant in the final model. As seen in Table 11, the most significant predictor of delinquency for females was substance use with an odds ratio of 7.3.

A slightly different pattern of results were found for adolescent males and is presented in Table 12. In this model, being Hispanic and Native American significantly increased odds for past year delinquency. Similar to the females, family substance use (both alcohol and drug use) were significant in the final model. History of physical assault and abuse was also a significant predictor for the boys with an increase in odds of nearly three times. Also similar to girls, a history of sexual abuse was not significant in the final model. Witnessing community violence also was a significant predictor among boys, with an odds ratio of 2.83. Like the girls, substance abuse was the largest predictor of all (OR = 4.47). Having a history of PTSD was not significant in the final model.

In an effort to further specify predictive models with these variables, separate logistic regressions were conducted on individual gender by racial/ethnic identification groups. Unfortunately, even with the relatively large sample size of this study, there were sufficient numbers within individual cells to examine only the White and African-American adolescents in the sample using this approach. Results for White and African-American males are presented in Table 13, and results for White and African-American females are presented in Table 14. The predictor variables for these analyses were slightly different from those above. Only age and income were entered as demographic controls since gender and race/ethnic identification were already controlled by limiting and dividing the samples. History of physical assault and history of physical abuse (i.e., harsh physical discipline) were divided into two separate variables for more precise analysis. These four analyses give gender and racial/ethnic group-specific models for predicting past year delinquent behavior.

The differences between the four analyses are the most interesting part of this analysis. Income was only significant for White males, and only at the initial step entry. In all final models it was not significant for any of the groups. This finding suggests that family income may not be important when these other factors are considered.

Family history of alcohol abuse was significant for all four groups at the step entry (i.e., controlling for age and income). It remained a significant factor in the final model (i.e., controlling for all other variables) for White males and females, but not for the African Americans. For white males, family history of alcohol abuse nearly doubled the odds of delinquency, and for White females, it tripled the odds of delinquency. With the exception of African American males, family history of drug use was significant at the step entry. However, it only remained significant in the final model for the White males.

History of sexual assault was not a significant predictor for any group, either at the step entry or in the final model. This finding was counter to our hypotheses. However, history of

physical assault was a significant predictor for all the groups at the step entry, but only for Whites in the final model. Having a history of physical abuse (e.g., harsh physical discipline) was a significant predictor only for White males. For this group, it nearly doubled the odds of delinquent acts. However, it was not significant for any of the other gender-racial/ethnic groups at either the step entry point or in the final model. Witnessing violence was a strong predictor for all four groups at both the step and final analyses. Interestingly, the size of the effect was smaller for White males compared to the other three groups, though still substantial. The odds ratio was particularly large for African-American females (OR = 10.42).

Having a lifetime history of PTSD was not significant in the final model for any of the groups. Significant problems with substance use (not necessarily abuse or dependence) was related to delinquent behavior only for the whites, and this variable was the strongest predictor for the white males and females (OR's = 4.71 and 6.83, respectively).

Tables 15 and 16 attempt to put some of these findings into an epidemiological perspective. While correlation is important, and strong multivariate correlations such as those found in the previous analyses do enlighten, they do not tell the full story. In these tables, the primary risk factors were combined by class. That is, the two family history of substance use problems variables were collapsed into one, such that if a participant was positive on either of the two variables, they were positive on the collapsed variable. Similarly, if a participant had a history of sexual assault, physical assault, or physical abuse, they were labeled assault positive. PTSD and problems with substance abuse were defined the same as in the above analyses.

Tables 15 and 16 divide the sample into 16 mutually exclusive groups that represent all possible combinations of the collapsed risk factor variables. For example, the first group is negative for all the risk factors and the last group is positive for all the risk factors. The middle groups are the various combinations of positive and negative risk factors. Two tables are presented, one for male adolescents and one for female adolescents.

The far right column of these tables ("%Risk Comb) is the percentage of adolescents in that risk factor group (i.e., those adolescents with the indicated set of risk factors) who committed at least one index offense in the year prior to the survey. As seen in Table 15, in the first risk factor combination group, i.e., those with none of the risk factors, only 4.5% of the adolescent males committed an index offense in the past year. However, within the last risk factor combination group, the group positive on all the risk factors, nearly 90% of the adolescent males had committed an index offense in the past year.

Examining these risk factors appears to have excellent predictive power for past year delinquency. In other words, if we locate a male adolescent with all of the risk factors, then he has a 90% chance of having recently committed a delinquent offense. Less impressive, but consistent results were found for adolescent females (see Table 16). In the completely negative risk group, less than 1% of the girls had committed a delinquent offense in the past year. However, in the all positive risk factors group, 43% had done so. The smaller percentages compared to boys are due to the fact that the girls had an overall delinquency rate about one-half that of boys.

These results appear to have implications for prevention programs. In other words, if powerful risk factors can be identified, it may be possible to predict the likelihood that an individual will commit a delinquent offense. However, this conclusion, while accurate, may be misleading in its effectiveness. The first column on the right ("% Delinquent") lists the percentage of all the adolescents who had committed an index offense in the past year who are in each risk factor group. For example, while 90% of the males in the all positive risk factor group had committed a past year index offense, they represented only 6.5% of all the male delinquents. On the other had, only 4.5% of the male adolescents in the all negative risk factor group had committed a past year delinquent act. But, they represented 20% of all the male delinquents. Therefore, the risk combinations have strong predictive power for those children who have the risk factors, but the children with those risk factors represent a very small number of delinquents. This apparent paradox is explained by the middle column on the right ("% Population). This column lists the percentage of the entire male adolescent sample (delinquent and nondelinquent) that each risk factor group represents. It can be seen in this column that the all negative risk factor group accounts for 61% of all male adolescents. Therefore, even though only 4.5% of the male adolescents in this group had committed an index offense in the past year, because they are 61% of the male adolescent population, they account for 20% of the male delinquents. Similarly, while the all positive risk factor group had a 90% offense rate, they represented only 6.5% of all male delinquents because they are only 1% of the entire male adolescent population. The base rates of the risk factors are relatively small in the general population. Therefore, while they are very good predictors when they are present, they are not prevalent enough in the general population to result in a substantial proportion of delinquents.

Similar results were found for girls (see Table 16). The no risk factor group had a less than 1% delinquency rate, but they accounted for nearly 9% of the female delinquent youth because they are nearly 60% of the adolescent female population. The all positive risk factor group had a 43% delinquency rate, but accounted for only 12% of the female delinquents, because this group was only 1.3% of the female adolescent general population.

