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Self-Reported Law-Violating Behavior from Adolescence to Early Adulthood in a Modern Cohort

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Executive Summary

The objective for the report is to provide criminal justice practitioners and policymakers with a timely view of problem and law-violating behavior of juveniles and young adults. The areas of behavior examined include status violations (smoking cigarettes, drinking alcohol, running away from home), marijuana and hard drug use, drug selling, property crimes, assault, carrying a handgun, and gang membership. The data for the study come from the first five rounds of the 1997 National Longitudinal Survey of Youth (NLSY97), a nationally representative study of youths who were between the ages of 12 and 16 as of December 31, 1996. The period covered by the yearly surveys was from 1997 to 2001, so the respondents' ages ranged from 12 (the youngest respondents in the round begun in 1997) to 22 (the oldest respondents in the round begun in 2001).

The examination of problem behaviors is divided into the topic areas of lifetime prevalence, onset age, current prevalence, behavior frequency, comorbidity, influences on onset and the transition to high-frequency serious offending, persistence in high-frequency serious offending, and continuity between juvenile problem behaviors and problem behaviors reported by adults. For each topic area, the report describes differences by age, sex, race/ethnicity, and family structure. For all topic areas except lifetime prevalence and onset age, the report presents analyses of the impact of a set of risk and protective factors that includes family/friends in gangs, disconnection from school and work, negative peer behaviors, and positive peer behaviors (there is no multivariate analysis of lifetime prevalence, and time-order problems prevent the use of many risk and protective factors in the examination of onset age). Because the topic areas

examined are diverse, encompassing a variety of behaviors (from smoking cigarettes to carrying a handgun), the findings are also diverse, defying attempts to apply a single, overarching explanation.

Key Findings

1. Most law-violating behaviors initiated by juveniles are abandoned by age 18—the behaviors do not persist into adulthood.
2. Major risk factors for engaging in problem behaviors and for doing so at a higher than average frequency include gang membership among family members or friends, the presence of higher levels of negative school-based peer behaviors, disconnection from both school and work, and having resided in a household without both biological parents present. In general, positive peer behaviors acted as a protective factor.
3. For juveniles ages 12 to 17, after risk and protective factors are taken into account, African-Americans and Hispanics were less likely than whites to report smoking, drinking, using marijuana, using hard drugs, running away from home, vandalism, minor theft, major theft, fraud/fencing, drug selling, or carrying a handgun. Exceptions to the pattern occurred with school suspension, assault, and gang membership.
4. In general, females were less likely than males to initiate problem behaviors or to engage in problem behaviors with high frequency. The clearest exception occurred with running away from home, which females were significantly more likely than males to report.

Policy Implications

Policy makers should take note of the strong and pervasive effects of negative social context. Programs aimed at disrupting negative social context—such as effective measures to reduce youth drinking and drug use, truancy, and gang activity—should have the indirect but beneficial effect of reducing risk for individuals by improving their social context. Second, the effects of a positive peer environment suggest that efforts to introduce constructive elements to youths' social context—elements such as after-school programs, programs to encourage preparation for and aspiration to college, or time spent

with peer or adult mentors—can help protect against a range of harmful and dangerous behaviors. Third, effective measures to either retain students in school or to help youth make the transition from school to work should also reduce the risks of problematic and law-violating behaviors. Finally, programs focusing on early intervention that have the effect of delaying onset may reduce the burden of juvenile offender law violating behavior.

Topic Area Highlights

Lifetime Prevalence

Across the age range from 12 to 21, three substance use behaviors (smoking cigarettes, drinking alcohol, and using marijuana) have the greatest prevalence, whereas behaviors such as major theft, belonging to a gang, and carrying a handgun exhibit much lower prevalences. Differences between males and females were pervasive across behaviors, except for substance use and running away from home. In general, whites and Hispanics were more likely than African-Americans to have ever used tobacco, alcohol, or hard drugs. Juveniles and young adults who had lived in families with both biological parents had lower lifetime prevalence levels than those who had lived in other families for all measured problem behaviors except drinking alcohol.

Onset of Problem Behaviors

Less serious behaviors — such as vandalism and minor theft — tend to have earlier onset than more serious behaviors such as major theft and selling drugs. Males and youth who did not reside with both biological parents tended to initiate problem

behaviors earlier than other youth, and that differences by race/ethnicity were mainly limited to earlier onset of white youth for smoking and drinking.

Current Prevalence

Running away from home (measured for youth ages 12 to 17 only) was the only behavior for which females had a statistically higher prevalence than males. In general, white youth were more likely than African-American youth to report smoking, drinking, using marijuana, using hard drug, minor theft, and drug selling. In the age 12 to 17 group, African-American subjects experience higher prevalences of school suspension than either whites or Hispanics. In both age groups, African-Americans and Hispanics had gang membership levels significantly higher than those of whites. Youth who had lived in families with both biological parents had lower prevalence levels than other youth for almost all behaviors. For both juveniles and young adults, the presence of friends or family in gangs, negative peer behaviors, and disconnection from school and work significantly raised the risk of problem behaviors. In contrast, positive peers provided protection against a wide variety of problem behaviors.

Frequency of Problem Behaviors

Substance related behaviors and handgun carrying were relatively frequent (more than 10 occurrences in a year), while property crimes and assault were less frequent behaviors (10 or few occurrences). Alcohol and marijuana frequency steadily increases from age 12 to 21, while hard drug use and drug selling frequencies reported by young adults were comparable to those reported by juveniles age 16 or 17. For property behaviors and assault, frequencies increase through the mid-to-late teen years, then decline. The frequency of handgun carrying increased significantly from around 40 times

per year among juveniles to 60 to 80 times per year among respondents ages 18, 19, or 20. For handgun carrying, a prevalence that wavers between 4% and 6% across ages is matched with a frequency that increased from about 40 times per year among juveniles to between 60 and 80 times per year among adults. Therefore, the total volume of handgun carrying acts was greater among young adults than among juveniles.

Career Characteristics and Very High Frequency Offending

For young adults age 18 or older, more extensive offending history raises the chances of current offending. For males age 18 or older, any history of a range of problem behaviors — from smoking to gang membership — by itself increases the likelihood of very high frequency offending during early adulthood. In contrast, the effects of behavior history were less likely to impact the current behavior of female respondents.

Comorbidity: Co-occurrence of Problem Behaviors

In general, for both juveniles and young adults, engaging in one problem behavior increases the risk of engaging in other problem behaviors, although some specialization appears — for example, marijuana use raises only the risk of drug selling and gang membership. Even with pairs of problem behaviors that have relatively high comorbidity, the level of overlap can vary substantially across different ages. For example, at age 12, 65% of self-reported gang members also reported assault; at age 20, the level had dropped to 27%.

Transition to Offending and Persistence: Serious Offenses

For the transition from no offending to any level of serious offending, having friends or family in a gang, negative peer behaviors, disconnection from school and work, and having resided in a household without both biological parents present were all significant risk factors, while peers engaged in positive behaviors served as protective factors. Once very high frequency serious offending has begun, factors that otherwise are associated with protection against problematic behaviors (positive peers, school enrollment or employment, and families with both biological parents) are less relevant to continued offending than are the risk factors of gang friends and bad peers.

Continuity Between Juvenile and Adult Offending

The large majority of juveniles with law violating behavior abandon those behaviors before they reach age 18, and even more abandon the behaviors by age 20. However, most youth who offend at age 16 or 17 also offend at age 18 or 19, and the great majority of young adults who report offending have a history of offending as juveniles.

1. Introduction

The National Longitudinal Survey of Youth (NLSY97) is a significant new national resource for the study of the development juvenile and young adult problem behaviors. This report presents analyses of data from the first five rounds of the NLSY97. NLSY97's nationally representative sample of youth were between the ages of 12 and 16 on December 31, 1996. The period covered by the yearly surveys is from 1997 to 2001, so the respondents' ages ranged from 12 (the youngest respondents in the round begun in 1997) to 22 (the oldest respondents in the round begun in 2001).

The objective for the report is to provide criminal justice practitioners and policymakers with a timely description of the problem and law-violating behaviors of juveniles and young adults. To meet the objective, this report presents cross-sectional descriptions of the onset ages of relevant behaviors tracked by the NLSY97; the short-term (i.e., current) prevalence and frequency of these behaviors; the lifetime prevalence (i.e., from ages 12 to 21) of these behaviors; and the overlap among problem behaviors. When utilizing the longitudinal nature of the data, the report describes the dynamic aspects of juvenile problem and law-violating behaviors — such as the transition from non-offending to offending, the persistence of relatively serious offending, and the continuation of a variety of serious and problem behaviors from the juvenile into the adult years. For many of these topics, the report presents analyses by subpopulation defined by age, sex, race/ethnicity, labor force status, and household composition. In addition, the report also presents assessments of the relative impact of a variety of risk and protective factors on these behaviors. Products of this research can inform

prevention programs, enforcement measures, and treatment plans for specific behaviors and specific classes of juveniles and young adults.

The 1997 National Longitudinal Survey of Youth

The NLSY97 was designed by the Bureau of Labor Statistics (BLS) and it is fielded by the National Opinion Research Center (NORC). Although not principally a study of law-violating behavior, the NLSY97 contains several questions (many included in the survey at the behest of the Office of Juvenile Justice and Delinquency Prevention, OJJDP) that directly assess delinquent and deviant behaviors, as well as measures that pertain to more general questions of adolescent behavior, attitudes, and development. The NLSY97 data include self-reports of a wide range of law-violating behaviors, from vandalism, to theft of items worth less than $50, to substance use (cigarette, alcohol, marijuana, or hard drugs), assault , the sale of hard drugs, and gun carrying. Other behaviors tracked by the survey include: participation in gang activity; suspension from school; labor force status (employed, unemployed, or not in the labor force) and employment history. The data also include reports of peer characteristics (for first round only); the percentage of peers engaged in a variety of behaviors, both positive and negative; and family characteristics, such as the type of parental figures in the household (i.e., whether the respondent lives with both biological parents, with two parents one of whom is a biological mother, or one of four other household types).

The NLSY97 was designed to produce descriptions of the general U.S. resident juvenile population in terms of sex, race, ethnicity, and urban/rural residence. To strengthen analysis possibilities, the NLSY97 oversamples of both non-Hispanic black and Hispanic youth. The NLSY97 has a relatively large sample, in comparison to other

self-report law-violation surveys. The first round of the NLSY97 surveyed over 8,900 subjects, and 88% of the original respondents participated in the fifth survey round. The size and demographic composition of the NLSY97 sample permit more detailed analyses than heretofore possible of both juveniles who engage in deviant or delinquent behaviors and juveniles who exhibit no such behaviors.

Table 1.1 NLSY97 Composition (unweighted)

Characteristics	NLSY97 Round 1, as of December 31, 1996 *N*
Sex	
Male	4,385
Female	4,599
Race/ethnicity	
Non-Hispanic white	4,406
Non-Hispanic African-American	2,333
Hispanic	1,899
Other	318
Age	
12	1,771
13	1,807
14	1,841
15	1,874
16	1,691

Participants in the NLSY97 are surveyed at approximately 12 month intervals. Table 1.2 shows the number of survey participants for each of the first five rounds of the NLSY97. The ages for the respondents to the first survey round, conducted in 1997 and early 1998, ranged from 12 to 18. Ages for the fifth round of surveys ranged from 17 to 22. Combining the first five rounds of the NLSY97 produces a cross-sectional file that contains respondents ages age 12 to age 21 with unweighted sample sizes ranging from over 1,100 at age 12 to over 7,300 at age 21[1]. For longitudinal analyses the data permit the study of five years in the lives over nearly 9,000 youth, with a different five-year period for each birth cohort.

[1] Although 22-year-old respondents are present in the fifth survey round, they were less than 2% of the sample, and were excluded from any age-specific analysis.

Table 1.2. Number and age at time of interview of NLSY97 respondents, rounds 1 to 5

	NLSY97 round					
Age at interview	1997	1998	1999	2000	2001	Total
12	1,169					1,169
13	1,726	105				1,831
14	1,858	1,598	109			3,565
15	1,877	1,677	1,664	58		5,276
16	1,719	1,735	1,632	1,555	67	6,708
17	614	1,747	1,728	1,667	1,548	7,304
18	21	1,415	1,622	1,657	1,620	6,335
19		109	1,387	1,606	1,610	4,712
20			67	1,401	1,588	3,056
21				137	1,339	1,476
22					111	111
Total	8,984	8,386	8,209	8,081	7,883	41,543

Plan of Analysis

The structure of the remainder of the report begins, in Section 2, with a description of lifetime prevalences—the proportion of youth and young adults who said they had ever engaged in any of the problem behaviors asked about in the NLSY97. The description of lifetime prevalence includes descriptions of differences by age, sex, race/ethnicity, and family structure. Section 3 addresses onset ages for a variety of problem behaviors, followed by an analysis of the effects of age, sex, race/ethnicity, and family structure on variations in onset. Section 4 contains description and analysis of current prevalences, i.e., whether individuals had engaged in any of the problem behaviors during the months or days immediately preceding the time of interview. The investigation of current prevalences also includes an analysis of risk factors that make problem behaviors more likely to occur. Section 5 details differences in behavior frequencies (how often the behaviors were reported to have occurred) by age, sex, race/ethnicity, and family structure. It also includes analysis of the risk factors that may

increase the likelihood of high-frequency problem behavior occurrence, and analysis of the relationship between early onset and high frequency of problem behaviors. The section on frequency is followed, in Section 6, by an analysis of co-morbidity (multiple problem behaviors at the same time in an individual). Section 7 presents a developmental analysis of problem behaviors: the transitions from no offending or low levels of offending to high-frequency serious offending; and the factors that affect persistence in high-frequency serious offending. Section 8 describes the level of continuity between juvenile problem behaviors and problem behaviors reported by adults. Section 9 compares the broad pattern of results contained in this report with results obtained from an earlier nationally representative sample of juvenile law-violating behavior, the National Youth Survey[2].

[2] Elliot, D.S., S.S. Ageton, D. Huizinga, B.A. Knowles, and R.J. Canter. 1983. *The Prevalence and Incidence of Delinquent Behavior: 1976 – 1980.* Boulder, CO: Behavioral Research Institute.

2. Lifetime Prevalence

Placing the problem behaviors of youth and young adults in context requires an understanding of lifetime prevalence—the proportion of persons who have ever engaged in specific behaviors. Examination of lifetime prevalence will not only show what proportion of youth and young adults have ever, for example, carried a handgun, it also lays the foundation for the study of onset (found in Section 3), and is the baseline to which current prevalence (Section 4) should be compared. The survey questions used to assess lifetime prevalence in the first survey round appear below in Table 2.1. In subsequent rounds, subjects who had not previously reported a behavior were asked if they had engaged in it "since the date of the last interview."

Table 2.1 Text of survey questions used to measure lifetime prevalence

Behavior	Question text
Cigarette Smoking	Have you ever smoked a cigarette?
Drinking alcohol	Have you ever had a drink of an alcoholic beverage? (By a drink we mean a can or bottle of beer, a glass of wine, a mixed drink, or a shot of liquor. Do not include childhood sips that you might have had from an older person's drink.)
Marijuana use	Have you ever used marijuana, for example: grass or pot, in your lifetime?
Hard drug use	Have you ever used any drugs like cocaine or crack or heroin, or any other substance not prescribed by a doctor, in order to get high or to achieve an altered state?
School suspension	Have you ever been suspended from school?
Running away	Have you ever run away, that is, left home and stayed away at least overnight without your parent's prior knowledge or permission?
Gang membership	Have you ever belonged to a gang? [A previous question specified: "By gangs, we mean a group that hangs out together, wears gang colors or clothes, has set clear boundaries of its territory or turf, protects its members and turf against other rival gangs through fighting or threats."]
Vandalism	Have you ever purposely damaged or destroyed property that did not belong to you?
Minor theft	Have you ever stolen something from a store or something that did not belong to you worth less than 50 dollars?
Major theft	Have you ever stolen something from a store, person or house, or something that did not belong to you worth 50 dollars or more including stealing a car?
Fraud/ fencing	Have you ever committed other property crimes such as fencing, receiving, possessing or selling stolen property, or cheated someone by selling them something that was worthless or worth much less than what you said it was?
Assault	Have you ever attacked someone with the idea of seriously hurting them or have a situation end up in a serious fight or assault of some kind?
Drug selling	Have you ever sold or helped sell marijuana (pot, grass), hashish (hash) or other hard drugs such as heroin, cocaine or LSD?
Carry a handgun	Have you ever carried a handgun? When we say handgun, we mean any firearm other than a rifle or shotgun.

The measures of lifetime prevalence indicate whether respondents said they had ever engaged in any of the various behaviors examined. Therefore, lifetime prevalence reflects the responses to questions asking whether individuals had ever engaged in the behaviors and the responses to questions asked during each survey round about current behaviors. The measure indicates experience with a behavior for respondent ages corresponding to all interview periods that fall after the age of onset. For example, a youth would be identified as having smoked at age 15 and afterward if the youth was age 15 at the second interview and self-reported smoking since the date of the preceding interview, but reported having never smoked in the first interview.

Analysis of lifetime prevalence begins with an examination of behaviors grouped by category. Behaviors that are not generally considered to be illegal—school suspension and gang membership—are not included in any group. Running away from home is also excluded. Item-specific analysis of these three behaviors appears later in the chapter. The categories and their included offenses are:

- Status—cigarette smoking and drinking alcohol
- Illegal drug—marijuana use, hard drug use[3], and drug selling
- Property—vandalism, minor theft, major theft, and fraud/fencing
- Person—assault, carry a handgun

Lifetime prevalence is also examined with a fifth, broader summary indicator of any illegal offense from the groups illegal drug use or selling, property offenses, and person offenses—that is, all of the specific behaviors listed above, except cigarette smoking and drinking alcohol.

[3] Because its inclusion would result in sample sizes too small to permit comparisons across sub-populations, the drug measure omits hard drug use for 12 and 13 year olds.

Table 2.2 contains the correlations between current prevalences of the offenses used to make the grouped offense indicators. From the relative sizes of correlations between offenses, it can be seen that offenses within a group, such as the four components of property offending—vandalism, minor theft, major theft, and fraud/fencing—are correlated with each other at higher levels than they are correlated with other offenses, such as drinking alcohol. The same pattern of correlations appears with status substances (cigarettes and alcohol) and illegal drug use/selling. Assault and handgun use are exceptions, as the correlation coefficients for assault and drug selling or assault and vandalism are larger than that of assault and carrying a handgun, but person offending is the most logical offending category in which to place these two behaviors.

Table 2.2 Zero-order correlations of offending behaviors, youth ages 12 to 21

	Cigarettes	Alcohol	Marijuana	Hard drugs	Drug selling	Vandalism	Minor theft	Major theft	Fraud / fencing	Assault
Alcohol	0.39									
Marijuana	0.38	0.37								
Hard drugs	0.23	0.19	0.34							
Drug selling	0.22	0.17	0.36	0.39						
Vandalism	0.12	0.11	0.16	0.17	0.25					
Minor theft	0.14	0.13	0.20	0.19	0.26	0.33				
Major theft	0.10	0.07	0.14	0.16	0.25	0.27	0.36			
Fraud / fencing	0.10	0.08	0.14	0.16	0.28	0.29	0.27	0.34		
Assault	0.15	0.11	0.17	0.14	0.24	0.26	0.17	0.18	0.21	
Handgun	0.10	0.09	0.12	0.11	0.20	0.15	0.10	0.16	0.19	0.20

For all behaviors, lifetime prevalence levels increase with increasing age. This is to be expected given that the percentage of persons in a cohort who report ever having engaged in a behavior can never decrease as the cohort ages, assuming that the behavior and mortality are not correlated. Table 2.3 shows that, across all ages, person offenses were less prevalent than status substance offending (cigarettes / alcohol), illegal drug offenses, or property offenses, reaching a maximum of 40% of the population at ages 20

and 21. In contrast, by age 14, about one-half of the youth reported ever using cigarettes/alcohol; by age 15, about one-half have engaged in offenses against property; by age 21, about one-half have either used or sold illegal drugs. The combined measure of delinquency offenses shows that, by age 20, 3 out of every 4 youth have engaged in drug, property, or person offending.

Table 2.3 Percentage of population, by age, who reported ever engaging in the indicated behavior

	Age									
Behavior	12	13	14	15	16	17	18	19	20	21
Cigarettes/alcohol	32%	40%	52%	62%	69%	74%	81%	86%	88%	92%
Illegal drug use/ selling[1]	5	9	18	25	32	38	43	47	49	53
Property offenses	39	41	47	50	54	56	57	59	59	60
Person offenses	19	19	25	29	31	34	36	38	40	40
Illegal drug, property, or person offenses[1]	46	47	56	60	66	69	71	74	75	77

[1] Question about hard drug use not asked in 1997 and was not incorporated into the drug offense measure for 12 or 13 year-olds

Figures 2.1 thru 2.5 depict lifetime prevalence for the five offense groups by sex, race / ethnicity, and family structure (as of the 1997 round of interviews). Each chart shows prevalence estimates at ages 12, 17, and 21. The samples were weighted to be nationally representative by sex, race, ethnicity, and urban/rural residence. Figure 2.1 presents the lifetime prevalence levels of cigarette/alcohol use. The three bars on the left indicate that 32% of youth at age 12 had used cigarettes or alcohol, 74% of youth at age 17 had done so, and 92% of 21-year-olds had done so. Similar patterns appear across sub-populations defined by sex, race/ethnicity, and family structure, although some variation emerges. For example, at age 12 Hispanics (at 22%) were significantly less likely than whites (34%) to have reported ever using cigarettes or alcohol, and at age 21 African-

Americans (at 84%) were less likely than whites (at 94%) to have experience with cigarettes or alcohol. Youth from families with both biological parents present were less likely than other youth to report experience with cigarettes or alcohol at all ages (12, 17, and 21).

As would be expected, the lifetime prevalence of illegal drug use/selling was generally lower than lifetime prevalence of cigarette/alcohol use. However the general patterns in the lifetime prevalence of illegal drug use/selling (Figure 2.2) bear some resemblance to the patterns in the prevalence of cigarette/alcohol use (Figure 2.1). In particular, the age 17 prevalence level for illegal drug behaviors (38%) was much higher than the age 12 prevalence level (7% excluding hard drug use, 9% including hard drug use), and the prevalence for 17-year-olds was more than one-half the age 21 prevalence level (53%). With both cigarettes/alcohol and illegal drugs, the period from 12 to 17 appears to be one of high levels of initiation into these behaviors; this holds true, in general, across groups defined by sex, race / ethnicity, and family status.