These results illustrate why it is important to understand the epidemiological contour of risk factor analysis as well as correlational analysis. It also illustrates the importance of comparison groups. While a particular risk factor may be strongly related to delinquent behavior, it may be so rare in the general population that it may actually be present in a very small number of delinquents. Understanding the prevalence of risk factors in the general and the delinquent population, therefore, is crucial.

Prevalence Summary and Population Estimates Of Critical Study Variables

Table 17 summarizes prevalence rates for critical study variables. In addition, this table provides census-based estimates of the number of affected adolescents in the United States on each study parameter. Such "actual number affected" estimates are a noted benefit of the census-driven RDD methodology employed by this study. As is illustrated in Table 17, rates of interpersonal violence and victimization are extremely high in American youth. Almost 2,000,000 (8.1%) children have been sexually assaulted in this country. Fully 3,900,000 (17.4%) have been severely physically assaulted, and another 2,100,000 (9.4%) have been punished in a manner considered to be physically abusive. Most pervasive is witnessing violence, with

approximately 8,800,000 (39.4%) children indicating that they actually have seen someone being shot, stabbed, sexually assaulted, physically assaulted, or threatened with a weapon.

These findings indicate that victimization of youth in this country is widespread and warrants attention. This point is firmly underscored when one considers the emotional impact of rampant assaultive violence on our children. Our population-based estimates indicate that fully 1,800,000 (8.1%) children have met criteria at one point in their lives for lifetime PTSD, and 1,100,000 (4.9%) currently suffer from the disorder. Potentially more damaging is substance abuse that appears to follows assault in a large proportion of cases. Two million (9.1%) youth have met medical diagnostic criteria for substance abuse or dependence (i.e., abuse of or dependence on alcohol, marijuana, or hard drugs) at some point in their lives. Approximately 1,500,000 children and adolescents currently meet medical diagnostic criteria for substance abuse or dependence.

Delinquency estimates are also provided in Table 17. Approximately 2,700,000 (12.3%) youth have committed an index offense at some point in their lives, and 2,100,000 (9.5%) have committed such an act in the past year.

These numbers are independently disconcerting, but become even more distressing when one considers the high rates of victimization of American youth and the apparent relationship between victimization and substance abuse or delinquency. That is, victimization, in addition to causing emotional problems such as PTSD, also appears to leads to substance abuse in a large proportion of children. Similarly, substance abuse is strongly linked to delinquent behavior even after controlling for other risk factors. This suggests that for a large proportion of youth, victimization is linked to substance use which is then linked to delinquent behavior. Although the present cross sectional study established the relationship between victimization and negative outcomes (PTSD, substance abuse, delinquency) longitudinal study designs are required to more firmly establish such causal conclusions.

DISCUSSION

The National Survey of Adolescents demonstrated the feasibility of conducting sensitive, clinically-relevant, large-scale research with this age group using household probability sampling methods and parental consent. Our findings regarding prevalence of sexual and physical assault were consistent with those of other studies in this area (e.g., Finkelhor & Dziuba-Leatherman, 1994; Saunders et al., 1992; Saunders et al., in press). As hypothesized, the rate of sexual assault was higher in females (13%) than males (3.4%), whereas the rate of physical assault was higher in males (21.3%) than females (13.4%). Rates of physically abusive punishment did not differ significantly between males (8.5%) and females (10.2%). Levels of physical assault and sexual assault increased substantially with age, and overall prevalence rates were higher among Native Americans, African Americans, and Hispanics than among Whites. However, rates of assaultive violence were inversely related to income, suggesting that socioeconomic status may mediate differences across ethnicity. Because proximity to, as well as experience of, violence may increase risk of negative outcomes, the NSA also included a measure of Witnessed Violence. For *all* studied variables, including PTSD, substance abuse, and delinquency, having witnessed violence greatly increased risk for male and female adolescents. Approximately 44% of male participants and 35% of female participants reported that they had

witnessed a violent act, with 38% of male adolescents and 29% of female adolescents indicating that they had actually seen someone threatened with a weapon. The NSA also studied prevalence of PTSD in sample. Eight percent of adolescents surveyed met criteria for the disorder, with rates of girls (10%) higher than those for boys (6.2%). The NSA also examined rates of delinquency in American adolescents. Boys were far more likely to have engaged in delinquent acts at some point in their lives than girls (lifetime prevalence: 17.7% boys, 6.7% girls).

Overall, rates of substance use reported in our sample are lower than those reported in the Monitoring the Future Study (1995) and slightly lower than those reported in the National Household Survey of Drug Abuse (1995), despite the fact that usage queries were very similar in each investigation. Several factors might explain these discrepancies. Foremost among these is methodological variance across studies. While the Monitoring the Future and National Household Survey studies allow adolescents to indicate use on self-completed questionnaires, the present study required adolescents to verbally report use. This might have contributed to lower rates for two reasons. First, respondents might have been reluctant to describe overtly and personally their use of illicit substances to another individual. Second, respondents might have feared describing their patterns of substance use aloud in their parents' home. Finally, our past year usage data for each substance were collected only for participants who had used that substance at least four times or, in the case of alcohol, had consumed five or more drinks on a single occasion. Therefore, incidental or experimental users that are included in the Monitoring the Future and National Household Survey studies, were not counted as users in the NSA. Slightly lower rates of use do not diminish the findings, however. By contrast, our findings pertaining to the relation between victimization and substance use are even more noteworthy, given that they are based on more conservative definitions.

Data regarding order of onset of substance abuse and victimization were clearly interpretable and consistent across all classes of drugs. For a large proportion of children, over one half, victimization preceded substance use. Relatedly, the important potential etiological role of victimization (discussed below) in delinquency is further highlighted by this finding.

In order to examine the unique impact of each variable on use and problem use (defined as either substance abuse or dependence) of each substance over and above effects of other variables, five-step hierarchal logistic regression was employed in which odds ratios of variables entered on each step were adjusted for those of other variables entered both on that step and on preceding steps. Grouping was rationally driven so as to maximize relevance of findings. This was accomplished by adopting a purposefully conservative analytic approach. As such, demographic variables were entered first (i.e., age, race indicator variables, and gender; income was not included due to large amounts of missing data for this variable). Effects of familial alcohol and drug use on adolescent substance use were examined in the second step. Of course, any effects noted for these variables would therefore be apparent over and above impact attributable to demographic variables. Victimization variables were entered following demographic and familial variables, to permit strengthening (or weakening) of conclusions that effects of abuse on substance use were not simply the result of uncontrolled sources of correlational variance. Witnessed violence is qualitatively different than experienced violence and was therefore entered on a separate step. PTSD status was entered on the fifth and final step because this variable referred to a diagnostic constellation of symptoms rather than to a specific

event or situation. Thus, our interest was whether such a constellation of symptoms increased risk of substance use and abuse independent of victimization and familial behavior. Also provided were Final Model odds ratios, which illustrated the unique impact of each variable on substance use while simultaneously controlling for effects of every other variable.

With regard to demographic factors, older children were more likely to engage in problem alcohol use. Male adolescents were also more likely to report problem alcohol use, whereas African Americans exhibited significantly reduced risk of alcohol problem use relative to Caucasians, particularly after the effects of victimization on alcohol consumption were controlled. Neither Hispanic nor Native American adolescents displayed differential risk when compared to Caucasians. Risk of *problem use* was nearly tripled in individuals with familial alcohol use, past physical assault/abuse, sexual assault, and witnessed violence. Moreover, this increased risk was apparent for these variables even when effects of all other variables were controlled. PTSD status did little to predict risk of alcohol use and abuse after the influence of other variables was controlled.

Being older and male also increased risk of marijuana abuse or dependence, when all other variables were considered. With respect to racial/ethnic reports of problem marijuana use, a pattern similar to that for alcohol was detected. African American adolescents, but not Hispanic or Native American youth, exhibited significantly reduced risk for marijuana use and problem use relative to Caucasians. Familial drug use was strongly associated with use and abuse of marijuana in adolescents, but familial alcohol abuse was not consistently related to problematic marijuana use. Physical and sexual abuse more than doubled risk of problem use of marijuana, independent of effects of familial substance use. Again, witnessed violence was also strongly associated with problem marijuana use. Independent effects of current PTSD on past-year marijuana problem use were also notable, with PTSD-positive individuals at twice the risk of abuse.

With respect to hard drug use and problem use, when all variables were considered in the final model, African American race was again strongly related to reduced risk. Age was positively associated with risk. Familial drug and alcohol use increased risk of hard drug problem use by a factor of 4, whereas sexual and physical abuse were associated with a large increase in risk, over and above effects of familial substance use. Once again, witnessed violence led to increased rates of recent use and problem use, as did PTSD diagnostic status.

Univariate and multivariate analyses in which substance use was the predicted variable were duplicated, this time substituting current delinquency as the predicted variable. Note that the same set of variables used to predict substance abuse was employed to predict delinquency (with the addition of substance abuse as a predictor variable). Multivariate analyses are primarily considered here.

For male adolescents, age and race were not associated with changes in final model risk of delinquency. However, familial drug or alcohol problems significantly increased risk of delinquency, over and above effects produced by demographic variables. The final model further revealed that physical assault, but not sexual assault increased risk that males would engage in delinquent acts. This may be an artifact of the small number of male subjects reporting sexual abuse, however. Witnessed violence and problem substance use also greatly

increased risk of delinquency, but this was expected given the definitional overlap between juvenile delinquent behavior and these predictors (i.e., delinquent adolescents would be likely to witness more violence committed by deviant peers or to engage in repeated substance use by virtue of association with a delinquent peer group). Finally, being diagnosed with PTSD did not increase the likelihood that male adolescents would report engaging in delinquent acts.

Considering again the final model, for female respondents, being African American more than tripled the odds of past year delinquency. Familial drug and alcohol abuse doubled risk of delinquency, as did physical, but not sexual, assault. Witnessed violence was associated with a fourfold increase in the likelihood of delinquency, and problem substance use increased risk by a factor of seven (OR=7.3). In contrast to boys, PTSD did increase risk of engaging in illegal activity.

From these analyses, it is clear that the possible pathways to delinquency, at least based on the factors assessed here, may vary by gender and ethnicity. For example, experiencing a physical assault and substance use were strong correlates of delinquent behavior for the White, but not African American adolescents. It also was surprising that having a history of physical abuse was predictive only for White males. These findings suggest that future research and prevention efforts should not only take into account gender and race as independent factors, but should also examine their interactions. These analyses also support the hypothesis that witnessing violence in one's community may increase the likelihood of engaging in delinquent behavior. Witnessing violence was a consistent correlate across all of the groups, but was particularly strong for the African American adolescents.

One of the most surprising findings of the analysis was that having a history of sexual assault was not associated with delinquency in any group, controlling for these other variables.

Overall, logistic regression analyses indicated that the key variables in predicting delinquency status were substance use, victimization history (particularly physical assault), and familial substance use. PTSD status did not add significantly to prediction of delinquency status. Perhaps the most important result of these analyses was the finding that any variable in isolation, including substance use, had limited impact on delinquency outcome. Indeed, substance use, history of victimization, or family history of substance abuse were all associated with approximately the same levels of delinquency. *Combinations* of variables, however, yielded a very different picture. Fully 78% of adolescents who were substances abusers, had been victimized, and had family members that used substances engaged in past-year delinquency. However, adolescents with all three risk factors represented only 15% of the male and 27% of the female delinquent population. Attention was therefore appropriately directed to pairs of variables. Levels of delinquency in children with ***both*** victimization and substance use histories, or ***both*** family substance use and personal substance use histories, or ***both*** victimization and family substance use histories were tremendously elevated, and, of equal importance, each of these combinations of variables accounted for 30% to 50% of the delinquent population. Thus, as outlined above, (a) testing positive for only two of the risk factors greatly increases the likelihood that a child will engage in delinquent behavior, and (b) this is very important because a large proportion of delinquency in this country appears to be etiologically related to these variables.

Assessment and treatment implications are clear: measurement of substance use in delinquents must be complemented by measurement of victimization history and familial substance abuse. Adolescent substance use alone does not determine delinquency, but is itself determined, in large part, by variables that also contribute to prediction of delinquency (i.e., victimization and familial substance use). Treatment for delinquency should follow assessment findings, and strategies to reduce substance use should be combined with techniques to diminish negative effects of victimization and familial substance use in children with these histories. In so doing, both adolescent substance use and delinquency will be more effectively reduced.