As shown in Figure 2.3, property offending appears to be a relatively early onset behavior. For example, the age 12 property offense lifetime prevalence levels were greater than one-half of age 21 prevalence levels, and lifetime prevalence levels increased at lower rates from age 12 to 17 and from age 17 to 21 than did substance-related behaviors. Only for whites and youth from families without both biological parents present was there a statistically discernable difference between age 17 and age 21 property offense lifetime prevalence levels.

Figure 2.4 shows lifetime prevalence levels of person offending (i.e., assault or carrying a handgun). In general, the age 21 person offense lifetime prevalence level

(40%) was about twice the age 12 level (19%), and most of the increase from age 12 to age 21 is already present in the 17 year-olds (at 34%). Overall, males were significantly more likely than females, African-Americans were significantly more likely than whites or Hispanics, and youth from families without both biological parents present were significantly more likely than those from families with both biological parents present to report they had engaged in person offenses.

Figure 2.5 presents the lifetime prevalence levels of combined delinquent/criminal offenses (i.e., an indicator of any experience with illegal drug use/selling, property offending, or person offending). Almost one-half (46%) of 12 year-olds had engaged in at least one of the three types of offending behaviors, and over three-fourths (77%) of 21 year-olds had done so.[4] Differences by sex or family structure seen with illegal drug, property, or person offenses also appear in the summary offense measure. At ages 12, 17 and 21, females had lower lifetime prevalence levels than males; at age 17 and 21 youth from households with both biological parents present had lower lifetime prevalence levels than other youth; and, at age 12, Hispanic youth had lower lifetime prevalence that African-American youth.

[4] As a result of the co-occurrence of problem behaviors within an individual , the sum of the specific lifetime prevalences of illegal drug experience, property offending, and person offending is greater than the prevalence estimate for the combined offense indicator. For example, for 12-year-olds the sum of the specific lifetime prevalences (5% + 39% + 19% = 63%) is greater than the combined offending prevalence level (46%).

Figure 2.1 Lifetime prevalence of cigarette/alcohol use, by age and demographic group

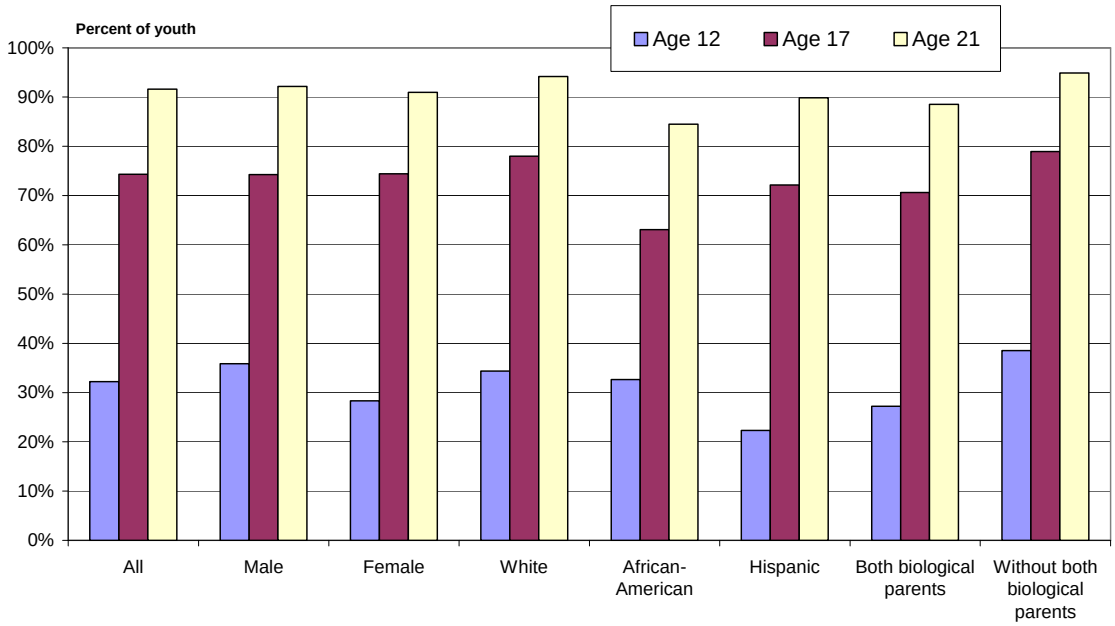


Figure 2.2 Lifetime prevalence of drug use/selling, by age and demographic group

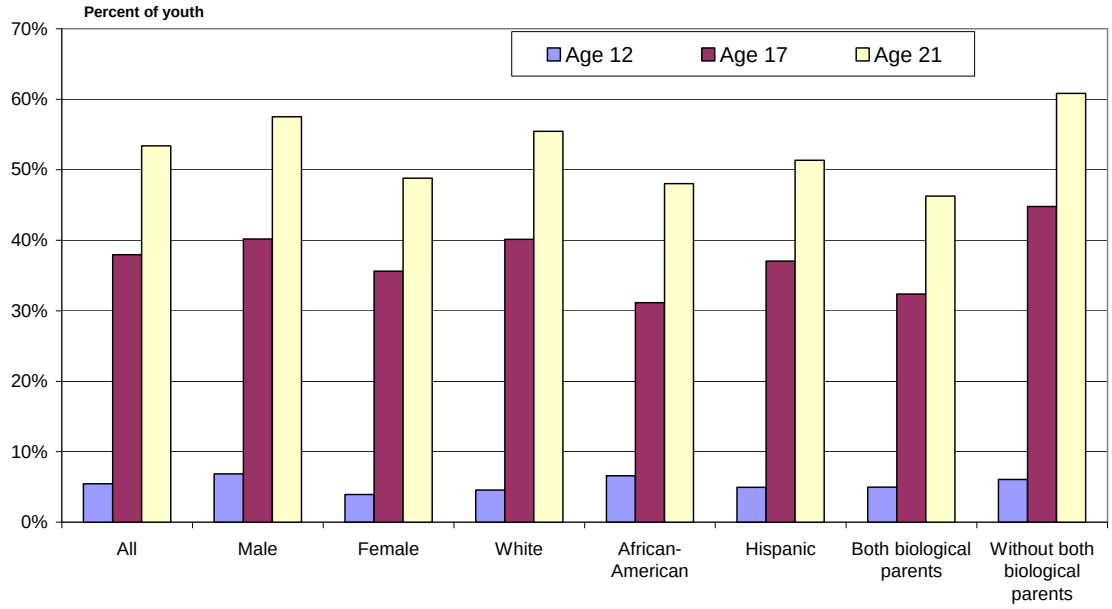


Figure 2.3 Lifetime prevalence of property offending, by age and demographic group

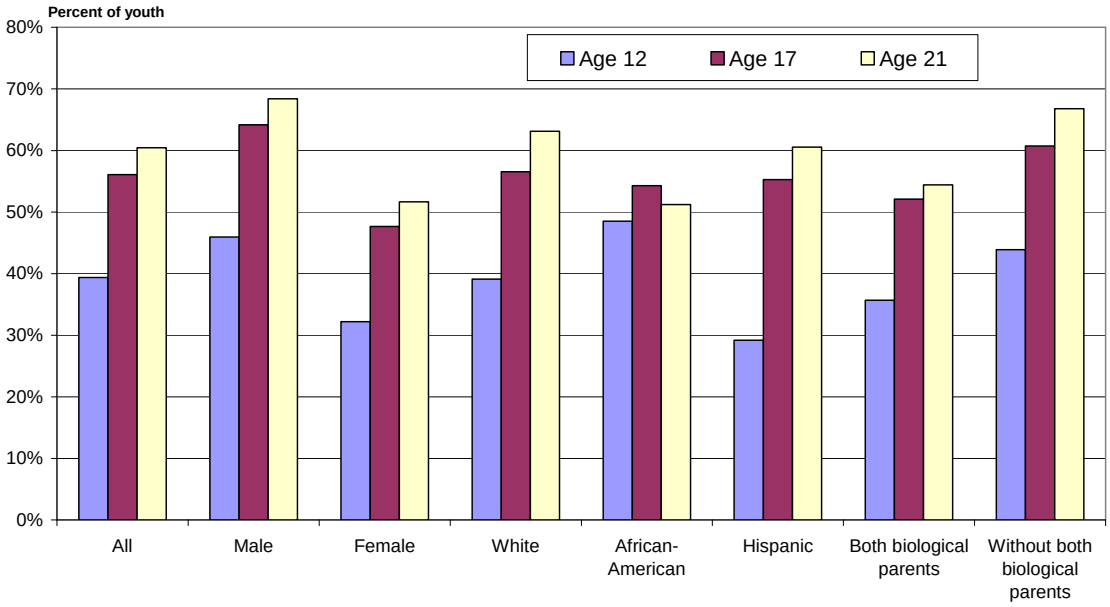


Figure 2.4 Lifetime prevalence of person offending, by age and demographic group

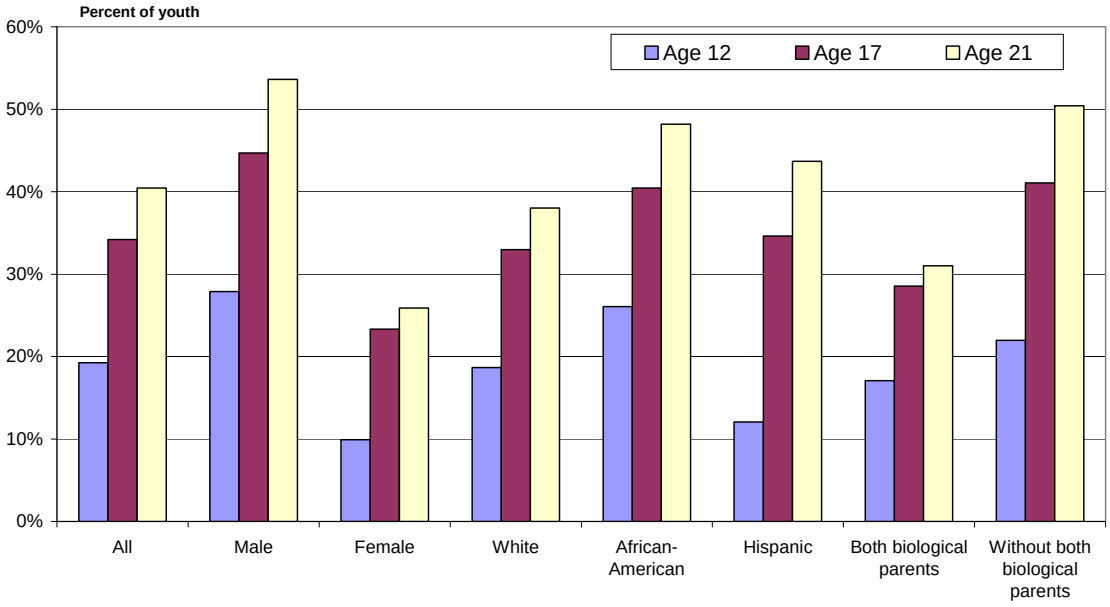
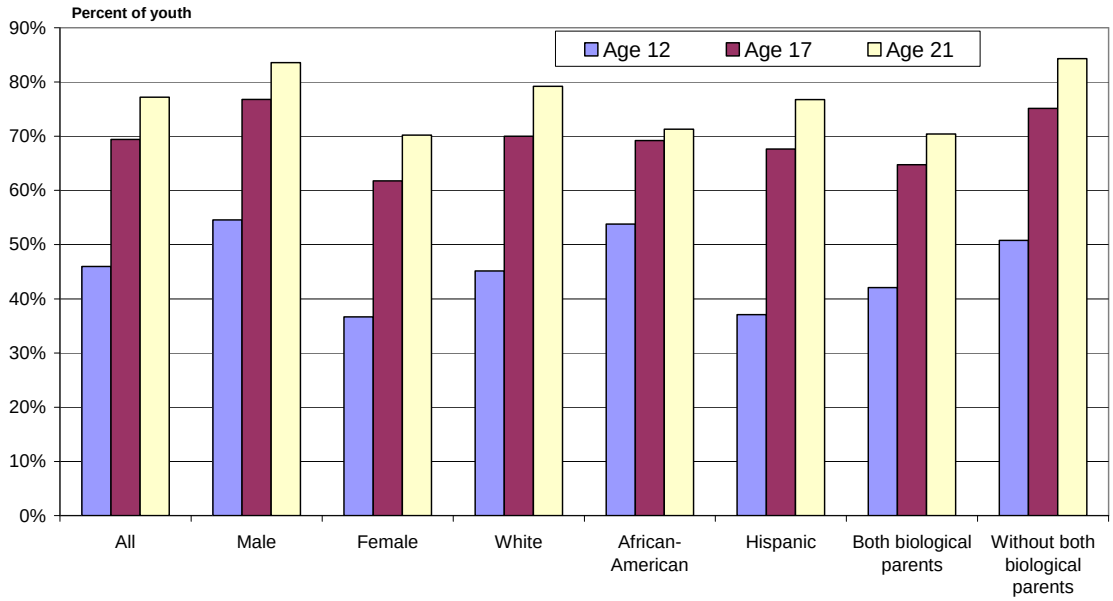


Figure 2.5 Lifetime prevalence of combined delinquent or criminal offending, by age and demographic group



Lifetime Prevalence of Specific Behaviors

For all specific behaviors, lifetime prevalence levels at age 17 were significantly greater than at age 12. Across the ages from 12 to 17, behaviors that were relatively less prevalent at age 12 — behaviors such as major theft, gang membership, handgun carrying, and fraud/fencing — were also relatively less prevalent at age 17. Similarly, behaviors that were more prevalent among 12-year-olds, such as cigarette smoking, drinking, minor theft, and vandalism, were also relatively more prevalent among 17-year-olds. [Table 2.4 shows the lifetime prevalence — the percentage of youth who said they had ever engaged in a particular behavior — for the 14 specific behaviors. Prevalence across age groups for selected behaviors are also depicted in Figures 2.5, 2.6, and 2.7.]

Table 2.4 Percentage at each age group who reported ever engaging in the indicated behavior

	Age									
Behavior	12	13	14	15	16	17	18	19	20	21
Cigarette smoking	22%	29%	38%	44%	50%	53%	60%	65%	66%	68%
Drinking alcohol	20	28	41	53	61	68	76	81	84	88
Marijuana use	5	8	16	23	30	34	40	43	44	49
Hard drug use[1]		2	5	7	9	10	13	13	14	13
School suspension	15	18	24	27	30	33	n/a	n/a	n/a	n/a
Runaway[2]			9	12	16	18	n/a	n/a	n/a	n/a
Gang membership	3	4	5	6	7	8	9	9	10	11
Vandalism	24	27	30	33	36	37	37	38	38	38
Minor theft	25	27	33	36	40	43	45	47	47	50
Major theft	4	4	7	9	11	13	14	16	17	17
Fraud/fencing	5	6	8	11	12	13	14	16	17	17
Assault	14	15	19	22	24	27	29	30	32	33
Drug selling	1	3	6	8	13	16	18	20	22	24
Carry a handgun	8	8	10	13	14	16	17	19	20	21

[1] Question not asked in 1997, the only interview year with 12 year-old respondents
[2] Question not asked of respondents younger than age 14 or age 18 or older.

Comparatively large increases in lifetime prevalence from age 12 to age 17 occurred in three substance-related behaviors — cigarette smoking, drinking alcohol, and marijuana use — and in minor theft. Prevalence rates of drinking alcohol increased 48 percentage points from age 12 to age 17. Large increases were also found in cigarette smoking (31 percentage points), in marijuana use (29 percentage points), and in minor theft (18 percentage points). Smaller increases — less than 10 percentage points — in lifetime prevalence across the age range from 12 to 17 were seen in gang membership (from 3% to 8%), fraud/fencing (from 5% to 13%), major theft (from 4% to 13%), and handgun carrying (from 8% to 16%); however, for each of these behaviors the lifetime prevalence at least doubled between ages 12 and 17.

The three behaviors that showed the largest increases in lifetime prevalence from age 12 to age 17 also had the largest increases from age 17 to 21: both the percentage of respondents who had ever smoked cigarettes and the percentage of respondents who had ever used marijuana increased by 15% percentage points between ages 17 and 21 (from 53% of 17-year-olds to 68% of 21-year-olds for smoking cigarettes and from 34% to 49% for marijuana use). Similarly, the percentage who had ever drunk alcohol grew by 20 percentage points between ages 17 and 21 (from 68% to 88%). The next-largest increases occurred in drug selling (from 16% of 17-year-olds to 24% of 21-year-olds), minor theft (from 43% to 50%), and assault (from 27% to 33%). Increases of 5 percentage points or less in lifetime prevalence from age 17 to age 21 occurred in hard drug use, gang membership, vandalism, fraud/fencing, major theft, and handgun carrying.

Figure 2.6 Lifetime prevalences of substance use behaviors, by age

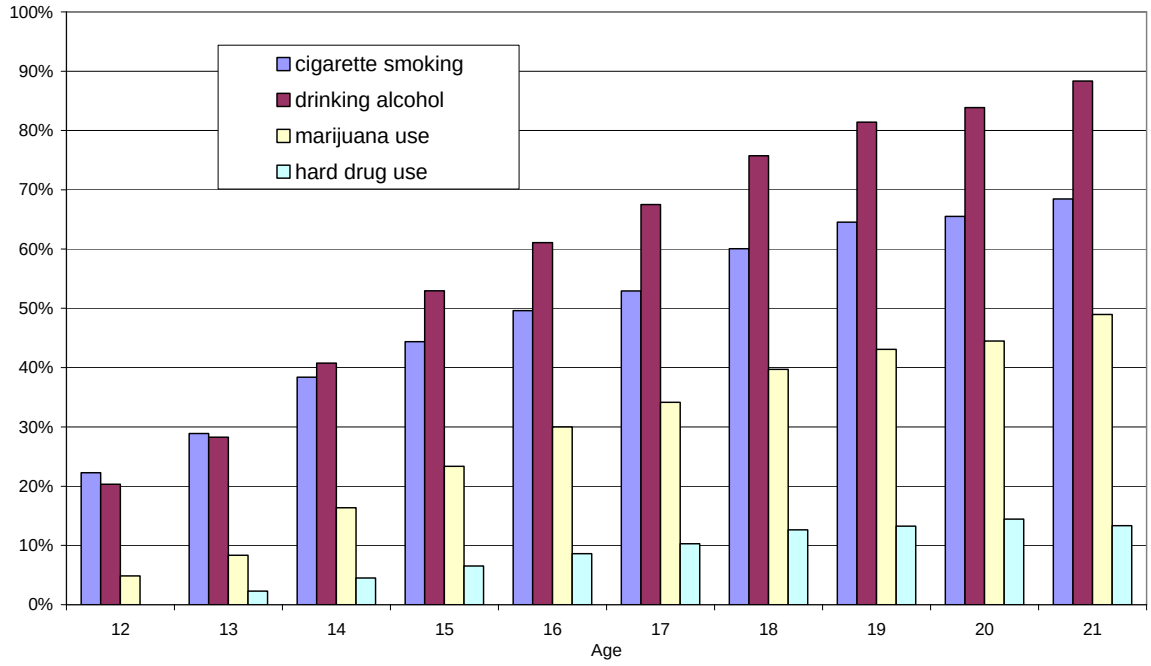


Figure 2.7 Lifetime prevalences of property crimes, by age

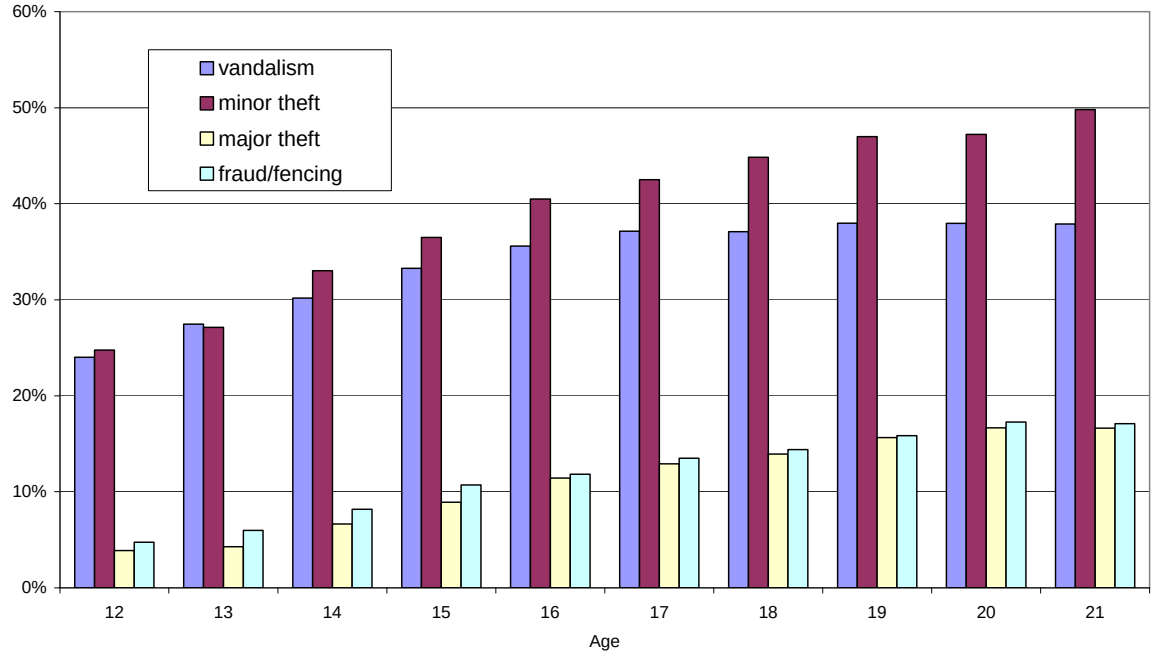
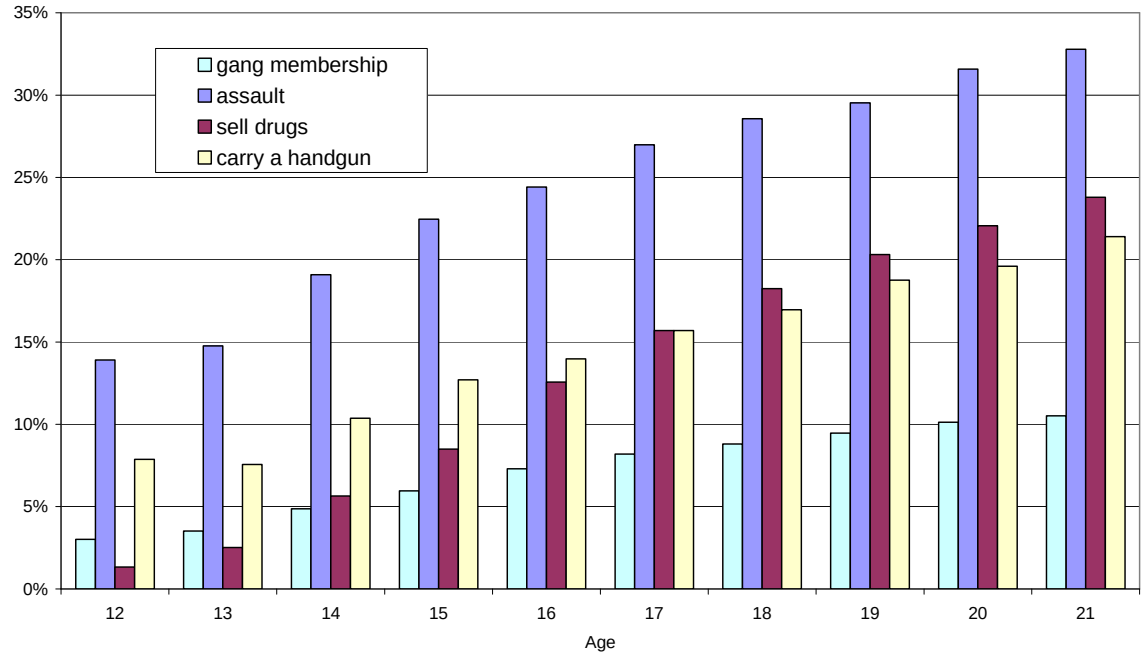


Figure 2.8 Lifetime prevalences of gang membership, assault, selling drugs, and carrying a handgun, by age



Lifetime Prevalence of Specific Behaviors by Sex, Race/Ethnicity, and Family Structure

Lifetime prevalence differences between males and females were pervasive across most behaviors. Table 2.5 shows that, at both age 17 and age 21, males were consistently more likely to have said they engaged in all measured behaviors except cigarette smoking, drinking alcohol, hard drug use, and running away from home. For example, by age 17, 10% of males and 11% females had ever reported using hard drugs; in contrast, 21% of males and 6% of females had ever reported fraud/fencing by age 17. At either age 17 or age 21, the largest differences in absolute terms between males and females occurred with vandalism and carrying a handgun. Girls reported significantly higher lifetime prevalence for one behavior: running away. At age 17, 20% of girls and 17% of boys said they had ever run away.