SUMMARY

Overall, observed patterns of association between relevant variables and substance use and problem use were remarkably consistent across drug types, racial backgrounds, and gender. Risk of use and abuse of all substances in general, but hard drugs in particular, was greatly increased in adolescents who had suffered sexual assault, physical assault and abuse, or who had witnessed violence. Familial substance use was also a source of consistent and significant risk. Notably, effects of victimization were independent those of other variables, further supporting the role of sexual or physical assault of adolescents in facilitating development of substance use and abuse. Moreover, the temporally linear contribution of assault to substance use behavior is indicated by the finding that victimization preceded substance use in most cases. Importantly, the overt symptom constellation that comprises post-traumatic stress disorder did not consistently elevate risk of alcohol or hard problem use, when demographic and victimization variables were controlled. Thus, even though victimized adolescents may not display prototypical adult post-trauma symptoms, they appear to be at high risk of suffering significant negative effects of trauma, particularly in the form of substance use disorders. This problem is very likely chronological in nature, and ironically, sets the stage for future victimization (Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997).

Three factors were consistently associated with increased delinquency: 1) victimization, 2) substance use, and 3) familial substance use. Substance abuse alone had limited impact on delinquency status, relative to the combined presence of victimization and family substance abuse histories. Presence of all three variables tremendously increased risk of delinquency, but most delinquents (over 85%) did not test positive for all three variables. However, testing positive for any two variables also led to greatly elevated rates of delinquency, and more importantly, described over 50% of the juvenile population. Thus, relevance of victimization history and familial substance use, in addition to adolescent substance abuse to delinquency status, was demonstrated.

RECOMMENDATIONS

Recommendations for Future Research

As is the case with most research, the NSA results raised as many questions as they answered. Below are what we consider to be the highest priorities for future research suggested by the findings of the NSA.

- **Recommendation One:** Longitudinal research is needed to clarify the temporal sequence of victimization, PTSD, substance use/abuse/dependence, and delinquent

behavior among adolescents. This is particularly important given that rates of violent assault, witnessing violence, alcohol and drug use, and delinquent behavior between the ages of 12 and 17. Such research should examine the temporal sequence of problem development as well as risk and protective factors that are related to victimization, alcohol and drug use, PTSD, and delinquent behavior.

- **Recommendation Two:** The NSA has demonstrated the feasibility of obtaining detailed information from adolescents about victimization experiences. Researchers should be encouraged to include measures for screening for history of violent assault and witnessing violence in studies of adolescent alcohol and drug use and delinquency.

- **Recommendation Three:** NSA findings indicate that PTSD appears to be a mediating factor in the relationship between victimization and substance use/abuse/dependence problems between victimization and delinquent behavior. Therefore, research should be conducted examining the efficacy of preventative mental health treatments for PTSD ion the subsequent development of substance use/abuse/dependence and delinquent behavior problems.

- **Recommendation Four:** NSA findings indicate that the bulk of violent assaults are perpetrated by someone the victim knows well rather than by a stranger. Future research should obtain more information about the circumstances and behavioral sequences that precede and follow such assaults. This might provide valuable data that would prove useful in the design of violence prevention programs.

- **Recommendation Five:** A longitudinal follow-up study should be done with the NSA sample in order to follow this national cohort through adolescence and better understand the timing an onset of the study outcomes.

- **Recommendation Six:** Research should examine specific and separate analytical models for gender and racial/ethnic groups. Results of the NSA indicated that not only were there significant differences between gender and racial/ethnic groups on the prevalence of many major variables, but relationships between these variables varied between these subgroups. For example, PTSD appeared to be a more important predictor of delinquency for African-American males than for other gender-racial/ethnic subgroups. Therefore, it is recommended that predictive models and other analyses be conducted by and within gender and racial/ethnic groups to further expose and understand these subgroup differences.

- **Recommendation Seven:** The roles of specific types of victimization and particular characteristics of victimizations should be evaluated in the development of substance use problems and delinquency, especially with gender and racial/ethnic subgroups. Some results suggested that some types of victimization are more important for some subgroups for predicting these problems. Further refinement and testing of these hypotheses are needed.

- **Recommendation Eight:** The recommendations above suggest that larger sample sizes and/or purposive sampling methods are needed to conduct more specific and refined research among important subgroups. In order to achieve the cell sample sizes necessary to understand the roles of specific types of victimizations with certain characteristics among gender and racial/ethnic subgroups, larger initial sample sizes will be necessary. Alternatively, purposive sampling methods could be used to increase cell sample sizes while maintaining the level generalizability and external validity necessary for meaningful results.

- **Recommendation Nine:** Research should be conducted to better understand the factors that contribute to the dramatic under-reporting of crimes against children. While some research exists in this area, most reasons offered for under-reporting is simply conjecture. Intervention (and secondary and tertiary prevention) cannot occur without identification.

Recommendations for Policy

The results of the NSA has several policy implications. Below are the most significant policy recommendations based upon these results.

- **Recommendation One:** The Bureau of Justice Statistics should consider making several changes in the National Crime Victimization Survey based on the NSA findings. Adolescents should be asked about sexual and physical assaults using more explicit, behaviorally specific screening questions along the lines of those demonstrated to be feasible in the NSA., Likewise, the NCVS should be revised to include brief measures of crime-related mental health problems

- **Recommendation Two:** The level of peer violence documented by the NSA suggests that much of the violence adolescents experience is perpetrated be other adolescents, many of whom would be processed by the juvenile justice system rather than by the criminal justice system. Thus, services to victims of offenders adjudicated in the juvenile justice system should be upgraded to insure that adolescent victims of violence perpetrated by juveniles receive comparable victim assistance as victims in the adult criminal justice system.

- **Recommendation Three:** The extent to which violent assaults go unreported to criminal justice system authorities suggests that it is important to identify barriers to reporting as well as ways to increase reporting to authorities.

- **Recommendation Four:** The NSA found that many violence victims had co-morbid PTSD and substance use/abuse/dependence problems and that victimization is an important pathway to substance abuse and delinquency. These findings imply that effective mental health treatment for victims is important not only to relieve post-victimization mental health problems, but also to prevent future substance use and criminal behavior. Therefore, mechanisms should be developed to insure that funding is

available to provide mental health counseling to adolescent victims who need it irrespective of their ability to pay or whether they qualify for crime victim compensation.

- **Recommendation Five:** A greater emphasis should be placed on youth victimization in juvenile justice policy and programs. Results of the NSA strongly indicates that victimization and its mental health correlates play an important role in the development of substance use and delinquency behavior among many adolescents. However, victimization receives relatively little attention in juvenile justice public policy compared to offending behavior. This small level of policy attention is shortsighted and neglects a key risk factor for these problems. Therefore, a reorientation in policy attention is required. The role of child victimization and its effects should be considered in all juvenile justice policy and program initiatives.

- **Recommendation Six:** Policies should promote the primary and secondary prevention of child victimization as part of a comprehensive plan for preventing youth substance use and delinquency. Effective and efficient prevention begins as early as possible in the risk factor chain. Results of this study suggest that victimization and its effects are strong and primary correlates with youth substance abuse and delinquency, even when controlling for other risk factors. Therefore, prevention of these early primary experiences will contribute to preventing these secondary problems.

- **Recommendation Seven:** Policies should encourage early identification of and intervention with victimized children (secondary and tertiary prevention). All child victimizations cannot be prevented. However, if more can be recognized and effective intervention provided to child victims, it is likely that at least some of the long-term negative effects leading to substance use and delinquency can be mitigated. Therefore, policies should encourage proactive rather than reactive approaches to identifying victimized youth, and should promote providing effective and rapid intervention for victimization-related problems that are related to the development of substance use and delinquency.

Recommendations for Practice

The NSA results imply important recommendations for practice. Below are the most meaningful recommendations growing out of the results.

- **Recommendation One:** Mental health professionals who work with children and adolescents should be informed about the high rates of victimization that occur among children and adolescents and about the extent to which victimization serves as a risk factor for PTSD, substance use/abuse/dependence, and delinquency.

- **Recommendation Two:** Mental health professional should be encouraged to screen for victimization experiences among child and adolescent clients. Substance abuse treatment programs for adolescents should do likewise.

- **Recommendation Three:** Victim assistance professionals in the criminal and juvenile justice systems should establish relationships with mental health professionals who are knowledgeable about crime victims' mental health issues.

- **Recommendation Four:** Mental health programs dealing with child victims should incorporate substance abuse and delinquency prevention components into their protocols. While mental health programs designed to reduce common psychological problems associated with child victimization are common, few include specific interventions for reducing substance use onset, substance abuse, or conduct and delinquency problems. Given the findings of the NSA, mental health programs should incorporate these prevention components as a regular part of their victimization treatment protocols.

- **Recommendation Five:** Law enforcement should develop programs for dramatically increasing the number of crimes against children that are reported, identified and investigated by them. For example, some departments have developed specialized Crimes Against Children units in order to develop and focus specialized expertise on this area of crime. While the effectiveness of such initiatives is unknown, their purpose is important. Creative law enforcement attention is needed to stop the current crime wave against children. By limiting the number of crimes committed ***against*** children, the number of crimes committed ***by*** children likely will decrease. Unfortunately, unless the crimes are identified, they cannot be investigated. Proactive, creative community programs are needed to encourage children and others to report crimes to law enforcement. It is likely that if the reporting rate of crimes against children remains low, the crime wave against children will continue, and more children will go on to commit crimes.

- **Recommendation Six:** Prosecutors should develop specific programs and expertise to increase the proportion of crimes against children that are successfully prosecuted. Many offices have tried various programs. The effectiveness of these programs is unknown for the most part. However, it is likely that if prosecutors focus more attention on crimes with child victims, more will be successfully prosecuted. More successful prosecution likely means fewer crimes against children.

- **Recommendation Seven:** Victim/witness programs should develop specific programs and expertise for dealing with child and adolescent victims and witnesses in order to encourage increased reporting and cooperation with the criminal justice system.

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Table 1. Demographic Characteristics of Parent Sample

Variable	n	Percent
Gender		
Female	2887	71.8
Male	1136	28.2
Relationship to the Adolescent		
Biological Parent	3622	90.0
Step-parent	201	5.0
Adoptive Parent	60	1.5
Grandparent	54	1.3
Another Relative	26	0.6
Guardian	42	1.0
Other relationship	17	0.4
Refused	1	0.0
Marital Status		
Married	3096	77.0
Living as couple	143	3.5
Separated	149	3.7
Divorced	401	10.0
Widowed	61	1.5
Single/never married	166	4.1
Refused	7	0.2

Table 1 Parent sample (continued)

Occupational Status		
Employed full-time	3178	79.0
Employed part-time	284	7.1

In the military	22	0.5
Unemployed & looking for work	122	3.0
Retired	68	1.7
Student	33	0.8
Disabled or too ill to work	70	1.7
Other	65	1.6
Refused	1	0.0
Total Household Income		
More than $50,000	1362	33.9
$30,001 to $50,000	1168	29.0
$20,001 to $30,000	600	14.9
$10,001 to $20,000	368	9.1
$5,000 or less	114	2.8
Not sure/refused	232	5.8

Table 1 Parent sample (continued)

Highest Educational Achievement		
Graduate degree	426	10.6
Some Graduate school	131	3.3
Four year college graduate	658	16.3
Some college	1100	27.4
High School graduate	1288	32.0
Some high school	316	7.8
Eighth grade	54	1.3
First through seventh grade	39	1.0
No formal schooling	1	0.0
Not sure/Refused	10	0.2

Racial/Ethnic Identity		
Caucasian/Non-Hispanic	3055	75.9
African American/Non-Hispanic	592	14.7
Hispanic	270	6.7
Native American	31	0.8
Asian	30	0.8
Other	31	0.8
Not sure/refused	14	0.3

Table 1 Parent sample (continued)

Community of Residence		
Large city	639	15.9
Suburb of large city	764	19.0
Large town	735	18.3
Small town	1095	27.2
Rural area	783	19.5
Not sure/refused	7	0.2

Note: N = 4,023

Table 2. Demographic Characteristics of Adolescent Sample -- Weighted and Unweighted Data

	Weighted Data		Unweighted Data	
Gender	**n**	**Percent**	**n**	**Percent**
Female	1958	48.7	2005	49.8
Male	2065	51.3	2018	50.2
Racial/Ethnic Identity				
Caucasian/Non-Hispanic	2825	70.2	2746	68.3
African American/Non-Hispanic	590	14.7	572	14.2
Hispanic	314	7.8	390	9.7
Native American	139	3.5	135	3.4
Asian	46	1.1	67	1.7
Not Sure/Refused	81	2.0	40	1.0
Other	28	0.7	73	1.8
Age				
12	682	17.0	576	14.3
13	685	17.0	685	17.0
14	673	16.7	744	18.5
15	682	16.9	733	18.2
16	652	16.2	682	17.0
17	641	15.9	597	14.8
Not Sure/Refused	8	0.2	6	0.1