Table 2.5 Lifetime prevalence levels at ages 17 and 21, by sex

	Age 17		Age 21*	
Behavior	Male	Female	Male	Female
Cigarette smoking	53% [a]	53% [a]	68% [a]	69% [a]
Drinking alcohol	67 [a]	68 [a]	89 [a]	87 [a]
Marijuana use	36 [a]	33 [b]	53 [a]	45 [b]
Hard drug use	10 [a]	11 [a]	15 [a]	14 [a]
School suspension	42 [a]	24 [b]	n/a	n/a
Runaway	17 [a]	20 [b]	n/a	n/a
Gang membership	11 [a]	6 [b]	15 [a]	5 [b]
Vandalism	47 [a]	27 [b]	49 [a]	25 [b]
Minor theft	47 [a]	38 [b]	54 [a]	44 [b]
Major theft	16 [a]	10 [b]	21 [a]	11 [b]
Fraud/fencing	21 [a]	6 [b]	26 [a]	7 [b]
Assault	33 [a]	21 [b]	41 [a]	24 [b]
Drug selling	19 [a]	12 [b]	29 [a]	17 [b]
Carry a handgun	25 [a]	6 [b]	34 [a]	7 [b]

*Values for respondents age 20 substituted for hard drugs entries; values for those age 21 were lower, although not significantly so.

[a, b] Cells within an age group and behavior that have different superscripts were different at the $p<0.05$ level.

The following age-detailed graphs depict similarities and differences between males and females in the relationship between development and problem behavior. Figure 2.9 shows that, after age 13, almost identical percentages of males and females had ever drunk alcohol; about one-half of all youth had drunk alcohol by age 15. Similarly, as seen in Figure 2.10, there were only small (and insignificant) differences by sex in hard drug use lifetime prevalence at any age. Figure 2.11 shows that, with advancing age, males were increasingly (and significantly) more likely than females to have ever committed major theft. Finally, Figure 2.12 shows that at any age males were more likely than females to ever have assaulted another person. For example, by age 14, 1 out of every 4 males had reported assault, about twice the prevalence level for females.

Figure 2.9 Lifetime prevalence of drinking alcohol, by age and sex

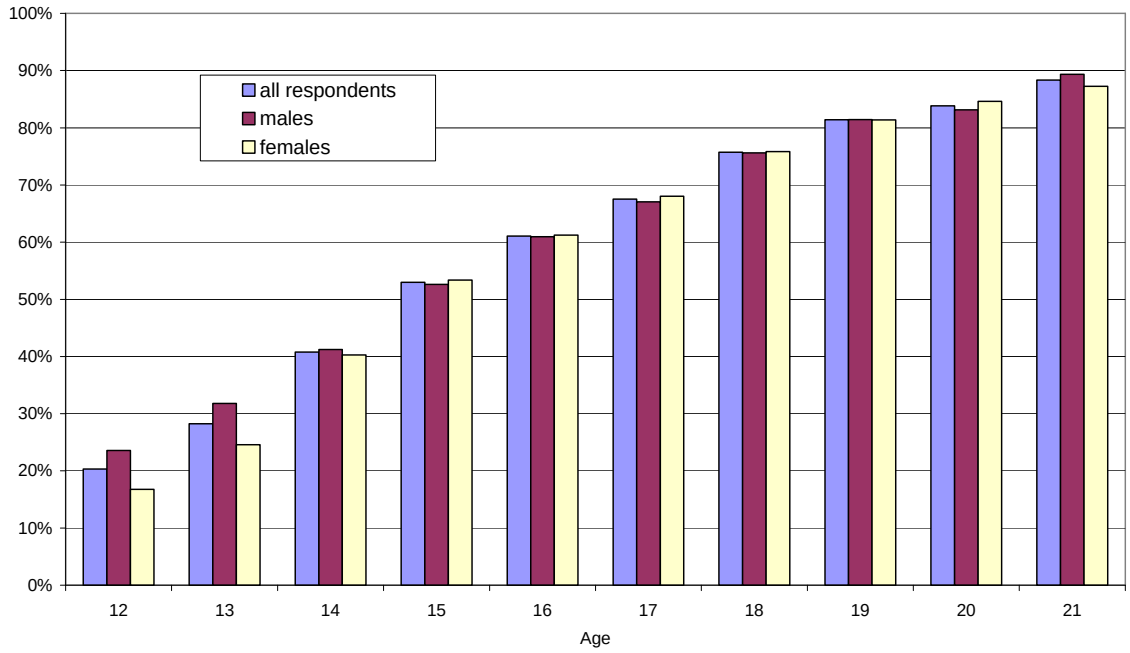


Figure 2.10 Lifetime hard drug use prevalence, by age and sex

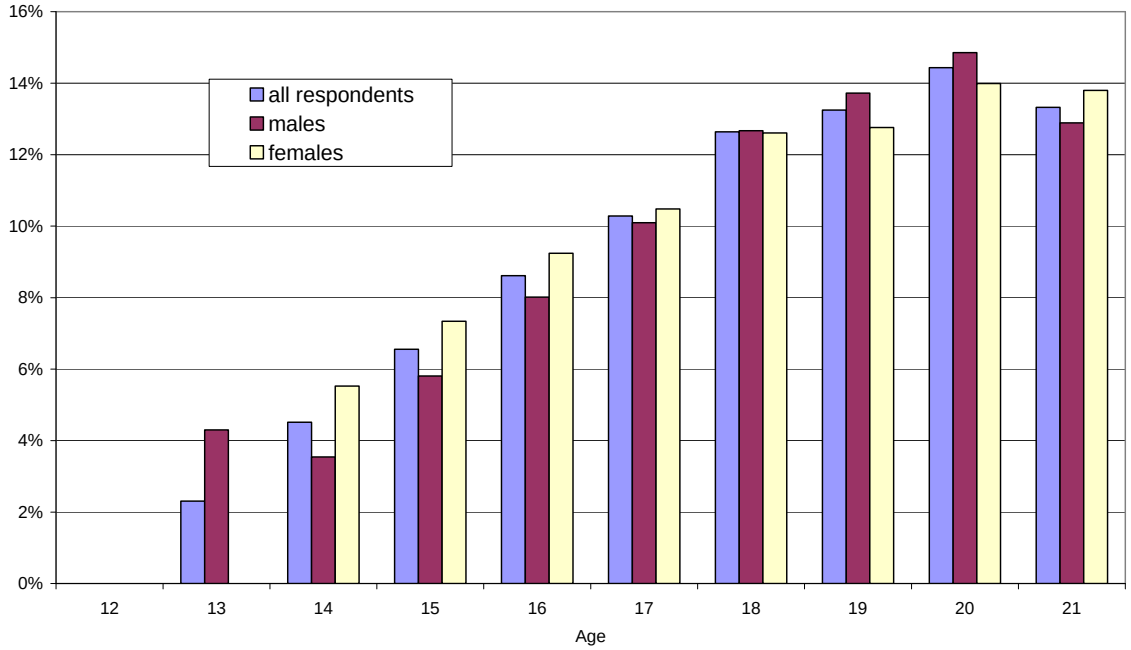


Figure 2.11 Lifetime prevalence of major theft, by age and sex

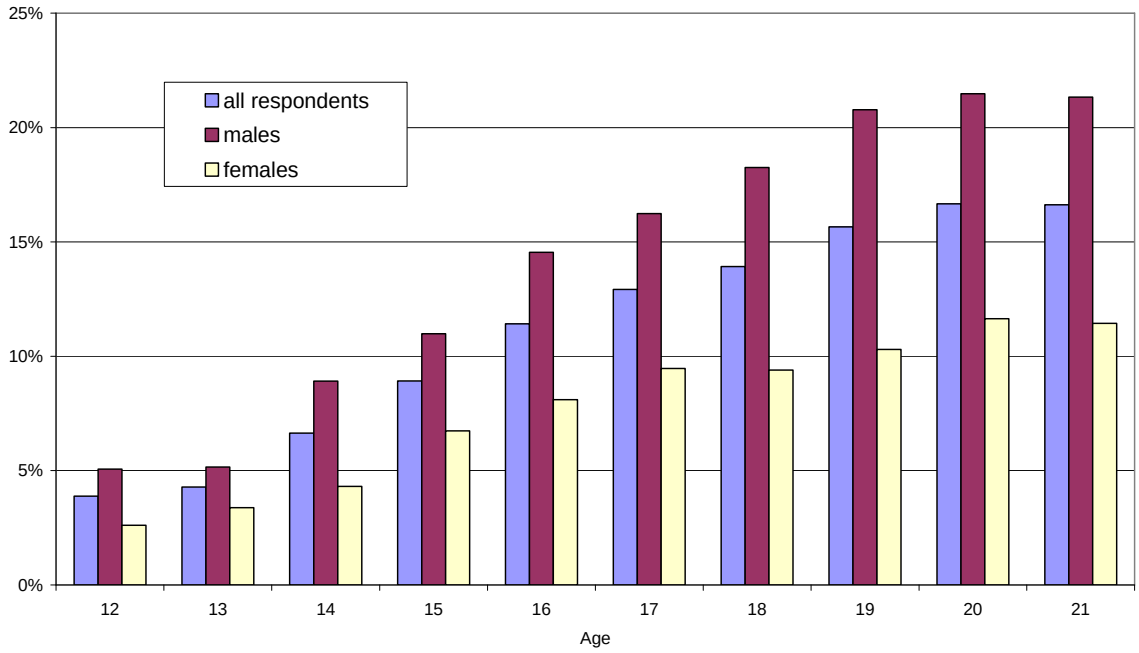
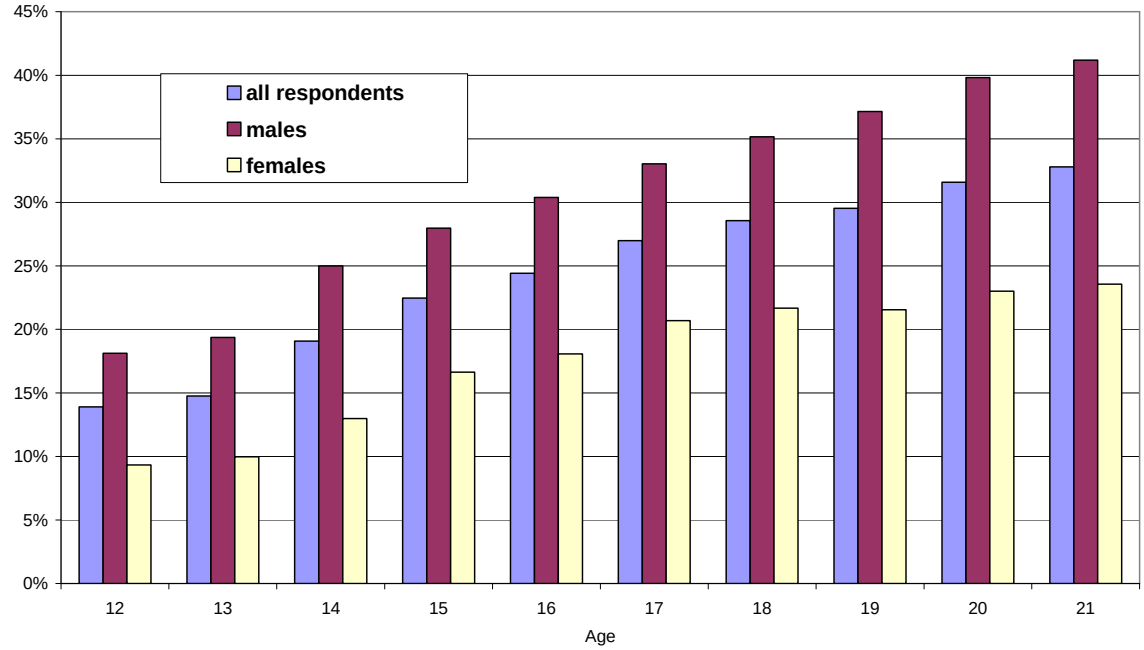


Figure 2.12 Lifetime assault prevalence, by age and sex



As can be seen in Table 2.6, racial/ethnic differences in lifetime prevalence at either age 17 or 21 varied across behaviors. For some behaviors there were no significant differences. For other behaviors, whites or whites and Hispanics had higher prevalences than African-Americans. For other behaviors, African-Americans had higher prevalences than whites or Hispanics. There was no dominant pattern across all behaviors. In general, both whites and Hispanics at age 17 and age 21 were more likely than African-Americans of similar age to have ever used tobacco, alcohol, or hard drugs. By age 17, about 3 out of every 4 white youth have experience with drinking alcohol, compared with 1 out of every 2 African-American youth. At age 17, white youth were more likely to have ever used marijuana than were either African-Americans or Hispanics; at age 21 there were no significant differences in marijuana use by race/ethnicity and about 1 out of every 2 white, African-American, and Hispanic young adults had used marijuana. Whites (by age 17 or age 21) were more likely than African-Americans to report vandalism or minor

theft; racial/ethnic differences in major theft and fraud/fencing prevalences were relatively small, even when the differences were statistically significant (e.g., African-Americans were more likely than whites at age 17 to report major theft). By age 17, African-Americans reported a lower prevalence of drug selling than whites; by age 21 the differences between groups were not statistically significant. By age 17, African-Americans were significantly more likely than Hispanics, who were significantly more likely than whites, to have been suspended from school; by age 17, more than one-half (56%) of African-American youth had ever been suspended. African-Americans and Hispanics were more likely than whites to have belonged to a gang, either by age 17 or by age 21. African-Americans by age 17 were more likely than whites or Hispanics to have ever reported committing and assault; by age 21, both African-Americans and Hispanics were more likely than whites to have reported assaulting another person.

Table 2.6 Lifetime prevalence levels by age and race/ethnicity

	Age 17			Age 21*		
Behavior	White	African-American	Hispanic	White	African-American	Hispanic
Cigarette smoking	57%[a]	40%[b]	49%[c]	73%[a]	54%[b]	67%[c]
Drinking alcohol	73[a]	52[b]	65[c]	92[a]	77[b]	85[c]
Marijuana use	37[a]	28[b]	31[b]	51[a]	45[a]	46[a]
Hard drug use	12[a]	3[b]	11[a]	17[a]	6[b]	14[a]
School suspension	28[a]	56[b]	38[c]	n/a	n/a	n/a
Runaway	18[a]	21[a]	17[a]	n/a	n/a	n/a
Gang membership	7[a]	12[b]	12[b]	7[a]	17[b]	17[b]
Vandalism	39[a]	33[b]	34[b]	41[a]	29[b]	34[a, b]
Minor theft	44[a]	38[b]	41[a, b]	52[a]	38[b]	48[a, b]
Major theft	12[a]	15[b]	14[a, b]	16[a]	17[a]	19[a]
Fraud/fencing	14[a]	14[a]	13[a]	18[a]	16[a]	16[a]
Assault	25[a]	36[b]	28[a]	30[a]	41[b]	38[b]
Drug selling	17[a]	13[b]	16[a]	26[a]	20[a]	19[a]
Carry a handgun	16[a]	15[a]	15[a]	20[a]	26[a]	23[a]

*Values for respondents age 20 substituted for hard drugs entries; values for those age 21 were lower, although not significantly so.

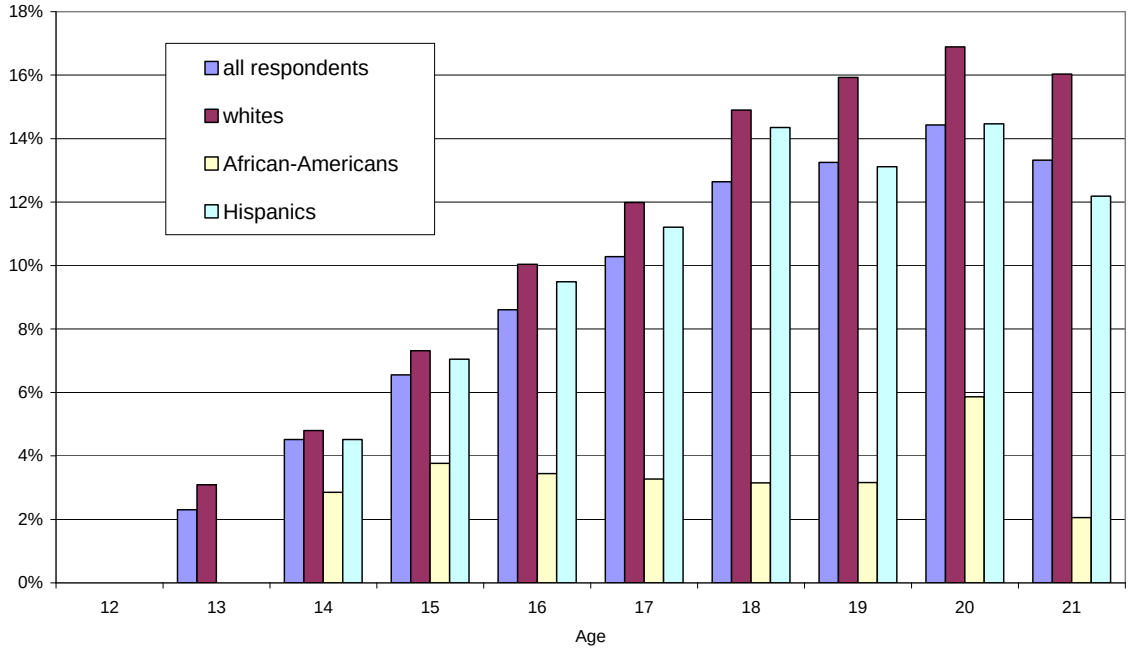
[a, b, c] Cells within an age group and behavior with different superscripts were different at the $p<0.05$ level.

Age-specific analyses of lifetime prevalence levels by race/ethnicity underscores some of the patterns seen in Table 2.6. For example, Figure 2.13 shows that the prevalence of hard drug use was generally higher among whites and Hispanics than among African-Americans regardless of age. For example, white youth were statistically more likely than African-Americans to use hard drugs from age 15 to 21, and Hispanics were statistically more likely than African-Americans to use hard drugs from age 16 to 21. However, when it came to drug selling, prevalence levels among whites and Hispanics were closer to those of African-Americans, although African-Americans still had drug selling prevalences statistically lower than whites at ages 16 through 19, and lower than Hispanics at ages 18 and 19 (Figure 2.14).

Figure 2.15 shows that the percentage of African-Americans and Hispanics who had ever belonged to a gang was, in general, almost twice that of whites (gang membership prevalences among whites were significantly lower than those for African-Americans and Hispanics from age 15 to age 21). In comparison, Figure 2.16 indicates that racial/ethnic differences in prevalence of handgun carrying were generally insignificant, with only one instance of significant difference occurring at age 13, with whites more likely than African-Americans to report carrying a handgun.

Table 2.7 shows that differences in lifetime prevalence by family structure, operationalized as whether a respondent lived with both biological parents in 1997, were pervasive. Except for drinking among respondents by age 21, youth and young adults who had lived in families with both biological parents had lower lifetime prevalence levels for the measured problem behaviors than youth and young adults who had lived in families without both biological parents present. For example, whereas 5% of youth age

Figure 2.13 Lifetime prevalence of hard drug use, by age* and race/ethnicity



*Hard drug use responses not collected for 12-year-olds.