Table 2 Adolescent sample (continued)

Year in School	**n**	**Percent**	**n**	**Percent**

Fifth	44	1.1	27	0.7
Sixth	284	7.1	219	5.4
Seventh	711	17.7	687	16.1
Eighth	659	16.4	808	17.1
Ninth	745	18.5	680	20.1
Tenth	643	16.0	572	16.9
Eleventh	561	13.9	331	14.2
Twelfth	330	8.2	47	8.2
Don't Attend	43	1.1	3	1.2
Not Sure/Refused	3	0.1	0.1	0.1

Note: N = 4,023

Table 3. Study Variables By Racial/Ethnic Groups

Variable	White	African-American	Hispanic	Native American	Asian	X^2
Familial Alcohol	11.7	14.2	18.2	26.6.	6.5	37.39***
Familial Drugs	7.8	12.9	9.6	14.4	2.2	23.4****
Sexual Assault	6.7	13.1	10.0	15.7	6.5	38.7***
Physical Assault	15.6	24.2	20.9	27.3	6.5	41.2***
Physically Abusive Punishment	7.9	15.4	8.4	15.1	6.5	39.5***
Witnessing Violence	34.3	57.2	50.5	55.7	26.1	143.6***
PTSD-Current	4.0	8.0	7.7	3.6	6.5	22.3*
PTSD-Lifetime	7.3	11.0	11.6	7.1	6.5	14.7*
Alcohol-past year	4.4	2.7	3.9	2.9	2.2	4.4
Alcohol-ever	6.0	4.4	6.4	5.7	2.2	3.7
Marijuana-past year	3.9	2.0	5.1	6.4	2.1	9.7
Marijuana-ever	4.7	2.4	6.1	7.9	2.1	12.6*
Hard Drugs-last year	1.1	.2	1.0	1.4	0.0	5.3
Hard Drugs-ever	1.3	.2	1.6	2.9	0.0	9.9
Delinquency-past year	7.4	14.9	14.1	20.9	4.3	65.1***
Delinquency-ever	9.9	18.8	16.8	25.9	8.5	68.9***

*p<.01, **p<.001, ***p<.0001

Table 4. Prevalence of Types of Assault by Gender

	Gender		
Sexual Assault	**Male**	**Female**	**X^2**
Penile penetration of child	0.5%	3.3%	40.8***
Finger/Object penetration of child	0.6%	2.7%	25.8***
Others' mouth on child's sexual parts	1.0%	1.3%	1.1
Touching of child's sexual parts	2.9%	10.0%	84.6***
Child forced to touch others' sexual parts	0.7%	3.5%	39.0***
Unwanted penetration of others by child (asked only of males)	0.8%	n/a	n/a
Any Sexual Assault	3.4%	13.0%	123.0***
Physical Assault			
Attacked with weapon	6.0%	3.4%	14.4**
Attacked without weapon, but with intent to kill/injure	8.5%	6.7%	4.3*
Threatened with gun or knife	7.9%	4.3%	22.6***
Beaten w/object, hurt badly	5.9%	3.5%	12.8**
Beaten w/fists, hurt badly	7.4%	5.1%	9.2*
Any physical assault	21.3%	13.4%	43.4***
Physically Abusive Punishment			
Spanked so hard you had to see a doctor	0.2%	0.7%	6.1*
Spanked so hard you got bad marks, bruises, cuts, or welts	8.2%	9.9%	3.5
Punished by burning, cutting or tying you up	0.6%	0.4%	1.1
Any physically abusive punishment	8.5%	10.2%	3.4

*p<.05, **p<.01, ***p<.001.

Table 5. Lifetime Prevalence of Witnessing Violence by Gender

	Gender		
Event	**Male**	**Female**	**X^2**
Seen someone shot with a gun	5.8%	4.1%	6.4*
Seen someone stabbed/cut	12.1%	9.0%	10.1**
Seen someone sexually assaulted	1.8%	3.8%	14.8**
Seen someone mugged/robbed	12.8%	7.8%	27.2***
Seen someone threatened with a weapon	38.2%	28.6%	41.2***
Any witnessing violence	43.6%	35.0%	31.5***

*p<.05, **p<.01, ***p<.001.

Table 6. Delinquency Offenses by Gender

	Gender		
Event	**Male**	**Female**	**X^2**
Stolen more than $100	4.5%	1.0%	45.6***
Stolen motor vehicle	2.4%	1.0%	10.9**
Broken/tried to break into building/vehicle	8.0%	1.1%	108.3***
Gang fights	7.7%	3.5%	33.2***
Strong armed for money/things	3.2%	0.9%	25.5**
Forced sexual relations	0.1%	n/a	2.8
Attacked someone with intent to hurt/kill	6.0%	2.6%	29.0***
Any delinquency offense - lifetime	17.7%	6.7%	111.0***
Any delinquency offense - past year	13.8%	5.0%	90.8***

*p<.05, **p<.01, ***p<.001.

Table 7. Hierarchical Logistic Regression Analyses for Lifetime PTSD as a Function of Demographic Variables, Family Substance Use History, and Sexual Assault, Physical Assault, and Witnessed Violence History

Step	Variable	b	SE	Wald	Step OR	b	SE	Wald	Final OR
1	Age	.23	.04	41.1	1.26***	.65	.07	82.2	1.91***
	Female	.53	.12	19.4	1.70***	-.55	.19	8.2	0.58**
	African American	.46	.15	9.4	1.59**	-1.07	.30	13.2	0.34**
	Hispanic	.52	.19	7.3	1.69**	-.47	.33	2.0	0.62
	Native American	-.03	.34	0.0	0.97	-.69	.52	1.8	0.50
2	Familial Problem Alcohol	1.02	.14	52.6	2.78***	.75	.20	13.6	2.13***
	Familial Problem Drug Use	.85	.16	28.2	2.34***	-.17	.27	0.4	0.85
3	Physical Assault/Punishment	1.26	.14	86.3	3.53***	.54	.20	7.3	1.71**
	Sexual Assault	1.08	.16	45.2	2.96***	.87	.24	13.3	2.40**
4	Witnessed Violence	1.02	.21	23.5	2.77***	1.00	.21	22.7	2.73***

n = 3,904. *p<.05, **p<.01, ***p<.001.