Figure 2.14 Lifetime prevalence of drug selling, by age and race/ethnicity

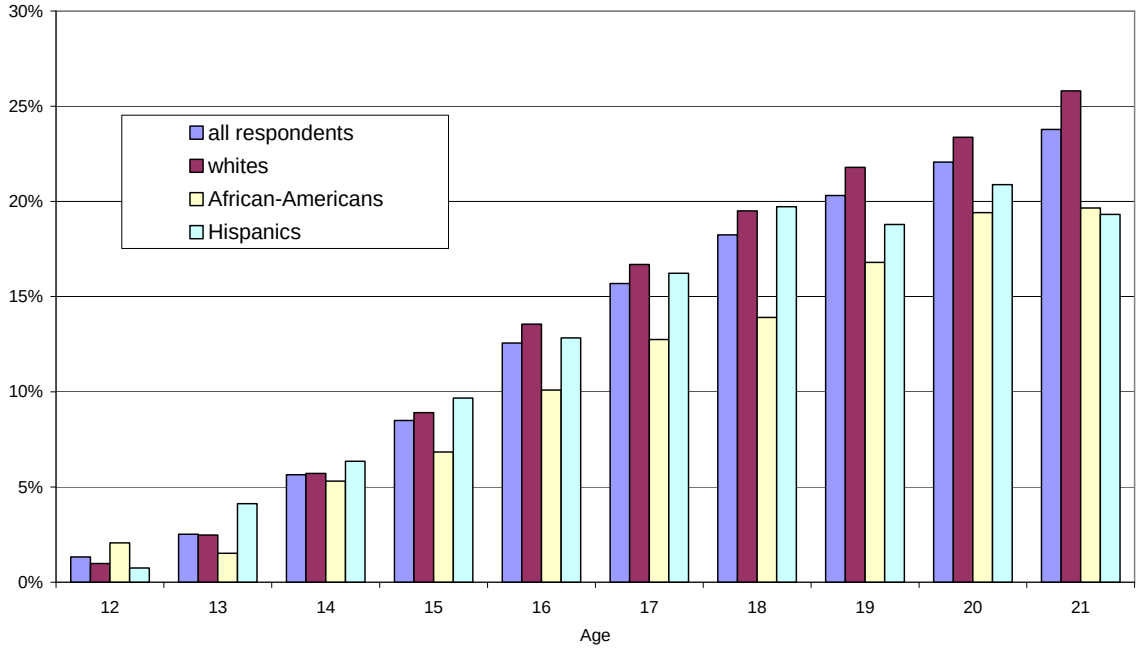


Figure 2.15 Lifetime prevalence of gang membership, by age and race/ethnicity

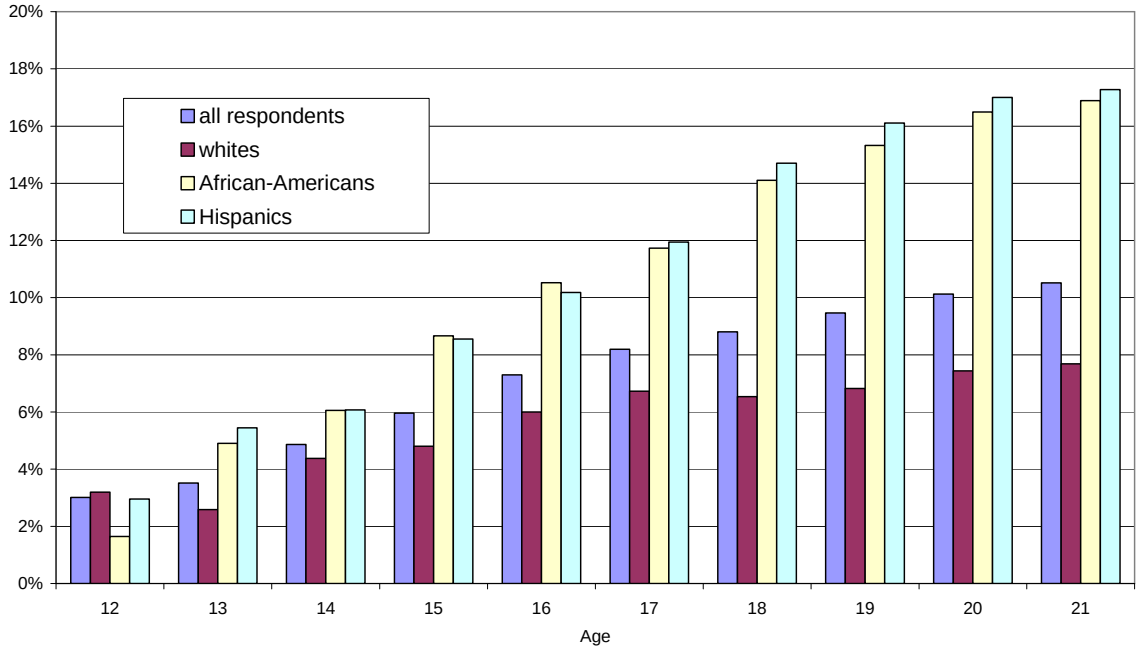
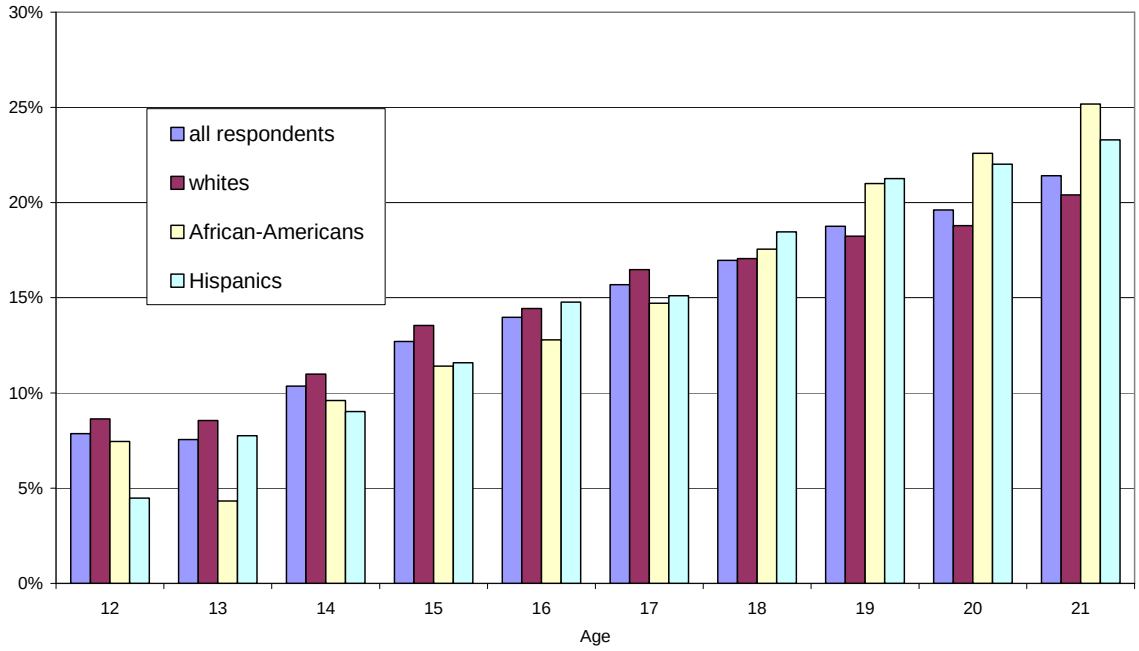


Figure 2.16 Lifetime prevalence of carrying a handgun, by age and race/ethnicity



17 from families with both biological parents reported having ever belonged to a gang, the prevalence level for youth living in other types of families was 12%. The differences between the two groups were especially noticeable (10% or greater) at age 17 and age 21 for cigarette smoking, marijuana use, and assault and at age 21 for minor theft and selling drugs.

It must be noted that the effect on family structure may be muted by the way it was operationalized in this study. Although family structure was recorded in each wave of the NLSY97, there are clear difficulties in comparing the family structure of, for example, 16-year-olds with that of 19-year-olds, many of whom reside outside of the home of their parents. Therefore, for the sake of comparability, the family structure variable reflects the household situations of juvenile respondents only, and 1997 was the last year that all respondents were juveniles younger than age 18. In subsequent waves the child's living arrangement may have changed causing the two groups (i.e., living with both biological parents vs. not living with both biological parents) to be contaminated with youth living in a new (i.e., the other) family structure. This would then dilute any differences related to family structure; so those differences that still rise to the level of statistical significance may actually be greater than observed. Similarly, the differences that are near, but not, statistically significant may well be truly different between the two classes of family structure.

Table 2.7 Lifetime prevalence levels by age and family structure[1]

	Age 17		Age 21*	
Behavior	Youth living with both biological parents	Youth living in other families	Youth living with both biological parents	Youth living in other families
Cigarette smoking	48%[a]	60%[b]	62%[a]	75%[b]
Drinking alcohol	66[a]	70[b]	87[a]	90[a]
Marijuana use	30[a]	40[b]	42[a]	56[b]
Hard drug use	9[a]	13[b]	13[a]	17[b]
School suspension	24[a]	45[b]	n/a	n/a
Runaway	13[a]	25 [b]	n/a	n/a
Gang membership	5[a]	12[b]	8[a]	13[b]
Vandalism	34[a]	41[b]	32[a]	44[b]
Minor theft	39[a]	47[b]	44[a]	56[b]
Major theft	10[a]	17[b]	14[a]	20[b]
Fraud/fencing	12[a]	16[b]	14[a]	21[b]
Assault	20[a]	35[b]	24[a]	43[b]
Drug selling	13[a]	19[b]	18[a]	30[b]
Carry a handgun	14[a]	17[b]	17[a]	26[b]

[1] Family structure indicator comes from the 1997 data file. Families without both biological parents include single-parent families, families with one biological parent and another non-biological parent, adoptive families, foster families, and families with grandparents.

* Values for respondents age 20 substituted for hard drugs entries; values for those age 21 were lower, although not significantly so.

[a, b] Cells within an age group and behavior that have different superscripts were different at the $p<0.05$ level.

The following two graphs effectively summarize the two general patterns of the relationship between family structure, problem behavior, and development. One pattern applies to drinking only; the other pattern applies to all other behaviors. Figure 2.17 shows that relatively minor differences by family structure occurred with lifetime alcohol drinking prevalence. In contrast, Figure 2.18 shows that the (statistically significant) differences by family structure in the lifetime prevalence of assault were consistent across the age range from 12 to 21.

Figure 2.17 Lifetime drinking prevalence, by age and family structure

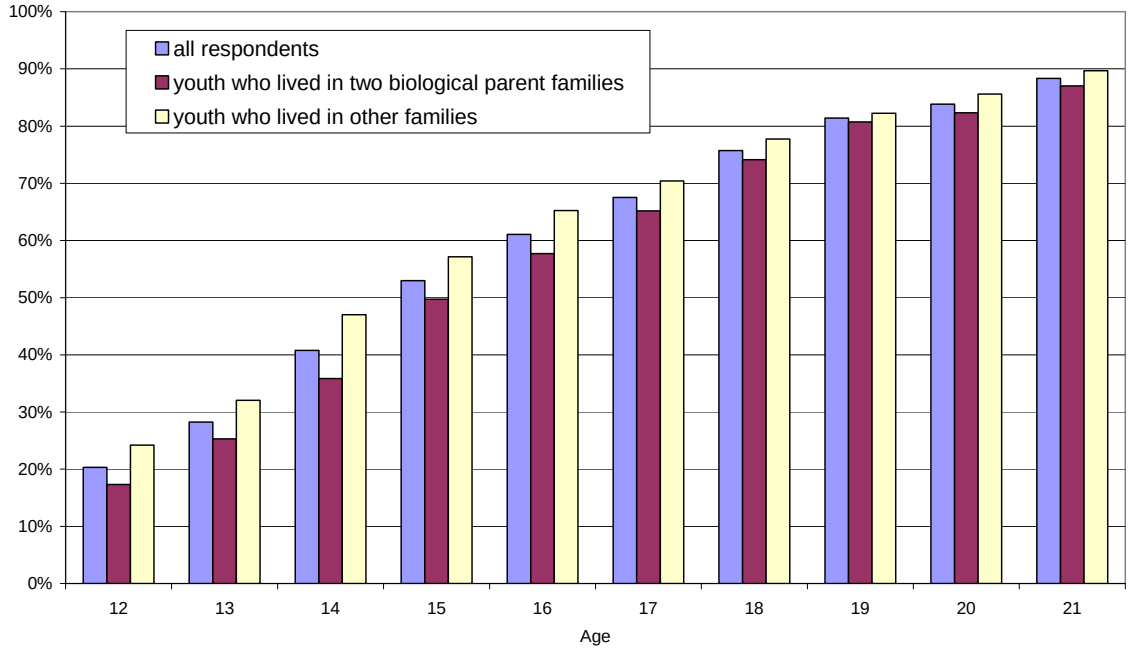
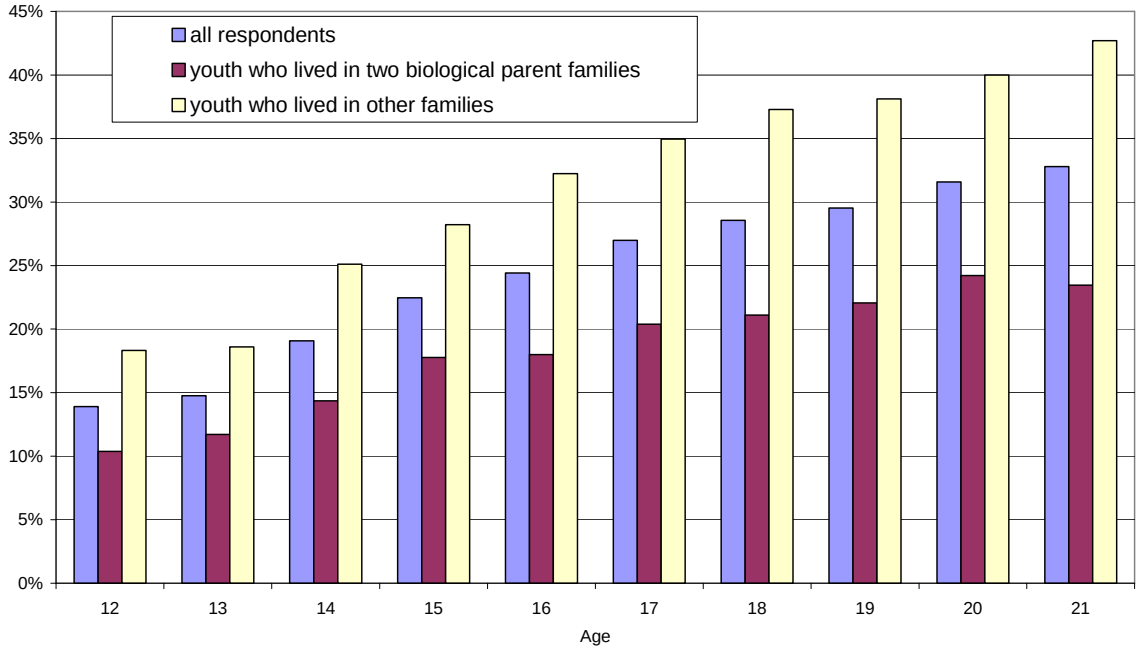


Figure 2.18 Lifetime assault prevalence, by age and family structure



3. Onset of Problem Behaviors

Examination of differences in onset age in the NLSY97 sample across problem behaviors shows that, in general, less serious behaviors—such as vandalism and minor theft—tend to have earlier onset than more serious behaviors such as major theft and selling drugs. Analysis of influences on onset age indicates that males and youth who did not reside with both biological parents tended to initiate problem behaviors earlier than other youth, and that differences by race/ethnicity were mainly limited to earlier onset of white youth for smoking and drinking.

Variation in Onset Age by Behavior

To compare onset ages across behaviors, the median onset age was calculated for each behavior. The calculation ignores onset after age 21. The median onset age calculation begins with lifetime prevalence reported by a group of respondents who were age 21 (or the average of the prevalence levels at age 20 and age 21 for drug selling), and then divides the age 21 lifetime prevalence by 2 to find the median prevalence. Then, from a distribution of lifetime prevalence by age, the age at which subjects report a lifetime prevalence equal to the median prevalence is assumed to be the median onset age. This method permits estimating median onset ages not explicitly tracked by the NLSY97 (such as onset for hard drug use and minor theft), because it is possible to impute the median based on the distribution, across ages, of lifetime prevalence. It also avoids the pitfalls of relying on respondents' memories of when they first engaged in any particular problem behavior.

The method based on lifetime prevalence among 21-year-olds was used to estimate the median onset age for all behaviors except vandalism. The age 21 lifetime prevalence for vandalism was 38%, and the age 12 prevalence (the prevalence reported by the youngest cohort in the first survey round) was 24%, a level equaling more than one-half of the age 21 prevalence. Therefore, the estimate for vandalism was based on both the lifetime prevalence level at age 21, the onset ages reported by the group of respondents who were age 12 in 1997, and the assumption of a linear growth in onset age prior to age 12.

Table 3.1 presents the estimated median onset ages. For example, the median age of onset for smoking cigarettes, for all respondents who reported smoking by age 21, was estimated to be 13.5 years; in other words, half of the 21-year-olds who smoked cigarettes began smoking cigarettes by age 13 years and 6 months. Median onset ages across the measure of problem behaviors fell in the 5-year range from about 10 years and 10 months (vandalism) to about 15 years and 10 months (drug selling). The behaviors with youngest median onset were vandalism and minor theft (at about 12 years 1 month). The behaviors with the oldest onset ages were hard drug use and drug selling (at 15 years 10 months). The distribution of median onset ages can be divided into three parts: onset age before 14, onset age at or near age 14, and onset age after age 14. Vandalism, minor theft, assault, and cigarette smoking all have median onset ages younger than 14—cigarette smoking is the latest onset at 13 years 6 months. The median onset ages for running away, fraud/fencing, carrying a handgun, drinking, and gang membership are all near 14, ranging from 13 years 11 months for running away to about 14 years 4 months for drinking and gang membership. Major theft and the three remaining substance related

behaviors (using marijuana, using hard drugs, and selling drugs) all have median onset ages later than 14 years 6 months.

Table 3.1 Estimated median onset ages among subjects at age 21

Behavior	Estimated Onset Age
Cigarette smoking	13.5
Drinking alcohol	14.3
Marijuana use	15.2
Hard drug use	15.3
Runaway[1]	13.9
Gang membership	14.3
Vandalism	10.8
Minor theft	12.1
Major theft	14.7
Fraud/fencing	14.1
Assault	13.4
Drug selling	15.8
Carry a handgun	14.1

[1] The maximum age for running away is 17; question not asked of subjects age 18 or older.

Influences on Onset Age

Table 3.2 contains the results of regression analysis of onset age, in years, for subjects who were either age 20 or 21 at the time of interview and who had ever reported the behavior examined—20-year-olds were included to increase statistical precision of estimates by adding cases. The regression models predict onset with dichotomous (i.e., "0", "1" values) variables indicating sex (male = 1), race/ethnicity (African-American, Hispanic, and other non-white race = 1), and family structure (residing in a household in 1997 that did not have both biological parents present = 1). These analyses omit the behaviors for which subjects were never explicitly asked to report onset age: hard drug use, running away from home, and minor theft. The constant indicates the predicted onset

age when the values of all predictor variables are set to 0 (i.e., the predicted age for a white female who had lived in a family with both biological parents present in 1997). For example, such a person had a predicted cigarette smoking onset age of about 14.3 years. The entries in the table are unstandardized regression coefficients. For example, the regression coefficient for the effect of sex on onset age is -0.33. The product of the coefficient and the male value of "1" (-0.33 * 1) is a negative quantity of one-third of a year. Thus, males are estimated to begin smoking cigarettes at an age about 4 months younger than females.

Of the control variables, sex had the most pervasive influence on onset age, with significant effects on 7 of the 11 behaviors—smoking cigarettes, drinking alcohol, marijuana use, running away from home, vandalism, fraud/fencing, and assault. For these behaviors, males initiated behavior at earlier ages than females, ranging from about one-third of a year (or four months) earlier for smoking and drinking to one year or greater for vandalism and fraud/fencing. Differences by family structure occurred in five behaviors—smoking, drinking, marijuana use, assault, and drug selling—such that respondents who had resided in households without both biological parents were likely to initiate problematic behaviors at a younger age than those from households with both biological parents. Differences ranged from about one-third of a year for marijuana use to about one year for smoking. Differences between African-Americans and other subjects occurred with smoking and drinking: African-Americans who smoked, first did so about 1 year 5 months later than whites and first drank about 7 months later than whites. Hispanics who ever smoked, first did so about 8 months later than whites, ran away about

a year later than whites, and first assaulted another person about 6 months later than whites.

Readers should note the small amounts of variance in onset ages explained by the control variables listed in Table 3.2. The R^2 statistics indicate that sex, family structure, and race/ethnicity explain only a small amount—from 2% to 5%—of variance in onset ages. The great majority of difference in onset ages across subjects remains unexplained by the equations. The equations do not control for factors such as family history, peer behaviors, or economic status, which, if included, would likely increase the level of explained variance.

It may appear from Table 3.2 that age of onset varies little across behaviors and that differences across individuals in the age of onset are difficult to explain with the kind of evidence available from the NLSY97. Nevertheless, analysis later in this report (Section 5) will demonstrate that differences in onset age are fairly reliable predictors of whether and how frequently a juvenile engages in problem behaviors.

Table 3.2 Regression coefficients: predicted onset ages (in years) for selected behaviors

Predictor	Smoking	Drinking	Marijuana	Runaway	Vandalism	Major theft	Fraud/ fencing	Assault	Drug selling	Gang	Handgun
Male	-0.33*	-0.36*	-0.39*	-0.80*	-1.03*	-0.29	-1.33*	-0.45*	-0.24	0.02	-0.77
Families without both biological parents present	-0.98*	-0.63*	-0.38*	-0.22	0.03	-0.44	0.42	-0.63*	-0.62*	0.14	0.41
African-American	1.41*	0.59*	0.35	0.17	-0.01	0.31	-0.53	0.39	0.52	-0.03	-0.01
Hispanic	0.72*	0.42	-0.31	0.96*	-0.12	-0.62	0.42	0.56*	-0.31	0.07	0.58
Other non-white race	0.78	0.59	0.56	0.33	0.44	-0.20	-0.01	-0.16	0.62	1.82*	1.64*
Constant	14.31*	14.67*	15.64*	14.23*	14.12*	15.53*	15.75*	15.25*	16.70*	13.90	15.65*
R^2	0.05	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.01	0.02
Sample size	1,833	2,239	1,281	551	1,028	468	466	935	589	239	573

*Regression coefficient significant at $p < 0.05$. See Appendix 3 for methods details.

4. Current Prevalence

Depending on the nature of the question asked in the NLSY97 interview, "current prevalence" refers to behavior that occurred either during the most recent 30 days (as with smoking cigarettes) or during the most recent 12 months (as with selling drugs). After the first survey round, most questions that referred to the prior 12-month period changed that reference to "in the time since the last interview." As in Section 2, which dealt with lifetime prevalences, this section begins with an examination of grouped offenses, then proceeds to detailed analyses of specific behaviors.

Table 4.1 reports the current prevalence levels, by age, of the 5 behavior groups described in Section 2: status offense substance use of cigarettes or alcohol, illegal drug use/selling (marijuana use, hard drug use, or drug selling), property offenses (minor theft, major theft, or fraud/fencing), person offenses (assault or carrying a handgun) and the summary measure of delinquent/criminal offenses, which excludes cigarette/alcohol use. Table 4.1 shows that, in contrast to the other types of behavior, current prevalence of cigarette/alcohol use climbs through out the age range from 12 to 21: illegal drug behavior prevalence reach a plateau by age 18; property offense prevalence declines steadily after age 13; person offense prevalence declines steadily, if gradually, after age 15.

The summary measure of any delinquent/criminal behavior remains nearly constant—between 34% and 36%--from age 13 to age 20, which is perhaps not what would be expected from the standard age-crime curve. However, if current prevalence of the three separate indicators are summed (drug offenses + property offenses + person offenses), the sum reaches a peak of 54% at age 16, and declines to 39% at age 21.

Table 4.1 Current prevalence of grouped behaviors by age

	Age									
Behavior	12	13	14	15	16	17	18	19	20	21
Cigarettes/alcohol	10%	16%	27%	37%	46%	53%	61%	68%	71%	78%
Illegal drug use/selling[1]	2	7	11	15	19	22	25	24	24	23
Property offenses[2]		28	25	22	21	18	16	13	10	6
Person offenses	13	12	15	16	14	12	12	11	10	10
Illegal drug, property, or person offenses[3]		35	35	35	36	35	36	34	34	31

[1] Question about hard drug use not asked in 1997 and was not incorporated into the drug offense measure for 12 year-olds; the estimate of hard drug use for 13 year-olds is 2%, and the level was probably even lower among 12 year-olds, based on the age-prevalence distribution.

[2] Question about minor theft not asked in 1997 and the property offense measure was not estimated for 12 year-olds; the estimate of minor theft prevalence for 13 year-olds is 13%, and there is no clear trend by age. Therefore, the possibility of very large errors in calculating the property offense prevalence of 12 year-olds precludes presentation of any estimate for them.

[3] Summary offense measure not estimated for 12 year-olds

Current prevalence levels for selected ages and across groups defined by sex, race/ethnicity, and family structure appear in Figures 4.1 thru 4.5. The sample was weighted to be nationally representative by sex and race/ethnicity, and to have equal proportions for every age.

Figure 4.1 presents the current prevalence estimates of cigarette/alcohol use. Current prevalence levels increased from 10% of youth at age 12, to 53% of those age 17, and to 78% of those age 21. Each population subgroup repeats the general pattern of prevalence increasing with age. The age-specific estimates show significant differences by race/ethnicity. In general, prevalences for white youth were higher than those of Hispanic youth, and prevalences for Hispanic youth were higher than those of African-American youth. There are also differences by family structure, with youth from households with both biological parents present were less likely at ages 12 and 21 to report cigarette/alcohol use than were youth from other households.

As seen in Figure 4.2, in contrast to cigarettes/alcohol, there was no significant difference between age 17 and 21 in the current prevalence levels of illegal drug use/selling. At each age, illegal drug behaviors were less prevalent than the status-related substances. The differences in prevalences across demographic groups at ages 17 and 21 resemble those seen in Figure 4.1, with the addition of differences by sex, such that prevalences of females' illegal drug behaviors were lower than those of males.

Figure 4.3 shows that the age-related trend in current prevalence levels of property offending is the mirror-image of that seen with cigarettes/alcohol: instead of increasing with age, property offending current prevalences declined with age (because 12 year-olds were not asked about minor theft, and because only 103 13 year-olds were asked about minor theft, we do not attempt comparisons across groups for 12 or 13 year-olds) . Differences appear across groups. For example, current prevalences for females were significantly lower than those of males at ages 14 and 17. But, for all groups, prevalence at age 17 was lower than at 14, and prevalence at age 21 was lower than at age 17.

Figure 4.4 depicts current prevalence levels of person offending (assault or carrying a handgun). In general, prevalences are lower at age 21 than at 12 or 17, although the absolute values of differences are small. For example, for the group of all respondents, the age 12 prevalence was 13% and age 21 it was 10%, and the difference between the two is not statistically significant. However, the respondent ages shown do not include the ages of peak person offending—ages 14 and 15; a more detailed, offense- and age-specific analysis appears later in this Section.

Figure 4.5 presents current prevalence levels for the indicator of any experience with illegal drug use/selling, property offenses, or person offenses. Again, differences appear across groups, so that prevalences were lower for females than males at any age, lower for African-Americans and Hispanics than whites at age 17, and lower for youth from households with both biological parents present than for other youth at ages 14 and 17. The overall pattern is one of stability, across ages, in the percentage of youth engaged in one or more of the component offenses.

Figure 4.1 Current prevalence of cigarette/alcohol use, by age and demographic group

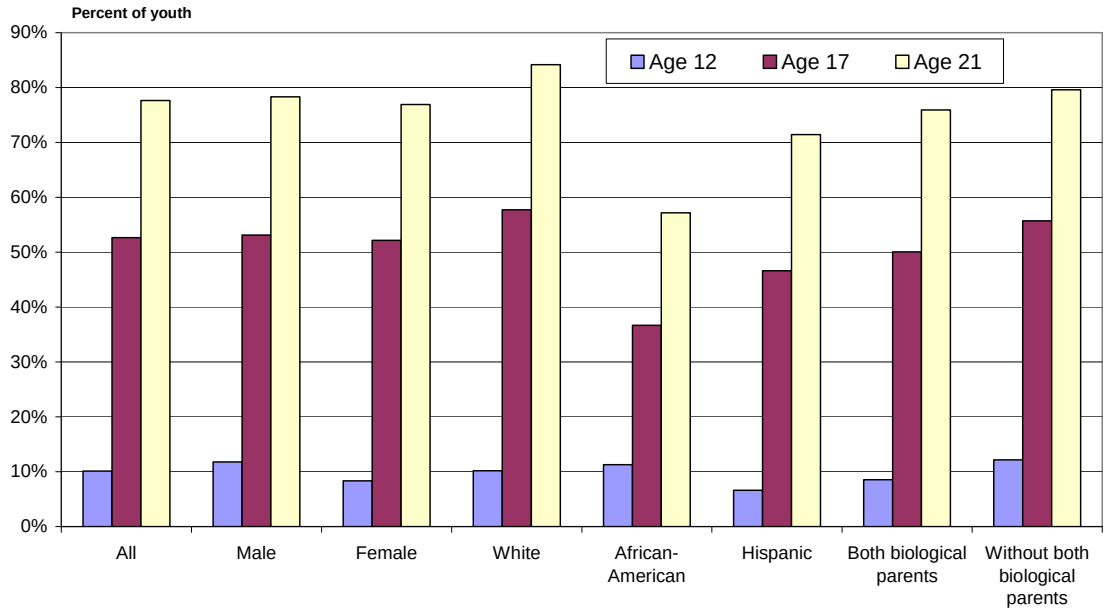


Figure 4.2 Current prevalence of drug use/selling, by age and demographic group

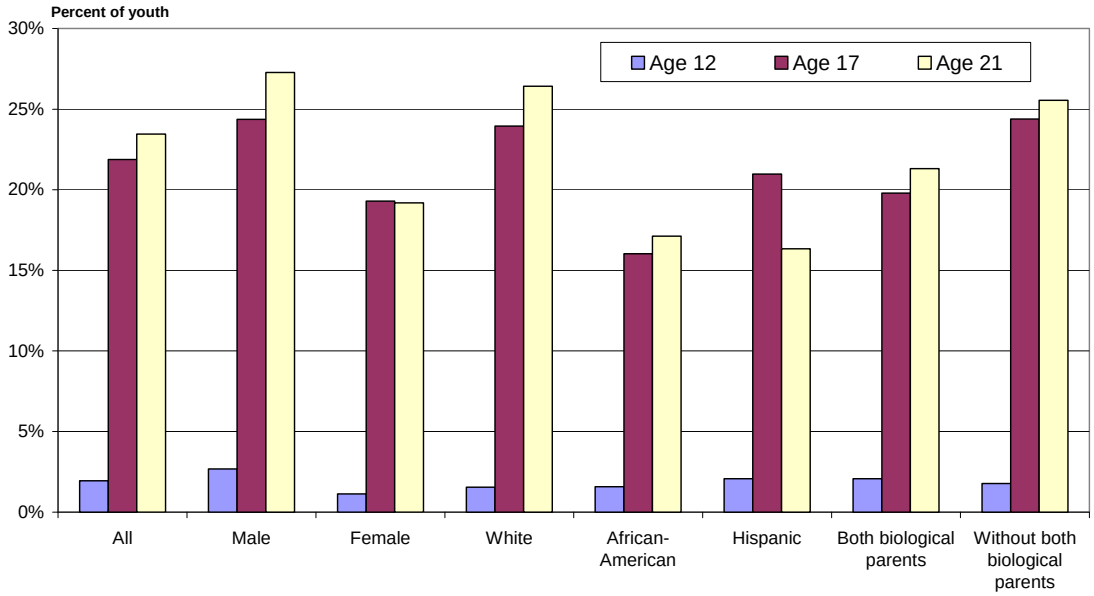


Figure 4.3 Current prevalence of property offending, by age and demographic group

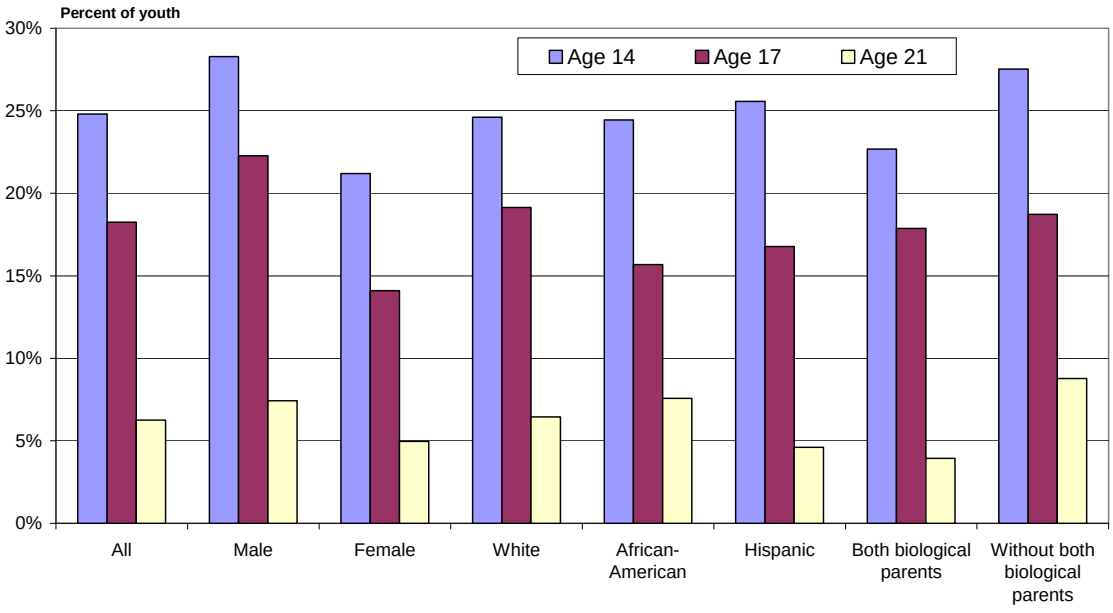


Figure 4.4 Current prevalence of person offending, by age and demographic group

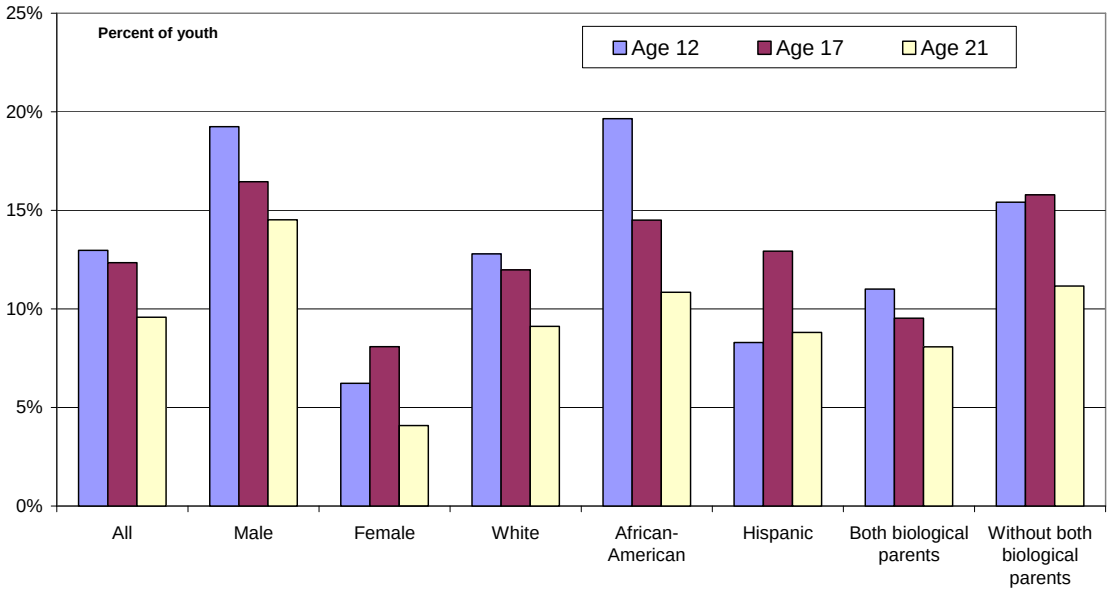
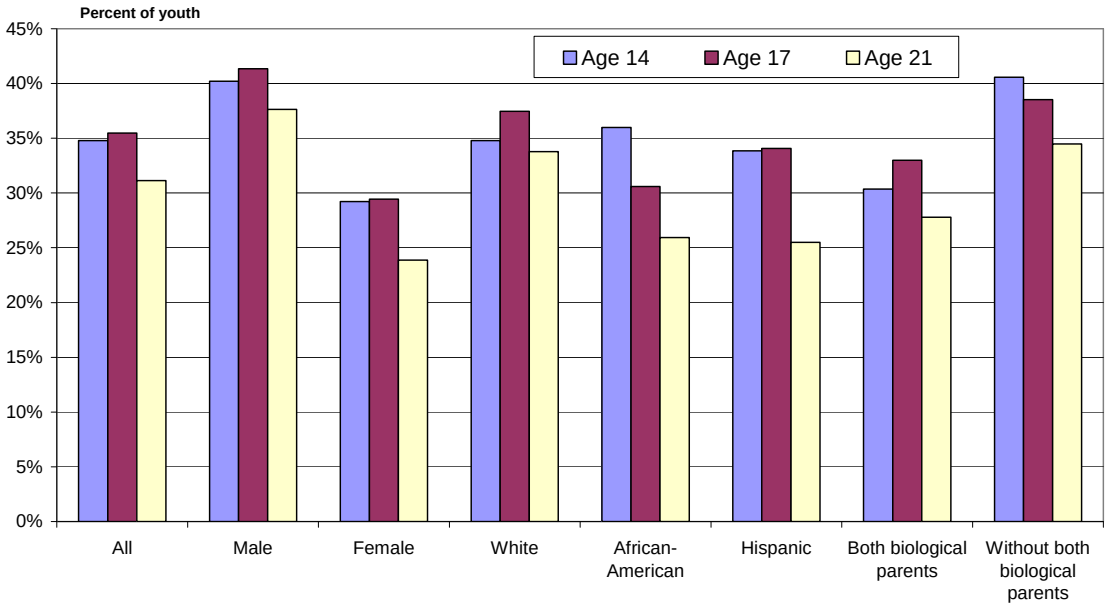


Figure 4.5 Current prevalence of combined delinquent or criminal offending, by age and demographic group



Current Prevalence of Specific Behaviors

An examination of current prevalence across the age range from 12 to 21 (Table 4.2) shows that, excluding substance-related behaviors, current prevalence levels among adults (age 18 and above) were never higher than the peak prevalence level in the juvenile years (under age 18). For example, the highest prevalence level for vandalism occurred at age 13 (17%), significantly higher than the vandalism prevalence among individuals age 16 or older, and more than twice the maximum level among adults (7%) at age 18. Similar patterns are seen with gang membership, minor theft, major theft, fraud/fencing, and assault. The peak level in gang membership (2%) occurred at age 16, and was significantly higher than any level among respondents age 18 or older. The peak level for minor theft (14%) at age 14 was significantly greater than any level at age 17 or older. The peak for major theft at age 16 (5%) was greater than any level at age 17 or older. The peak for fraud/fencing at age 15 (5%) was significantly greater than any level at age 17 or older. The peak level for assault (11% at age 15) was significantly greater than any prevalence at age 17 or older. Carrying a handgun was different; across the entire range of ages, handgun prevalence was between the levels of 4% and 6%, with no clear peak or valley. In contrast to other behaviors, the prevalence of substance use (cigarettes, alcohol, marijuana, and hard drugs) grew steadily from age 12 to 19. At or about age 19, cigarette smoking, marijuana use, and hard drug use plateaued, while drinking prevalence continued to increase.

Figures 4.6 to 4.8 show some of the general patterns visible in Table 4.2. From age 12 to 17, smoking, drinking, and marijuana use showed similar patterns of growth in current prevalence, but drinking was the only behavior to continue consistent growth

from age 18 to 21 (Figure 4.6). Among substance use behaviors, drinking alcohol was significantly more prevalent after age 13 than smoking, smoking was significantly more prevalent than marijuana use, which, in turn, was significantly more prevalent than hard drug use. Current prevalence levels for all property-related behaviors (Figure 4.7) peaked by age 16; in general and across ages, vandalism and minor theft had significantly higher prevalences than did major theft or fraud/fencing. Further, less serious property-related behaviors (vandalism and minor theft) reached peaks at ages 1 to 3 years earlier than major theft or fraud/fencing. Among gang membership, assault, drug selling, and handgun carrying, gang membership (Figure 4.8) had the lowest prevalence across the ages shown, ranging between about 2% (ages 14, 15, and 16) and about 1% (age 18 to 21).

Table 4.2 Current prevalence by age

	Age									
Behavior	12	13	14	15	16	17	18	19	20	21
Cigarette smoking[1]	7%	11%	17%	23%	30%	34%	39%	43%	45%	43%
Drinking alcohol[1]	6	10	19	30	35	41	51	59	60	71
Marijuana use[1]	1	4	7	11	15	18	20	21	21	22
Hard drug use[2]		2	4	5	6	7	9	7	8	7
School suspension	6	9	14	13	12	10	n/a	n/a	n/a	n/a
Runaway[3]			5	6	7	6	n/a	n/a	n/a	n/a
Gang membership	2	2	2	2	2	2	1	1	1	1
Vandalism	14	17	16	14	13	9	7	6	4	3
Minor theft[2]		13	14	13	12	11	10	7	6	4
Major theft	3	3	4	5	5	4	3	3	2	1
Fraud/fencing	2	3	4	5	4	3	3	3	2	2
Assault	9	10	11	11	11	9	9	7	6	5
Drug selling	1	2	5	6	8	8	8	7	6	6
Carry a handgun	5	4	5	6	5	4	5	4	5	5

[1] Questions about cigarette smoking, drinking alcohol, and using marijuana all were asked in reference to the 30 days prior to interview. Other questions, when asked in 1997, were asked in reference to the 12 months prior to the interview; when asked in subsequent survey rounds they referred to the interval between the time of questioning and the previous interview.