Table 8. Hierarchical Logistic Regression Analyses for Past-Year Alcohol Abuse or Dependence

Step	Variable	b	SE	Wald	Step OR	b	SE	Wald	Final OR
1	Age (per year)	.71	.07	108.8	2.03***	.65	.07	82.2	1.91***
	Female	-.36	.17	4.6	0.70*	-.55	.19	8.2	0.58**
	African American	-.49	.27	3.2	0.61	-1.07	.30	13.2	0.34**
	Hispanic	-.20	.32	0.4	0.82	-.47	.33	2.0	0.62
	Native American	-.21	.50	0.2	0.81	-.69	.52	1.8	0.50
2	Familial Problem Alcohol	1.19	.20	36.7	3.27***	.75	.20	13.6	2.13***
	Familial Problem Drug Use	.18	.26	0.5	1.19	-.17	.27	0.4	0.85
3	Physical Assault/Punishment	.85	.19	20.0	2.35*	.54	.20	7.3	1.71**
	Sexual Assault	1.05	.23	20.5	2.86***	.87	.24	13.3	2.40**
4	Witnessed Violence	1.02	.21	23.5	2.77***	1.00	.21	22.7	2.73***
5	PTSD	--	--	--	--	.45	.28	2.6	1.56

n = 3,907.

Note: * p < .05, ** p < .01, ***p <.001; df=1 for all OR's. For clarity, the odds in the reference category for each categorical variable (i.e., equal to 1.00) are not shown. OR estimates for age are reported per 1-year increase (e.g., an OR of 1.61 indicates an increased risk of 61% for a 1-year increase in age).

Table 9. Hierarchical Logistic Regression Analyses for Past-Year Marijuana Abuse or Dependence

Step	Variable	b	SE	Wald	Step OR	b	SE	Wald	Final OR
1	Age (per year)	.50	.06	69.6	1.65***	.42	.06	42.5	1.52***
	Female	-.39	.17	4.9	0.68*	-.53	.19	7.2	0.59**
	African American	-.69	.31	4.8	0.50*	-1.39	.33	17.5	0.25***
	Hispanic	.32	.28	1.3	1.38	.06	.29	0.0	1.06
	Native American	.59	.21	2.5	1.81	.08	.39	0.0	1.08
2	Familial Problem Alcohol	.81	.22	15.5	2.25***	.35	.21	2.7	1.42
	Familial Problem Drug	1.19	.22	29.5	3.28***	.75	.23	10.8	2.11***
3	Physical Assault/Punishment	1.04	.19	30.0	2.83***	.57	.20	7.9	1.76**
	Sexual Assault	.80	.24	11.2	2.23***	.45	.25	3.2	1.56
4	Witnessed Violence	1.56	.24	40.8	4.75***	1.52	.25	38.5	4.58***
5	PTSD	--	--	--	--	1.05	.25	17.3	2.86***

n = 3,907

Note: * p < .05, ** p < .01, ***p <.001; df=1 for all OR's. For clarity, the odds in the reference category for each categorical variable (i.e., equal to 1.00) are not shown. OR estimates for age are reported per 1-year increase (e.g., an OR of 1.61 indicates an increased risk of 61% for a 1-year increase in age).

Table 10. Hierarchical Logistic Regression Analyses for Past-Year Hard Drug Abuse or Dependence

Step	Variable	b	SE	Wald	Step OR	b	SE	Wald	Final OR
1	Age (per year)	.60	.13	22.2	1.82***	.48	.14	11.9	1.61***
	Female	.02	.33	0.0	1.02	-.46	.39	1.4	0.63
	African American	-1.52	.87	3.1	0.22	-2.34	.90	6.8	0.10**
	Hispanic	-.29	.65	0.2	0.75	-.41	.67	0.4	0.67
	Native American	.56	.69	0.7	1.76	-.06	.72	0.00	0.94
2	Familial Problem Alcohol	1.48	.37	15.6	4.39***	.94	.38	6.3	2.57*
	Familial Problem Drug	1.50	.38	15.5	4.49***	.93	.39	5.8	2.54*
3	Physical Assault/Punishment	1.65	.44	14.3	5.21***	1.19	.45	6.9	3.28**
	Sexual Assault	1.23	.41	9.2	3.44**	.94	.42	5.1	2.56*
4	Witnessed Violence	1.48	.57	6.6	4.40**	1.42	.58	6.0	4.15*
5	PTSD	--	--	--	--	.88	.43	4.2	2.41*

n = 3,907.

Note: * p < .05, ** p < .01, ***p <.001; df=1 for all OR's. For clarity, the odds in the reference category for each categorical variable (i.e., equal to 1.00) are not shown. OR estimates for age are reported per 1-year increase (e.g., an OR of 1.61 indicates an increased risk of 61% for a 1-year increase in age).

Table 11. Hierarchical Logistic Regression for Prediction of Past-year Delinquency for Female Adolescents

Step	Variable	b	SE	Wald	Step OR	b	SE	Wald	Final OR
1	Age (per year)	0.18	0.06	8.1	1.20**	-.11	.08	1.7	0.90
	African American	1.06	0.25	17.8	2.89***	1.21	.31	15.4	3.37**
	Hispanic	0.95	0.33	8.3	2.58**	.71	.39	3.3	2.04
	Native American	1.19	0.43	7.8	3.29**	.66	.55	1.4	1.94
2	Familial Problem Alcohol	1.38	0.24	32.8	3.96***	.73	.27	7.4	2.08**
	Familial Problem Drug Use	1.28	0.25	26.7	3.61***	.92	.28	10.7	2.51**
3	Physical Assault/Punishment	1.81	0.26	48.9	6.10***	1.19	.28	18.2	3.28***
	Sexual Assault	0.76	0.26	8.6	2.13**	.08	.29	0.1	1.08
4	Witnessed Violence	1.84	0.36	26.7	6.3***	1.52	.37	16.9	4.58***
5	PTSD	0.68	0.27	6.6	1.98*	.58	.28	4.1	1.78*
6	Substance Use	---	-----	---	---	1.99	.29	46.0	7.31***

Table 12. Hierarchical Logistic Regression for Prediction of Past-year Delinquency for Male Adolescents