[2] Question not asked in 1997, the only interview year with 12 year-old respondents

[3] Question not asked of subjects younger than age 14 or older than age 17

Figure 4.6 Current prevalence levels for substance use behaviors, by age

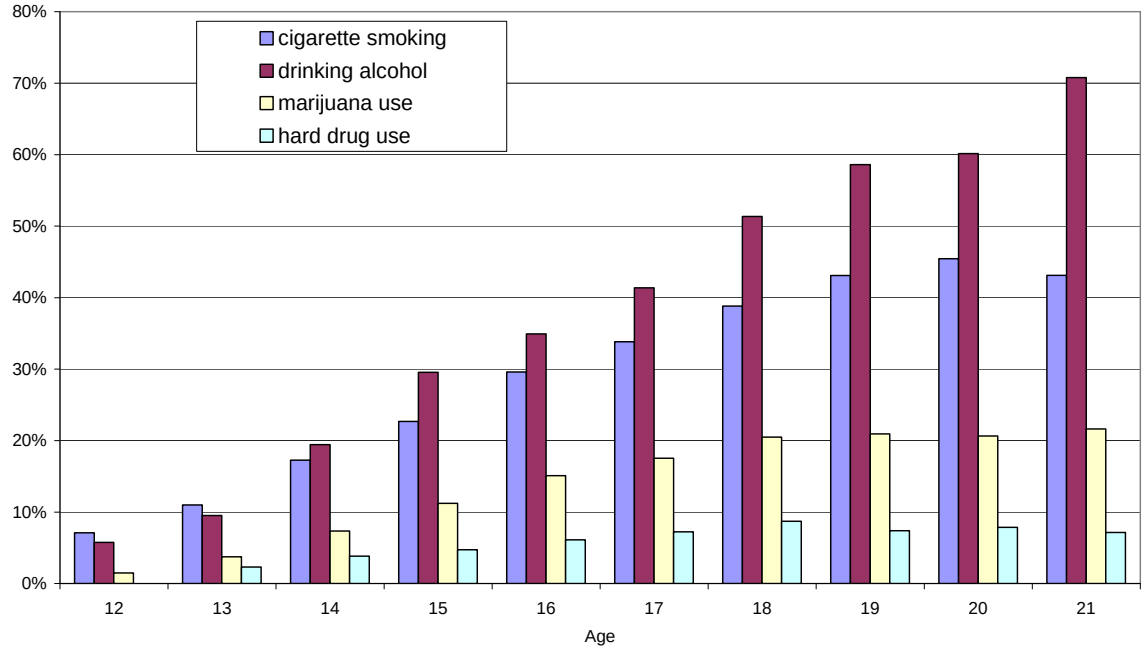


Figure 4.7 Current prevalence levels for property crimes, by age

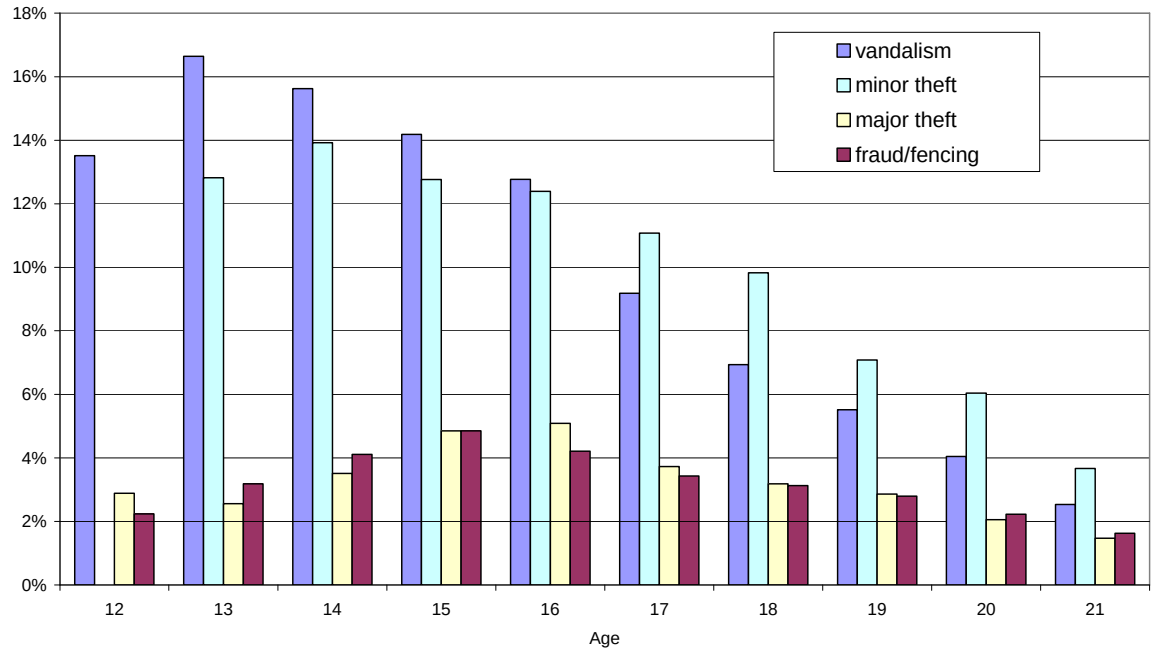
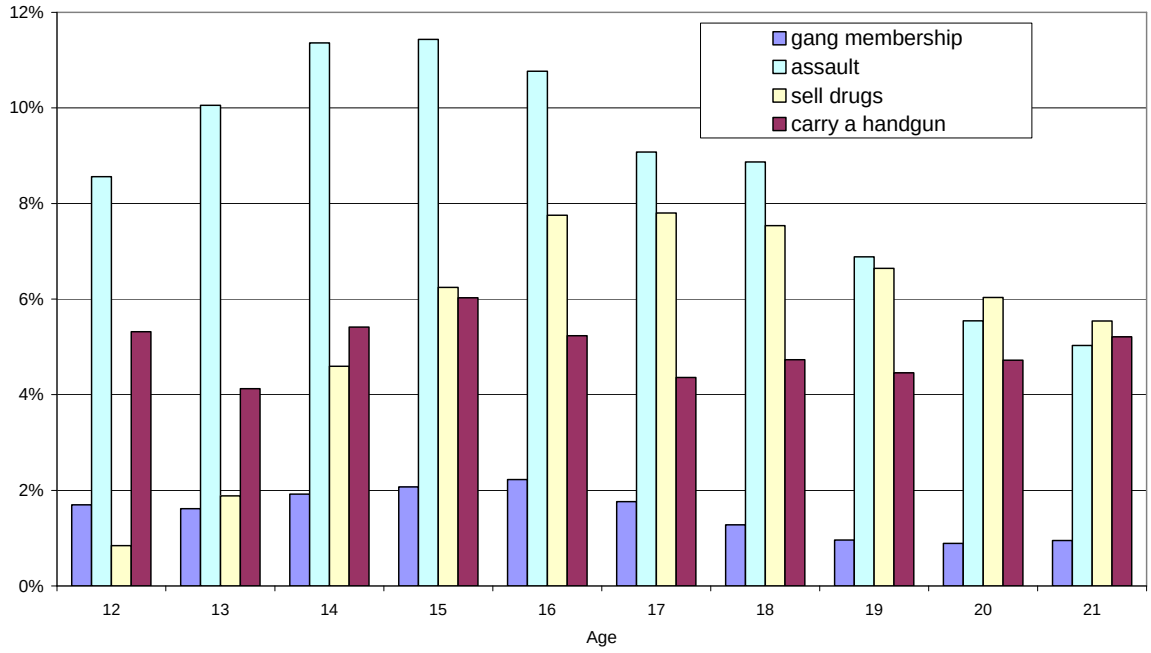


Figure 4.8 Current prevalence levels for gang membership, assault, drug selling, and carrying a handgun, by age



Current Prevalence of Specific Behaviors by Sex, Race/Ethnicity, and Family Structure

Examination of average prevalence levels by sex and age group (either 12 to 17 or 18 to 21) shows that for most behaviors, males had statistically higher prevalence levels in both the younger and older age group (Table 4.3). Males and females had similar levels of current cigarette, alcohol, and hard drug use within both younger and older age groups. Further, males and females had similar levels of minor theft among young adults. Running away (measured for youth ages 12 to 17 only) was the only behavior for which females had a statistically higher prevalence than males (8% vs. 5%).

Table 4.3 Average current prevalence by age group and sex

	Ages 12 to 17		Ages 18 to 21	
Behavior	Males	Females	Males	Females
Cigarette smoking	20%[a]	21%[a]	43%[a]	42%[a]
Drinking alcohol	24[a]	24[a]	62[a]	60[a]
Marijuana use	10[a]	9[b]	24[a]	18[b]
Hard drug use[1]	5[a]	6[a]	8[a]	8[a]
School suspension	17[a]	7[b]	n/a	n/a
Runaway[2]	5[a]	8[b]	n/a	n/a
Gang membership	3[a]	1[b]	2[a]	<1[b]
Vandalism	18[a]	10[b]	7[a]	3[b]
Minor theft[1]	14[a]	11[b]	7[a]	6[a]
Major theft	5[a]	3[b]	3[a]	1[b]
Fraud/fencing	6[a]	2[b]	4[a]	1[b]
Assault	13[a]	8[b]	9[a]	5[b]
Drug selling	6[a]	4[b]	8[a]	5[b]
Carry a handgun	9[a]	1[b]	8[a]	1[b]

[1] Age range of respondents is 13 to 17.

[2] Age range of respondents is 14 to 17.

[a, b] Cell entries with different superscripts within age group and behavior are significantly different from each other at the $p<0.05$ level.

A comparison of males ages 12 to 17 and those ages 18 to 21 (Table 4.4) shows that younger males were consistently and significantly less likely than older males to report smoking cigarettes, drinking alcohol, using marijuana, using hard drugs, or selling drugs. For gang membership, vandalism, minor theft, major theft, fraud/fencing, and assault, males ages 12 to 17 were significantly more likely than those ages 18 to 21 to report the behavior. For carrying a handgun, there was no significant difference between younger and older males. Comparing younger and older females reveals a similar pattern of differences: older females were significantly more likely to report any substance use behavior examined (but not drug selling), and younger females were significantly more likely to report gang membership, property-related offenses, and assault.

Table 4.4 Average current prevalence by sex and age group

	Males		Females	
Behavior	Ages 12 to 17	Ages 18 to 21	Ages 12 to 17	Ages 18 to 21
Cigarette smoking	20%[a]	43%[b]	21%[a]	42%[b]
Drinking alcohol	24[a]	62[b]	24[a]	60[b]
Marijuana use	10[a]	24[b]	9[a]	18[b]
Hard drug use[1]	5[a]	8[b]	6[a]	8[b]
Gang membership	3[a]	2[b]	1[a]	<1[b]
Vandalism	18[a]	7[b]	10[a]	3[b]
Minor theft[1]	14[a]	7[b]	11[a]	6[b]
Major theft	5[a]	3[b]	3[a]	1[b]
Fraud/fencing	6[a]	4[b]	2[a]	1[b]
Assault	13[a]	9[b]	8[a]	5[b]
Drug selling	6[a]	8[b]	4[a]	5[a]
Carry a handgun	9[a]	8[a]	1[a]	1[a]

[1] Age range of respondents is 13 to 17.

[a, b] Cell entries with different superscripts within sex and behavior are significantly different from each other at the $p<0.05$ level.

In general, there was continuity across age groups in prevalence differences by race/ethnicity (Table 4.5). Within both the younger and older age groups, whites and Hispanics or whites alone (for marijuana use among 18- to 21-year-olds) were more likely than African-Americans to report cigarette, alcohol, marijuana, and hard drug use. In both age groups whites had higher levels of minor theft and drug selling. In the age 12 to 17 group, African-American youth reported higher prevalences of school suspension than either whites or Hispanics; 1 out of every 5 African-Americans in this age group reported they had been suspended from school. In both age groups, African-Americans and Hispanics had gang membership levels significantly higher than those of whites. Further, in both age groups, African-Americans had higher levels of assault than did whites, and higher prevalence than Hispanics in the 12 to 17 age group. In the younger age group alone, whites were more likely than either African-Americans or Hispanics to report vandalism and handgun carrying. There were no significant differences by

race/ethnicity in the prevalence of running away—whites, African-Americans, and Hispanics all reported 6% current prevalence. Table 4.5 contains a suggestion of convergence across racial/ethnic groups in the current prevalences of minor theft and assault, which had smaller percentage differences among 18- to 21-year-olds than among 12- to 17-year-olds.

Table 4.5 Average current prevalence by age group and race/ethnicity

	Ages 12 to 17			Ages 18 to 21		
	Whites	African-Americans	Hispanics	Whites	African-Americans	Hispanics
Cigarette smoking	23%[a]	13%[b]	16%[c]	48%[a]	28%[b]	36%[c]
Drinking alcohol	26[a]	15[b]	23[c]	67[a]	41[b]	54[c]
Marijuana use	10[a]	7[b]	10[a]	23[a]	16[b]	16[b]
Hard drug use[1]	7[a]	2[b]	6[a]	9[a]	2[b]	7[c]
School suspension	9[a]	20[b]	12[c]	n/a	n/a	n/a
Runaway[2]	6[a]	6[a]	6[a]	n/a	n/a	n/a
Gang membership	1[a]	3[b]	3[b]	<1[a]	3[b]	2[b]
Vandalism	14[a]	12[b]	12[b]	5[a]	4[a]	4[b]
Minor theft[1]	13[a]	10[b]	13[a]	7[a]	6[b]	6[a, b]
Major theft	4[a]	5[b]	4[a,b]	2[a]	3[a]	3[a]
Fraud/fencing	4[a]	3[a]	4[a]	2[a]	3[a]	3[a]
Assault	10[a]	15[b]	10[a]	6[a]	9[b]	8[b]
Drug selling	5[a]	4[b]	5[a]	7[a]	4[b]	6[a,b]
Carry a handgun	6[a]	5[b]	4[b]	5[a]	5[a]	6[a]

[1] Age range of respondents is 13 to 17.

[2] Age range of respondents is 14 to 17.

[a, b, c] Cell entries with different superscripts within age group and behavior are significantly different from each other at the $p<0.05$ level.

Comparing whites ages 12 to 17 against those ages 18 to 21 (Table 4.6) finds that for all substance-related behaviors, the older group was, on average, significantly more likely to report the behavior. In contrast, for all property-related behaviors, assault, and carrying a handgun, whites ages 12 to 17 were significantly more likely than those ages 18 to 21 to report the behaviors. The pattern of differences that emerges between African-

Americans ages 12 to 17 and those ages 18 to 21 resembles those seen with whites when significant differences occur—young adult African-American respondents were significantly more likely than those ages 12 to 17 to report smoking cigarettes, drinking alcohol, or using marijuana; juvenile African-American respondents were more likely than those ages 18 to 21 to report vandalism, minor theft, or assault. Between younger and older Hispanic respondents, the older group was significantly more likely to report substance use (cigarettes, alcohol, or marijuana, but not hard drugs) and significantly less likely to report vandalism, minor theft, or major theft.

Table 4.6 Average current prevalence by race/ethnicity and age group

	Whites		African-Americans		Hispanics	
	Ages 12 to 17	Ages 18 to 21	Ages 12 to 17	Ages 18 to 21	Ages 12 to 17	Ages 18 to 21
Cigarette smoking	23%[a]	48%[b]	13%[a]	28%[b]	16%[a]	36%[b]
Drinking alcohol	26[a]	67[b]	15[a]	41[b]	23[a]	54[b]
Marijuana use	10[a]	23[b]	7[a]	16[b]	10[a]	16[b]
Hard drug use[1]	7[a]	9[b]	2[a]	2[a]	6[a]	7[a]
Gang membership	1[a]	<1[b]	3[a]	3[a]	3[a]	2[a]
Vandalism	14[a]	5[b]	12[a]	4[b]	12[a]	4[b]
Minor theft[1]	13[a]	7[b]	10[a]	6[b]	13[a]	6[b]
Major theft	4[a]	2[b]	5[a]	3[a]	4[a]	3[b]
Fraud/fencing	4[a]	2[b]	3[a]	3[a]	4[a]	3[a]
Assault	10[a]	6[b]	15[a]	9[b]	10[a]	8[a]
Drug selling	5[a]	7[b]	4[a]	4[a]	5[a]	6[a]
Carry a handgun	6[a]	5[a]	5[a]	5[a]	4[a]	6[a]

[1] Age range of respondents is 13 to 17.

[a, b] Cell entries with different superscripts within racial/ethnic group and behavior are significantly different from each other at the $p<0.05$ level.

There was notable consistency in differences between prevalence levels of youth who lived in different family structures (Table 4.7), which was again operationalized as whether respondents lived in households with both biological parents at the first interview (administered in 1997 and 1998). In the 12 to 17 age group, youth who had

lived in families with both biological parents had lower prevalence levels for all behaviors except carrying handguns. In the 18 to 21 age group, those who had lived in two biological parent families were less likely to report every behavior but belonging to a gang.

Table 4.7 Average current prevalence by age group and family structure[1]

	Ages 12 to 17		Ages 18 to 21	
Behavior	Youth who lived with both biological parents	Youth who lived in another family structure	Youth who lived with both biological parents	Youth who lived in another family structure
Cigarette smoking	17%[a]	24%[b]	39%[a]	47%[b]
Drinking alcohol	23[a]	25[b]	62[a]	59[b]
Marijuana use	8[a]	12[b]	19[a]	23[b]
Hard drug use[2]	5[a]	7[b]	7[a]	8[b]
School suspension	7[a]	15[b]	n/a	n/a
Runaway[3]	5[a]	8[b]	n/a	n/a
Gang membership	1[a]	3[b]	<1[a]	2[a]
Vandalism	13[a]	15[b]	4[a]	6[b]
Minor theft[2]	12[a]	14[b]	6[a]	8[b]
Major theft	3[a]	5[b]	2[a]	3[b]
Fraud/fencing	3[a]	4[b]	2[a]	3[b]
Assault	8[a]	14[b]	5[a]	9[b]
Drug selling	4[a]	6[b]	6[a]	8[b]
Carry a handgun	5[a]	5[a]	4[a]	6[b]

[1] Family structure indicator comes from the 1997 data file. Families without both biological parents include single-parent families, families with one biological parent and another non-biological parent, adoptive families, foster families, and families with grandparents.

[2] Age range of respondents is 13 to 17.

[3] Age range of respondents is 14 to 17.

[a, b] Cell entries with different superscripts within age group and behavior are significantly different from each other at the $p<0.05$ level.

Table 4.8 confirms the general pattern seen in comparison of age groups within groups defined by sex or by race/ethnicity: regardless of whether the age group comparison is restricted to males, females, whites, African-Americans, Hispanics or, as in Table 4.8, either those who had resided in households with two biological parents present

or those who had resided in some other type of household, wherever significant differences exist, persons ages 12 to 17 are more likely than those ages 18 to 21 to report gang membership, property-related behaviors (vandalism, minor or major theft, fraud/fencing) or assault and persons ages 18 to 21 are more likely to report substance-related behaviors (cigarette, alcohol, marijuana, or hard drug use, along with drug selling).

Table 4.8 Average current prevalence by family structure[1] and age group

	Youth who lived with both biological parents		Youth who lived in another family structure	
Behavior	Ages 12 to 17	Ages 18 to 21	Ages 12 to 17	Ages 18 to 21
Cigarette smoking	17%[a]	39%[b]	24%[a]	47%[b]
Drinking alcohol	23[a]	62[b]	25[a]	59[b]
Marijuana use	8[a]	19[b]	12[a]	23[b]
Hard drug use[2]	5[a]	7[b]	7[a]	8[a]
Gang membership	1[a]	>1[b]	3[a]	2[a]
Vandalism	13[a]	4[b]	15[a]	6[b]
Minor theft[2]	12[a]	6[b]	14[a]	8[b]
Major theft	3[a]	2[b]	5[a]	3[b]
Fraud/fencing	3[a]	2[b]	4[a]	3[b]
Assault	8[a]	5[b]	14[a]	9[b]
Drug selling	4[a]	6[b]	6[a]	8[a]
Carry a handgun	5[a]	4[a]	5[a]	6[a]

[1]Family structure indicator comes from the 1997 data file. Families without both biological parents include single-parent families, families with one biological parent and another non-biological parent, adoptive families, foster families, and families with grandparents

[2] Age range of respondents is 13 to 17.

[a, b] Cell entries with different superscripts within family structure and behavior are significantly different from each other at the $p<0.05$ level.

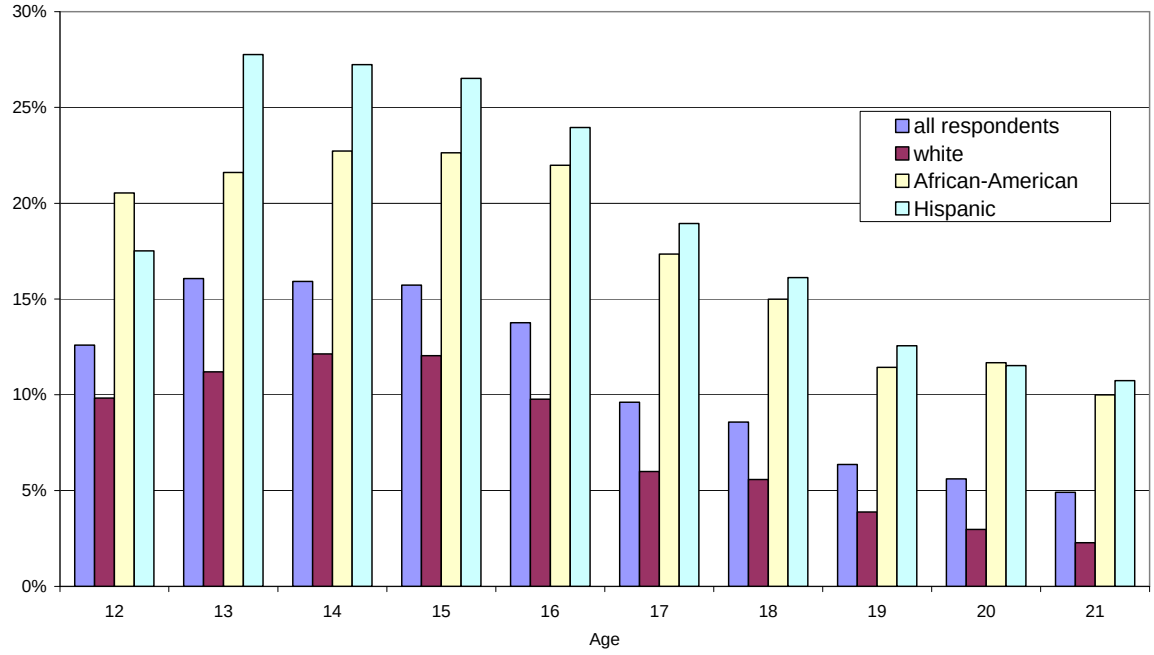
Current Prevalence: Multivariate Analysis

Using NLSY97 data, it is possible to test for effects on current behavior prevalence of factors other than those of age, sex, race/ethnicity, or family structure. This part of the report details the results of multivariate analyses of the associations between the problem behaviors and sex, race/ethnicity, family structure, and age, as well as

variables reflecting respondents' social context and school/work status. As the reader will see, the more rigorous, multivariate analysis strongly indicates that a negative social context, as embodied in friends, family, and peers, is a powerful predictor of dangerous, risky behavior.

For these analyses, social context is captured by three variables: gang friends, a bad peer index, and a good peer index. The gang friends variable was taken directly from the NLSY97 question asking whether "any of your brothers, sisters, cousins or friends belong to a gang," where gang is defined (in the preceding question) as "a group that hangs out together, wears gang colors or clothes, has set clear boundaries of its territory or turf, protects its members and turf against other rival gangs through fighting or threats." Figure 4.9 shows that, in general, the percentage of youth with friends or relatives in gangs was highest at ages 13 to 16 (around 16%), declining with increasing age to a low of about 5% at age 21. At all ages, statistically greater percentages of African-American and Hispanic respondents than white respondents reported friends or relatives in gangs. At age 16, for example, 12% of whites, 23% of African-Americans, and 27% of Hispanics had friends or relatives in a gang. There was no significant difference between males and females in the probability of reporting friends or relatives in gangs. For all respondents, about 9% of those with friends or relatives in gangs were themselves in a gang at the same time: 8% for whites, 12% for African-Americans, and 9% for Hispanics, levels that are not statistically different from each other.

Figure 4.9 Respondents with friends or relative in gangs, by age and race



Both the bad peer index and the good peer index were built from responses to questions posed **only in the first round of the NLSY97**. For each peer-related question, responses were coded on a 5-point scale that ranged from 1, indicating "almost none," or less than 10% of peers, to 5, indicating "almost all," or more than 90% of peers. The bad peer index sums responses to five questions that asked respondents the percentage of their peers in school (either currently or during the respondent's most recent school experience) who (1) smoked cigarettes, (2) got drunk at least once a month, (3) belonged to a gang that does illegal activities, (4) ever used marijuana, inhalants, or other drugs, or (5) cut classes or skipped school. The bad peer index (Figure 4.10) ranged from 5 to 25, with a mean of 11.1, a standard deviation of 4.8, and an obvious right skew. The good peer index sums responses to four questions asking the percentage of peers who (1) went to church or religious services on a regular basis, (2) participated in organized sports,

clubs, or school activities, (3) planned to go to college, or (4) did volunteer work. The good peer index (Figure 4.11) ranged from 4 to 20, with a mean of 12.1 and a standard deviation of 2.9. As would be expected, low values on the bad peer index were much more frequent than low values on the good peer index. For use in the analysis that follows, both the bad peer and the good peer indices are transformed into three-category variables, as closely as possible dividing the distribution of scores into lower, middle, and upper thirds.