Step	Variable	b	SE	Wald	Step OR	b	SE	Wald	Final OR
1	Age (per year)	0.22	.047	31.1	1.25***	.02	.05	0.3	1.02
	African American	0.77	.17	20.8	2.15***	.36	.20	3.4	1.44
	Hispanic	0.71	.22	10.5	2.04**	.65	.25	6.8	1.91**
	Native American	1.39	.27	25.9	4.02***	.99	.32	9.3	2.68**
2	Familial Problem Alcohol	1.20	.17	49.8	3.32***	.59	.19	9.4	1.81**
	Familial Problem Drug Use	1.11	.20	30.3	3.03***	.63	.22	7.9	1.88**
3	Physical Assault/Punishment	1.53	.15	106.9	4.62***	1.08	.16	44.8	2.93***
	Sexual Assault	0.50	.28	3.0	1.65	.15	.31	0.2	1.16
4	Witnessed Violence	1.17	.17	45.6	3.2***	1.04	.18	33.9	2.83***
5	PTSD	.50	.23	4.8	1.65*	.45	.24	3.6	1.57
6	Substance Use	---	---	---	---	1.50	.20	56.7	4.47***

* $p < .05$, ** $p < .01$, ***$p < .001$

Table 13. Predictive Model of Past Year Index Delinquency Offenses for White and African-American Males

		White n = 1,398		African-American n = 277	
Step	Variable	Step OR	Final OR	Step OR	Final OR
1	Age	1.20**	0.98	1.76***	1.50**
	Low Income	2.00*	1.46	0.88	0.80
2	Familial Problem Alcohol	3.20***	1.89*	2.48*	1.00
	Familial Problem Drug Use	4.41***	2.81**	1.02	0.84
3	Sexual Assault	1.14	0.68	1.77	1.19
	Physical Assault	4.97***	3.13***	2.87*	1.54
	Physical Abuse	2.27*	1.95*	1.92	1.61
4	Witnessed Violence	2.74***	2.32***	6.54*	6.69*
5	PTSD	1.40	1.41	3.25*	3.09
6	Substance Use	4.71***	4.71***	1.59	1.59

Table 14. Predictive Model of Past Year Index Delinquency Offenses for White and African-American Females

		White		African-American	
		n = 1,343		n = 295	
Step	Variable	Step OR	Final OR	Step OR	Final OR
1	Age	1.27*	0.86	1.11	0.93
	Low Income	1.08	0.53	1.49	1.02
2	Family History Alcohol	5.43***	3.18*	4.75**	2.75
	Family History Drug	3.60**	2.26	3.27*	3.87
3	Sexual Assault	2.12	1.09	1.72	1.42
	Physical Assault	5.90**	2.93*	5.16**	3.10
	Physical Abuse	0.73	0.65	2.33	2.27
4	Witnessed Violence	7.17***	5.15**	11.04*	10.42*
5	PTSD	2.35*	1.55	1.31	1.34
6	Significant Substance Use	6.83***	6.83***	1.35	1.35

Table 15. Proportion of Male Youths Who Committed an Index Offense in the Past Year with Risk Factor Combination

Family History	Assault History	PTSD	Substance Abuse	% Delinquent	% Population	% Risk Comb.
-	-	-	-	20.0	61.2	4.5
+	-	-	-	3.6	5.7	8.7
-	+	-	-	21.0	13.5	21.3
-	-	+	-	2.2	1.4	20.7
-	-	-	+	5.4	3.5	21.2
+	+	-	-	12.9	5.2	34.3
+	-	+	-	1.3	0.7	27.0
+	-	-	+	3.3	0.6	78.4
-	+	+	-	1.6	1.5	14.0
-	+	-	+	8.2	2.5	44.5
-	-	+	+	0.0	0.1	0.0
+	+	+	-	3.2	0.9	49.5
+	+	-	+	8.6	1.7	71.2
+	-	+	+	0.0	0.1	0.0
-	+	+	+	2.2	0.5	58.2
+	+	+	+	6.5	1.0	89.9

Table 16. Proportion of Female Youths Who Committed an Index Offense in the Past Year with Risk Factor Combination

Family History	Assault History	PTSD	Substance Abuse	% Delinquent	% Population	% Risk Comb.
-	-	-	-	8.8	58.8	0.7
+	-	-	-	3.4	9.4	1.8
-	+	-	-	7.5	10.9	3.4
-	-	+	-	0.5	2.3	1.0
-	-	-	+	0.9	1.9	2.4
+	+	-	-	12.6	5.0	12.5
+	-	+	-	3.6	1.1	16.8
+	-	-	+	4.6	0.9	24.7
-	+	+	-	2.4	2.1	5.7
-	+	-	+	8.3	1.5	28.3
-	-	+	+	0.7	0.1	26.0
+	+	+	-	12.3	2.0	31.3
+	+	-	+	14.8	1.4	51.1
+	-	+	+	0.7	0.1	25.8
-	+	+	+	6.9	0.9	37.2

+	+	+	+	11.6	1.3	42.9

Table 17. Population Estimates of Primary Study Variables

Variable	Cases in Sample	Prevalence in Sample	Prevalence Confidence Interval	Population Point Estimate*
Sexual Assault	326	8.1%	(7.1% - 9.1%)	1.8 million
Physical Assault	701	17.4%	(16.4% - 18.4%)	3.9 million
Physically Abusive Punishment	376	9.4%	(8.4% - 10.4%)	2.1 million
Witness Violence	1,586	39.4%	(37.4% - 41.4%)	8.8 million
Lifetime PTSD	324	8.1%	(7.1% - 9.1%)	1.8 million
Current PTSD	196	4.9%	(3.9% - 5.9%)	1.1 million
Committed a Delinquent Offense Past Year	381	9.5%	(8.5% - 10.5%)	2.1 million
Ever Committed a Delinquent Offense	496	12.3%	(11.3% - 13.3%)	2.7 million
Current Alcohol Abuse/Dependence	157	3.9%	(2.9% - 4.9%)	870,000
Current Marijuana Abuse/Dependence	147	3.7%	(2.7% - 4.7%)	825,000
Current Any Substance Abuse/Dependence	277	6.9%	(5.9% - 7.9%)	1.5 million
Lifetime Alcohol Abuse/Dependence	226	5.6%	(4.6% - 6.6%)	1.3 million
Lifetime Marijuana Abuse/Dependence	179	4.5%	(3.5% - 5.5%)	1 million
Lifetime Drug Abuse/Dependence	46	1.2%	(0.9% - 1.5%)	268,000
Lifetime Any Substance Abuse/Dependence	366	9.1%	(8.1% - 10.1%)	2.0 million

*Based on Bureau of Census 1995 estimates of the U.S. population of adolescents of 22.3 million.