Figure 4.10 Frequency distribution for scores on the Bad Peer Index

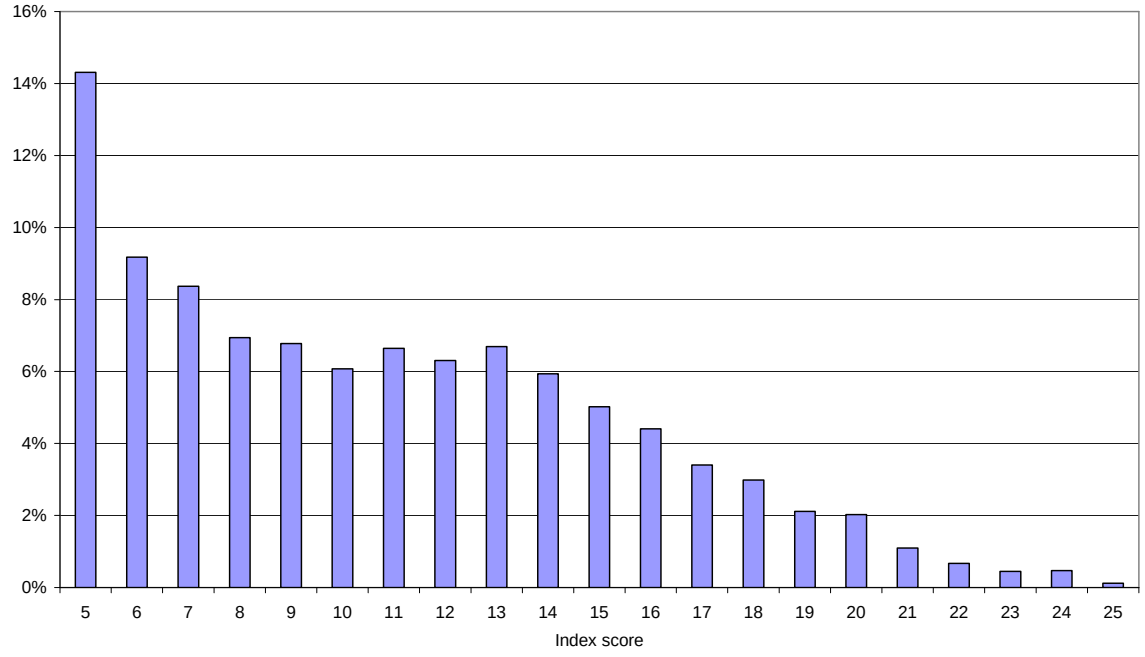
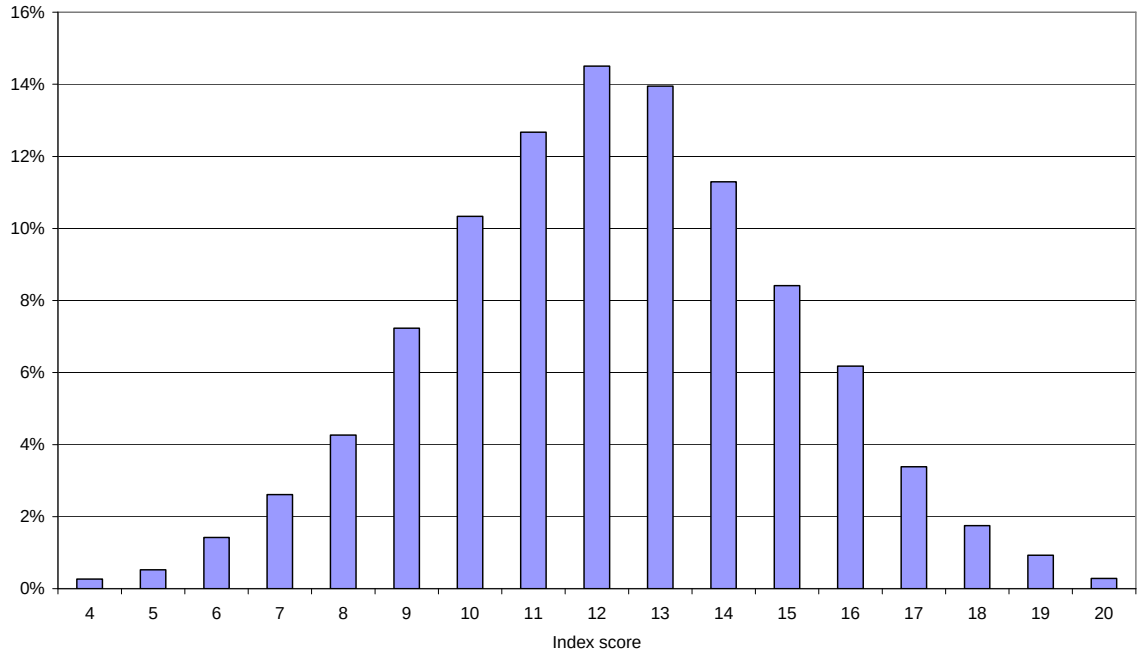


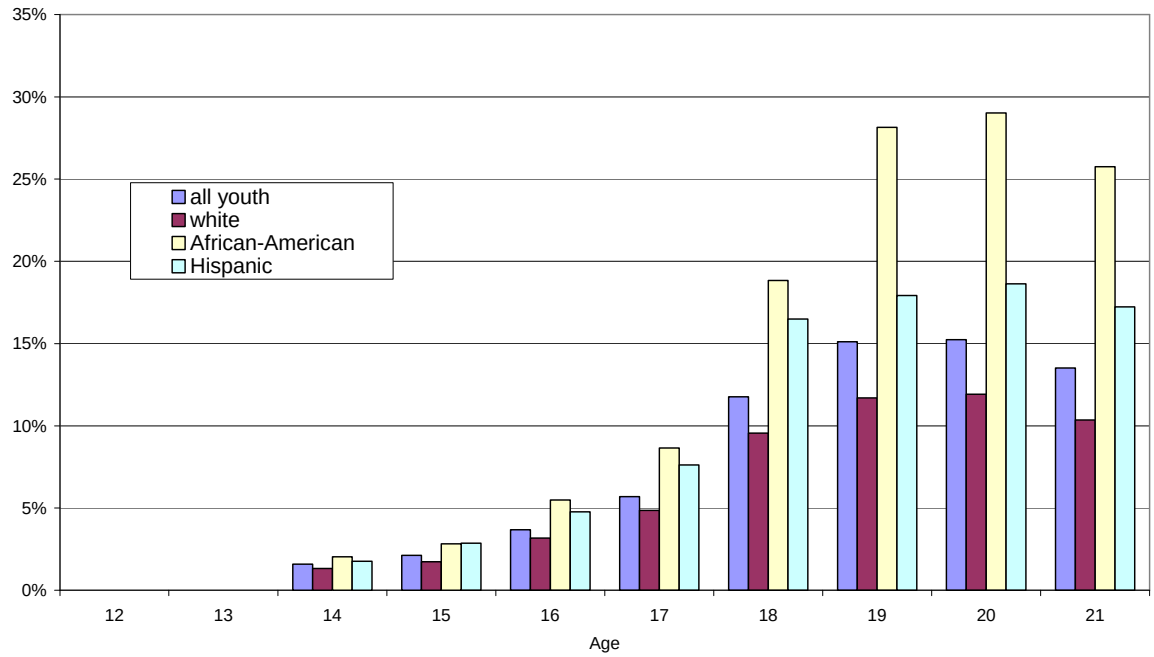
Figure 4.11 Frequency distribution for scores on the Good Peer Index



On both the bad peer index and the good peer index there were significant differences between whites and both African-Americans and Hispanics. Whites had a statistically lower average bad peer index score than either African-Americans or Hispanics (10.5, 11.8, and 11.1, respectively). Analogously, whites on average had statistically higher values on the good peer index than either African-Americans or Hispanics (12.4, 12.0, and 11.8, respectively). Respondent sex was also associated with the index scores: males, interestingly, had both statistically lower bad peer index scores than females (males 10.3, females 11.4) and statistically lower good peer index scores than females (males 12.1, females 12.4). The extent to which differences between males' and females' assessments of peers reflect objective conditions is unknown.

For these analyses, school/work status is captured by a dichotomous variable labeled "disconnected," which indicates whether a respondent is either employed or in school or a college graduate. In general, the prevalence of disconnected status (see Figure 4.12) was very low among youth ages 12 and 13, then climbed steadily from age 14 to age 20. Differences by sex were small—for example, about 15% of males age 19 and about 15% of females age 19 were disconnected from both school and work. Much larger differences appeared across races/ethnicities, and the racial/ethnic differences tended to be magnified by increasing age. From age 18 to 21, the level of disconnectedness among African-Americans exceeded that of Hispanics, and Hispanics' exceeded whites'. For example, at age 14, 1% of whites, 2% of African-Americans, and 2% of Hispanics were neither working nor in school; at age 20, 12% of whites, 29% of African-Americans, and 19% of Hispanics were neither working nor in school.

Figure 4.12 Youth neither working nor in school, by age and race/ethnicity*



* Percentage not distinguishable from 0 for subjects age 12 or 13.

Table 4.9 details the effects (expressed as odds ratios) of the demographic, contextual and disconnection measures on current prevalence of problem behaviors[5]. There are separate analyses for youth ages 12 to 17 and young adults ages 18 to 21. The odds ratios denote the factor by which the odds associated with a given predictor variable change as the value of the predictor variable changes. Using the example of the gang friends variable, an odds ratio above 1 indicates that the presence of friends or family in a gang will lead to an increase in the odds—that is, the outcome will become more likely. Odds ratios below 1 signal a decrease in the odds. For example, the variable that codes African-American as "1" and non-African-American as "0" has an odds ratio for smoking of 0.12, indicating that African-American youth are less likely than white youth (the reference category of race/ethnicity) to have reported smoking.

[5] The results of panel data models presented in this report come from random effects models that estimate the combined effects of differences across individuals and differences arising within individuals across time. The model estimation results presented in this report typically refer to some explanatory variables that can change over time and which vary across individuals, such as whether a youth was disconnected from school and work, and explanatory variables that differ across individuals only, such as sex and race. Significant results pertaining to an explanatory variable that can change over time can be interpreted as arising from differences across respondents or changes within a respondent across time. Either interpretation is valid, and there is no *a priori* reason to expect the explanatory power of variance across time to be predominant over variance across individuals, or *vice versa*. Comparison of models using lagged explanatory variables only with models that use data from one survey round only shows that effects that are significant within individuals across time (as shown by lagged effects) are also significant across individuals (cross-sectional models with data from one survey round).

Table 4.9 Predictions of current prevalence of problem behaviors: odds ratios, respondents ages 12 to 17

	Behavior													
Predictor	Smoking	Alcohol	Marijuana	Hard drugs[1]	Suspension	Runaway[1]	Gang	Vandalism	Minor theft[1]	Major theft	Fraud/ fencing	Assault	Sell drugs	Handgun
Gang friends	2.59*	2.60*	3.27*	3.63*	1.61*	2.90*	16.15*	3.16*	2.89*	3.44*	4.49*	4.42*	5.46*	4.04*
Bad peers, mid level	1.69*	1.41*	1.67*	1.36*	1.49*	1.43*	1.47*	1.77*	1.39*	1.72*	1.74*	1.72*	1.76*	1.30*
Bad peers, high level	3.35*	2.04*	3.34*	3.19*	2.59*	2.19*	3.02*	2.63*	2.16*	2.85*	2.94*	2.98*	4.10*	2.22*
Good peers, mid level	0.78*	1.11	0.83*	0.91	0.74*	0.78*	1.02	0.80*	0.98	0.85	0.78*	0.77*	1.00	0.82*
Good peers, high level	0.62*	0.97	0.66*	0.67*	0.70*	0.80	0.94	0.73*	0.81	0.87	0.80	0.77*	0.72*	0.74*
Disconnected	2.05*	1.04	1.42*	1.61*	1.81*	2.02*	2.36*	1.14	1.21	1.94*	1.22	1.79*	1.58*	2.15*
Male	1.27*	1.13*	1.84*	1.16	2.80*	0.72*	4.37*	3.15*	1.53*	2.61*	5.68*	2.47*	2.79*	8.31*
African-American	0.12*	0.20*	0.30*	0.13*	1.93*	0.69*	1.10	0.44*	0.42*	0.69*	0.46*	1.05	0.26*	0.54*
Hispanic	0.28*	0.56*	0.51*	0.56*	1.18*	0.67*	1.39*	0.53*	0.59*	0.79*	0.63*	0.74*	0.51*	0.58*
Other non-white race	0.55*	0.44*	0.61*	0.43*	0.96	1.10	0.70	0.78	0.70	1.03	0.68	0.87	0.34*	0.47*
Families without both biological parents present	2.10*	1.22*	1.85*	1.57*	2.14*	1.65*	1.95*	1.23*	1.33*	1.63*	1.34*	1.80*	1.67*	1.18
Age 13	1.70*	1.95*	3.28*		1.46*		1.06	1.12	0.85	0.76	1.31	1.16	2.50*	0.80
Age 14	4.34*	5.97*	8.28*	3.64	1.84*	1.48	1.24	1.00		1.32	1.72*	1.19	5.58*	0.92
Age 15	7.59*	13.56*	17.45*	4.95	1.76*	2.22	1.44	0.74*	0.85	1.53*	1.77*	1.19	9.16*	1.12
Age 16	14.82*	20.10*	29.87*	6.08	1.41*	2.32	1.49	0.59*	0.72*	1.32	1.50	1.01	11.57*	0.92
Age 17	21.41*	31.75*	38.95*	7.36	1.08	2.02	1.22	0.39*	0.60*	1.09	1.23	0.84	13.40*	0.84
Months between interviews	0.99	1.01	0.98*	0.97*	1.06*	1.02	1.03	1.02*	1.04*	1.02*	1.02*	1.04*	1.01	1.04*
Observations	23,525	23,524	20,614	15,283	23,397	15,050	23,576	23,571	15,292	23,568	23,571	23,566	23,561	23,577
Individuals	8,331	8,335	6,706	6,442	8,337	6,378	8,341	8,339	6,446	,341	8,338	8,339	8,338	8,340

* Probability of z-score < 0.05. See Appendix 3 for details on methods.

[1] Question not asked of 12-year-old respondents.

Social context and disconnection from school and work affected the probability of youth ages 12 to 17 engaging in problem behaviors. No predictor variable was more pervasive in its effects than the indicator of friends or family who belonged to gangs: across all behaviors, the presence of friends or family in gangs significantly elevated the risk of youth engaging in the behavior. For example, having friends or family in gangs raised the odds of each of the five relatively serious behaviors of major theft, fraud/fencing, assault, drug selling, and carrying a handgun. Clearly, for the approximately 10% of youth who shared the characteristic, having friends or family in gangs should be considered a major risk factor.

Similarly, higher values on the bad peers index increased the probability of each problematic behavior of youth ages 12 to 17. The comparison group for the bad peer indicators is the one-third of respondents with lower levels on the index. Respondents with either a mid- or high-level of bad peer behaviors had their odds of engaging in problem behaviors elevated. For example, a 16 year-old white male respondent who was either in school or working, who had lived with both biological parents in 1997, and who had a low level of bad peer behaviors and the median level of good peer behaviors had a 2% chance of drug selling. A similar youth with a high level of bad peer behaviors had, at 6%, a significantly greater chance of drug selling.

In contrast to bad peer effects, the good peer control variables had no significant impact on drinking, gang membership, minor theft, or major theft. A higher level of good peer behaviors affected only the prevalences of hard drug use or drug selling, and only the mid-level of good peer behaviors affected the prevalences of running away or fraud/fencing. Both mid- and high-levels of good peer behaviors reduced the chances of

smoking, using marijuana, being suspended from school, vandalism, assault, and carrying a handgun. To continue the previous example, a 16-year-old white male who was either in school or working, who had lived with both biological parents in 1997, and who had the mid-level of both bad and good peer behaviors had a 3% chance of drug selling; with a high level of good peer behaviors, the chance of drug selling dropped (slightly but with statistical significance) to 2%.

Youth who were neither in school nor working also faced greater risks of engaging in some problem behaviors: smoking, using marijuana, using hard drugs, running away, belonging to a gang, major theft, assault, selling drugs, and carrying a handgun. As might be expected, youth who were not working or in school were also more likely to have been suspended from school.

A study of the odds ratios enables us to see the effect of one variable on the targeted behavior after controlling for all other factors in the equation (i.e., holding all other factors constant). Examination of the odds ratios for the demographic predictor variables confirms some of the patterns noted in the preceding bivariate analyses. Among youth ages 12 to 17, males were significantly more likely to report smoking cigarettes and drinking alcohol. Boys were less likely than girls to run away from home; for all other behaviors (marijuana use, school suspension, gang membership, vandalism, minor theft, major theft, fraud/fencing, drug selling, and handgun carrying), males were significantly more likely than females to have engaged in the behavior, with the largest effect of sex appearing with handgun carrying.

African-American youth and Hispanic youth were significantly less likely than white youth to have reported most behaviors—for example, African-American youth

were less likely than white youth to report smoking cigarettes or hard drug use. Exceptions to the general pattern by race/ethnicity occurred with school suspension (both African-American and Hispanic youth were more likely to be suspended from school than whites) and gang membership (Hispanic youth were more likely than white youth to report belonging to a gang). No significant difference between African-Americans and white youth appeared in prevalence of either gang membership or assault. But for smoking, drinking, using marijuana, using hard drugs, running away from home, vandalism, minor theft, major theft, fraud/fencing, drug selling, and carrying a handgun, African-Americans or Hispanics were significantly less likely than to report the behavior than were white youth.

The inclusion of controls for friends or relatives in gangs, bad peers, good peers, and disconnection from school or work appears to have heightened the contrast between African-American and Hispanic youth and white youth. When the analysis is repeated with only controls for race/ethnicity, sex, family structure, and age (not shown), the differences between African-Americans and whites on running away and major theft were no longer significant, and African-American youth appeared more likely than white youth to belong to a gang or to have assaulted another person. With the same restricted set of predictor variables, Hispanic youth were no longer less likely than white youth to report hard drug use, running away, vandalism, minor theft, fraud/fencing, assault, drug selling, and handgun carrying, and Hispanics were more likely than white youth to report belonging to a gang. The clear implication is that social context (peer behaviors, family or friends as gang members) and being out of school and work disproportionately elevate the prevalences of problem behaviors among African-American and Hispanic youth.

Family structure effects on reports of problem behaviors were pervasive among youth ages 12 to 17. For all behaviors except carrying a handgun, youth from families without both biological parents were significantly more likely to have reported the behavior. With regard to age effects, compared to the prevalence levels of 12 year-olds, youth ages 13 to 17 were significantly and increasingly more likely to report smoking, drinking, marijuana use, and drug selling, and increasingly—but not significantly—more likely to report hard drug use.

Results from estimating current prevalence of problem behaviors among young adults (ages 18 to 21) appear in Table 4.10. Overall, the effects of the explanatory variables resemble the effects seen among youth ages 12 to 17, with the exception of the dummy variables that control for age at the time of interview. Having friends or family in gangs increased the odds of all the behaviors examined. Young adults in the upper third of the bad peer behavior distribution were more likely to report all problem behaviors except gang membership, even though the bad peer index reflected assessments that were, on average, at least three years old. The effects of the good peer index persisted in lowering the risks of smoking, assault, and handgun carrying, but no longer measurably affected the risk of vandalism or drug selling. One odd effect is that a mid-level of positive peer behaviors in 1997 is associated with a higher prevalence of drinking in the young adult sample. For young adults, disconnection from both school and work increased the odds of smoking, hard drug use, gang membership, major theft, and assault, as it did with youth ages 12 to 17; unlike the effect with the younger group, disconnection did not increase the odds of using marijuana, drug selling, or carrying a handgun among the older group. Only in the older group was disconnected status associated with

increased risk of engaging in fraud/fencing. Disconnected status was tied to reduction in one risky behavior: young adults who neither worked nor were in school were at lower risk for using alcohol than other young adults.

In general, the effects of sex, race/ethnicity, and family structure among young adults ages 18 to 21 resembled the effects seen among youth ages 12 to 17. Exceptions were that, among young adults, African-Americans were not significantly less likely than whites to report major theft or handgun carrying; Hispanics were not significantly less likely than whites to engage in major theft, fraud/fencing, assault, or handgun carrying; and young adults who, in 1997, lived in families without two biological parents were about as likely as other young adults to report alcohol use or vandalism. Age effects were the inverse of those seen in the sample of juveniles ages 12 to 17; with the exceptions of cigarette smoking, drinking alcohol, and carrying a handgun, the general pattern among young adults was that increasing age was associated with lower odds of engaging in problem behaviors.

Table 4.10 Predictions of current prevalence of problem behaviors: odds ratios, respondents ages 18 to 21

	Behavior											
Predictor	Smoking	Alcohol	Marijuana	Hard drugs	Gang	Vandalism	Minor theft	Major theft[2]	Fraud/ fencing[2]	Assault	Sell drugs	Handgun
Gang friends	2.92*	2.43*	3.74*	3.66*	37.77*	4.60*	3.17*	4.01*	5.21*	5.96*	5.38*	3.62*
Bad peers, mid level	2.67*	1.49*	2.16*	1.59*	1.11	1.36*	1.10	1.33	1.29	1.88*	2.23*	1.33
Bad peers, high level	5.05*	1.72*	3.63*	2.78*	2.05	2.06*	1.72*	2.28*	1.92*	3.01*	4.05*	2.71*
Good peers, mid level	0.73*	1.18*	0.89	0.90	0.85	0.86	0.96	0.89	0.99	0.69*	0.89	0.85
Good peers, high level	0.64*	1.12	0.80	0.88	1.06	0.93	0.82	0.94	0.94	0.67*	0.96	0.71*
Disconnected	1.76*	0.62*	1.04	1.41*	1.73*	1.19	1.09	1.77*	1.83*	1.68*	1.26	1.13
Male	1.90*	1.39*	2.47*	1.35*	7.39*	3.12*	1.60*	3.24*	5.67*	2.69*	4.02*	11.82*
African-American	0.09*	0.17*	0.30*	0.08*	3.34*	0.45*	0.48*	0.78	0.65*	1.08	0.25*	0.95
Hispanic	0.21*	0.38*	0.38*	0.50*	2.79*	0.60*	0.55*	0.81	0.78	0.91	0.53*	1.27
Other non-white race	0.48*	0.35*	0.58*	0.52*	1.98	0.54	0.72	1.14	0.98	0.64	0.46*	0.81
Families without both biological parents present	2.08*	0.89	1.40*	1.30*	2.36*	1.08	1.25*	1.33*	1.35*	1.30*	1.46*	1.20
Age 19	1.38*	1.51*	0.96	0.71*	0.62	0.86	0.71*	0.74*	0.84	0.74*	0.81	1.00
Age 20	1.53*	1.70*	0.96	0.84	0.62	0.54*	0.54*	0.63*	0.60*	0.51*	0.68*	0.98
Age 21	1.25	3.27*	0.86	0.59*	0.37*	0.33*	0.27*	0.38*	0.45*	0.44*	0.57*	1.15
Age 22	1.61	3.63*	0.60	0.49	0.23	0.78	0.20*			0.53	0.25*	0.79
Months between interviews	0.99	0.98	0.95*	0.99	1.06	1.05*	1.05*	1.04*	1.04*	1.05*	1.01	1.06*
Observations	13,870	13,836	13,851	13,851	13,894	13,903	13,876	13,897	13,894	13,896	13,894	13,895
Individuals	6,155	6,151	6,152	6,149	6,152	6,160	6,153	6,157	6,155	6,156	6,157	6,159

* Probability of z-score < 0.05. See Appendix 3 for details on methods.

Overall, the examination of current prevalences shows that, with the exceptions of substance use behaviors, most youth who reported ever engaging in the measured problem behaviors had ceased such behaviors by age 17. For gang membership and offenses ranging from minor theft to assault, the pattern of results fits with the view that many problem behaviors are both begun and abandoned during adolescence. Aside from the contrasting effects of increasing age on juveniles and young adults, the above analyses support the general conclusion that the influences on the likelihood of problematic or law-violating behavior among juveniles resemble the influences on young adults. Policymakers should take note of the strong and pervasive effects of negative social context. Programs aimed at disrupting negative social context—such as effective measures to reduce youth drinking and drug use, truancy, and gang activity—could have the indirect but beneficial effect of reducing risk for individuals by improving their social context. Second, the effects of a positive peer environment suggest that efforts to introduce constructive elements to youths' social context—elements such as after-school programs, programs to encourage preparation for and aspiration to college, or time spent with peer or adult mentors—could help protect against a range of harmful and dangerous behaviors. Third, effective measures to either retain students in school or to help youth make the transition from school to work should also reduce the risks of problematic and law-violating behaviors.

5. Frequency of Problem Behaviors

The level of harm imposed on the public by law-violating behaviors depends, in large part, on the number of times the behaviors occur during a specified time in a specified population. This rate, in turn, depends both on the number of individuals who engage in the act and how often they engage in the act. With an exclusive focus on juveniles and young adults who reported problem or law-violating behaviors, this section of the report examines the number of times a behavior was performed during a specified interval (also referred to as frequency or incidence).

Age-related trends in the reported number of occurrences differ from those seen in current prevalences. Prevalences of problem behaviors other than substance-related behaviors declined substantially as respondents aged beyond the juvenile years. In contrast, the reported frequencies for property crimes, assault, drug selling, and handgun carrying showed either very small declines as individuals aged from juvenile to young adult ages or, with carrying a handgun, a clear increase. Table 5.1 reports calculated (annualized) average yearly frequencies, by age, for those behaviors with frequency measures. The behaviors can be classified into relatively frequent behaviors (more than 10 occurrences in a year) and relatively infrequent ones (10 or few occurrences). Substance-related behaviors and carrying a handgun were relatively frequent, while property crimes and assault were infrequent behaviors. Among two of the four substance-related behaviors (alcohol and marijuana use) the pattern is one of steadily increasing frequency with increasing age, while hard drug use and drug-selling frequencies reported by young adults were comparable to those reported by juveniles ages 16 or 17. For the property behaviors and assault, frequencies appear to change little between younger and

older respondents. The frequency of handgun carrying increased significantly from around 40 times per year among juveniles to 60 to 80 times per year among respondents ages 18, 19, or 20.

Table 5.1 Yearly behavior frequencies by age among those reporting the behavior

	Age									
Behavior	12	113	14	15	16	17	18	19	20	21
Drinking alcohol	14	13	21	29	34	40	57	66	67	85
Marijuana use	*	32	48	50	66	75	93	99	109	118
Hard drug use	*	*	*	37	49	31	38	23	23	16
Vandalism	2	2	3	3	4	4	4	4	3	*
Minor theft	*	*	5	5	5	7	6	6	5	*
Major theft	*	*	4	4	4	7	7	5	*	*
Fraud/fencing	*	4	3	4	4	5	6	5	*	*
Assault	3	3	3	3	3	4	4	3	3	*
Drug selling	*	*	10	11	14	19	20	24	19	*
Carry a handgun	*	*	36	36	41	36	59	76	70	*

***** Frequency not available from 1997 or the number of cases was fewer than 100 and no frequency was calculated

The following graphs illustrate patterns of relationship between yearly frequency and prevalence. For both alcohol consumption and marijuana use (Figures 5.1 and 5.2) both frequency and prevalence are seen to increase steadily across the entire range of ages from 12 to 21; therefore, the total volume of both alcohol and marijuana consumption grew, becoming broader (involving more people) and deeper (with increasing average days of use). A second pattern can be seen in the frequencies and prevalences of minor theft and assault (Figures 5.3 and 5.4). For both behaviors, a steady decline in prevalence after age 14 (minor theft) or 15 (assault) precedes a decline in frequency following age 17 (minor theft) or 18 (assault). For minor theft after age 17 and assault after age 18, the total volume of offending decreased in response to decreases in both frequency and prevalence. Third, with handgun carrying (Figure 5.5), a prevalence that wavered between 4% and 6% across ages is matched with a frequency that increased

from about 40 times per year among juveniles to between 60 and 80 times per year among adults. Steady prevalence with increasing frequency meant that the total volume of handgun carrying acts was greater among young adults than among juveniles. The patterns of frequency and prevalence for carrying a handgun suggest that interventions designed to prevent an individual from ever carrying should be targeted to individuals younger than age 18; if effective, such a policy would greatly reduce the risk associated with handgun carrying. In contrast, the results suggest that, if there is a choice to be made in enforcement between a focus on teenagers or on young adults, then an emphasis on young adults would be more effective in reducing the risk associated with the simple presence of handguns.

Figure 5.1 Current prevalence and estimated days per year alcohol was used by those reporting its use, by age

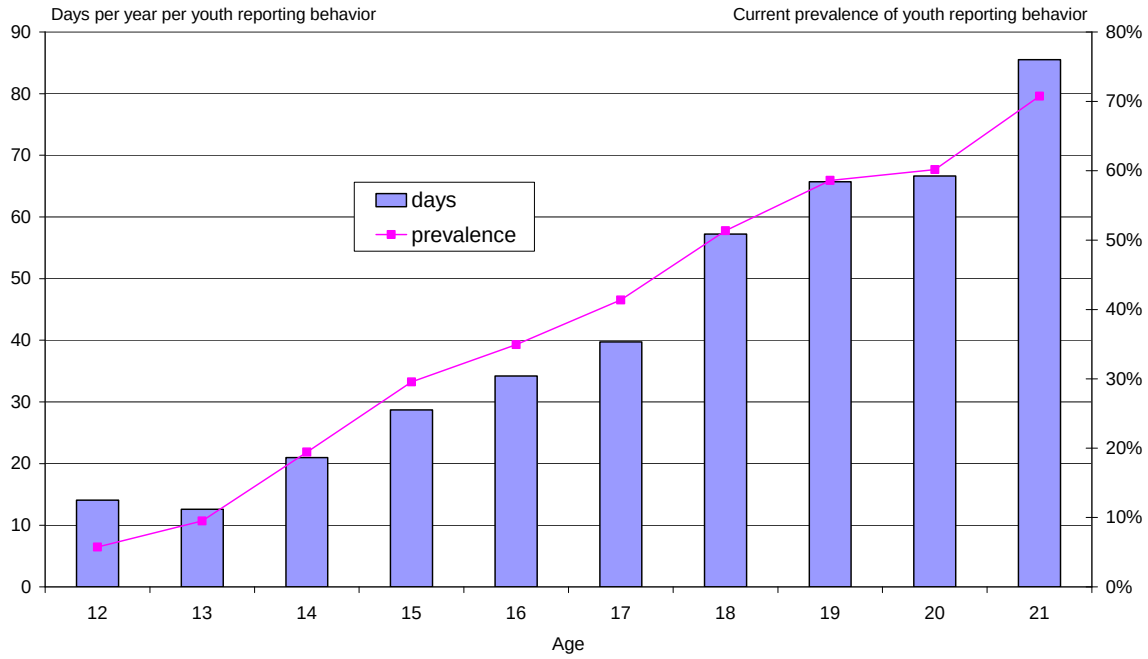


Figure 5.2 Current prevalence and estimated days per year marijuana was used by those reporting its use, by age

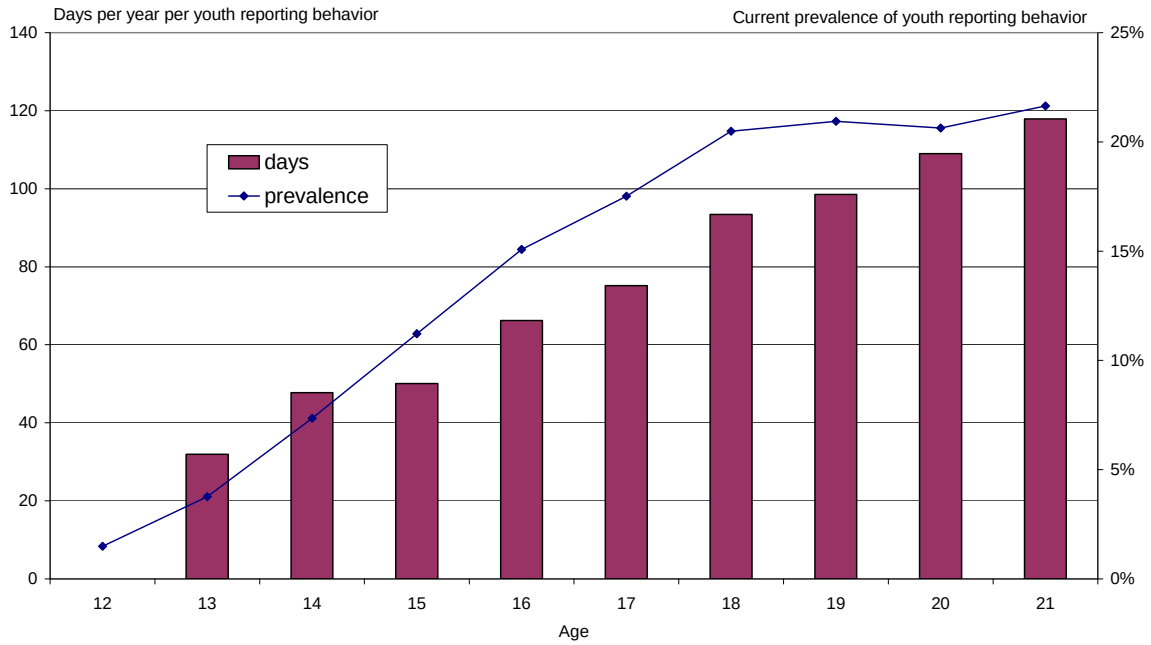


Figure 5.3 Current prevalence and estimated yearly frequency of minor theft by those reporting the behavior, by age

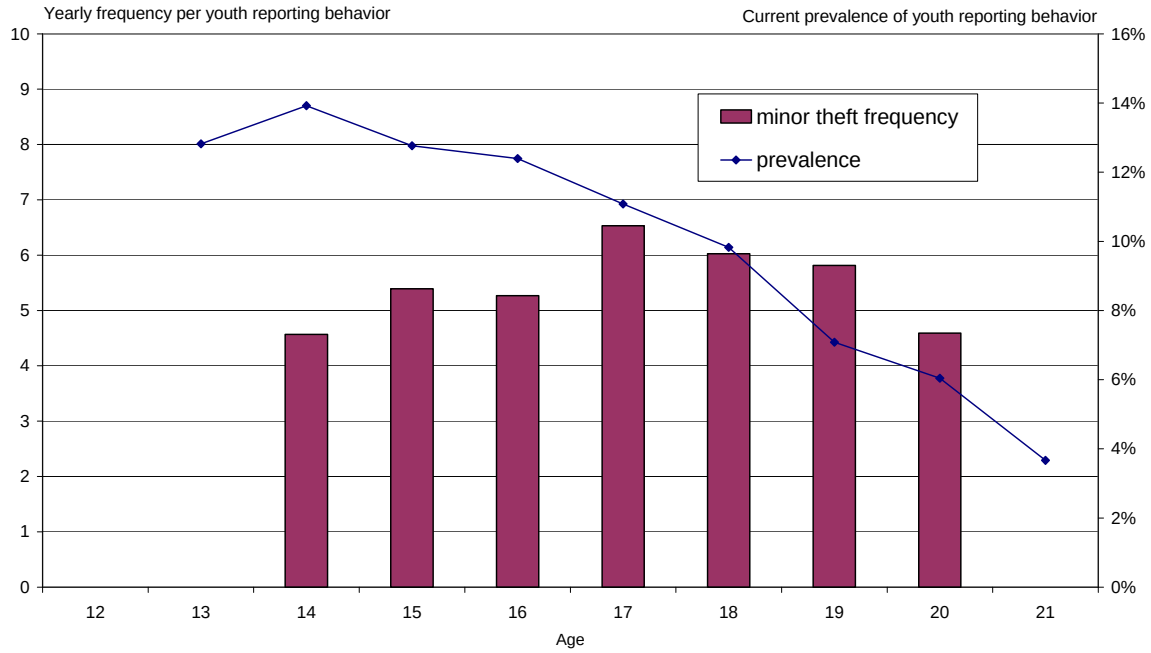


Figure 5.4 Current prevalence and estimated yearly frequency of assault by those reporting the behavior, by age

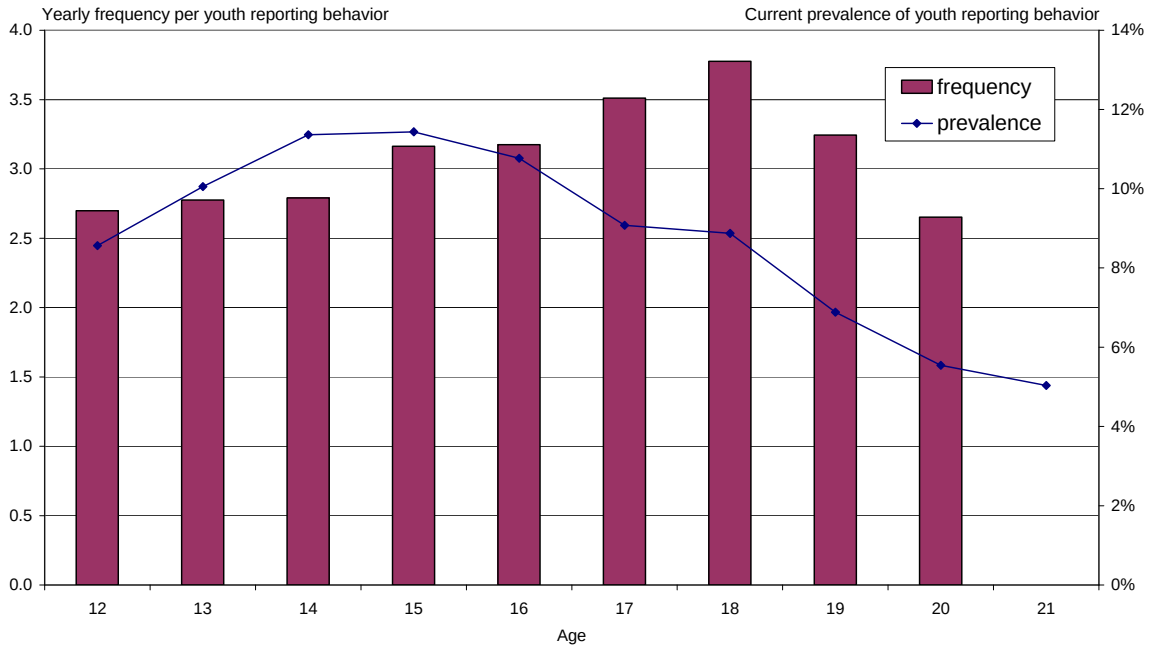
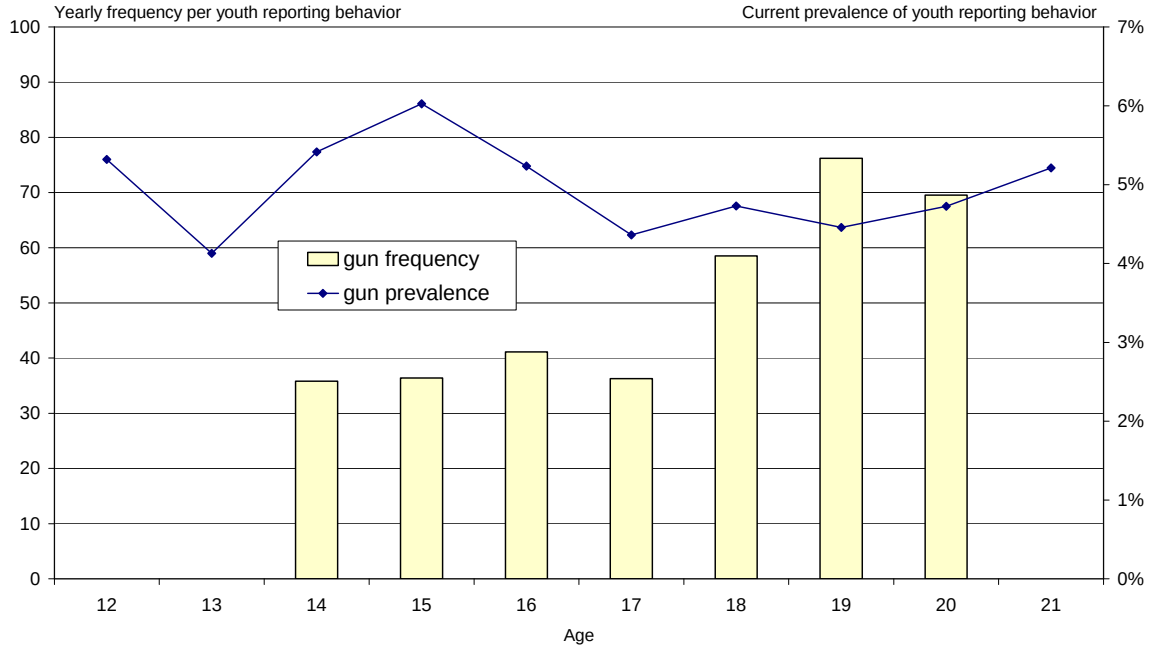


Table 5.5 Current prevalence and estimated yearly frequency a handgun was carried by those reporting the behavior, by age



Influences on Problem Behavior Frequencies

Once a youth crosses the threshold and engages in a behavior, what determines whether that youth is a high frequency or low frequency offender? In general, a negative social context and male gender increased the odds of high frequency offending. The following table contains results of logit analyses of influences on the frequency of offending; specifically, whether a respondent's behavior was "high frequency." In response to the varying shapes of the frequency distributions (neither normal nor Poisson), the data were dichotomized; for each year of age, the frequency distributions were divided as closely as possible at the median. As a result, all respondents who reported a behavior were identified as either high or low frequency offenders for that behavior and the cut point varied with age group. For example, the dividing line for low and high frequency of handgun carrying for 13-year-olds who reported carrying a handgun (more than 35 times per year) is not a same for 19-year-olds (about 75 times per year). Frequencies are examined only for those respondents who indicated they had engaged in one of the specified behaviors and who also said how many times they had done so over a specified time interval (30 days, 12 months, or the time since the previous interview). [If the time interval was the time since the previous interview, then an annualized rate of offending was calculated based on the number of months between interviews.]

The models of behavior frequency use the predictor variables from Section 4 to predict prevalence: an indicator of friends or family who are gang members, the 1997-based good and bad peer categories (mid level or high level versus low levels of good peers or bad peers), an indicator of whether the respondent was disconnected from work and school, sex, family structure, and race/ethnicity. The models also include age of onset

as a predictor variable. Age at time of interview—measured as whether the individual was a younger (ages 12 to 14) or older (ages 15 to 17) juvenile was omitted as a control variable because model estimation with age at interview showed no improvement in model fit (although the variable was a significant predictor of high frequency marijuana use and high frequency engagement in fraud/fencing, with older juveniles having odds of either condition that significantly greater than that of younger juveniles). To account for the possibility that the influences on behavior frequency differ between juveniles and young adults, the frequency models will be estimated twice, once for 12- to 17-year-olds and once for 18- to 21-year-olds. Analyses are limited to respondents who engaged in one of the eight problematic behaviors for which there was both frequency and onset data: drinking alcohol, using marijuana, vandalism, major theft, fraud/fencing, assault, drug selling, and carrying a handgun.

The results in Table 5.2 indicate that onset age, gang friends (or family), a high level of bad peer behaviors, and sex were all significant predictors of at least five of the eight behaviors. Older onset age was significantly associated with a lower likelihood of high frequency offending for all behaviors—whether this is a result of early onset youth having a greater disposition toward offending or a result of more experience with offending gained over the course of a longer career remains unclear. Having friends or family in gangs was tied to higher frequencies of alcohol use, vandalism, major theft, fraud/fencing, and assault. A high level of bad peer behaviors increased the chances of high frequency offending for alcohol and marijuana use, vandalism, major theft, and assault. Males had significantly greater odds of high frequency offending for all behaviors except fraud/fencing. Disconnection from school and work increased the odds

of high frequency marijuana use, assault, and drug selling; the odds of youth selling drugs were significantly greater for those not in school or working than for other youth. The other control variables were of only sporadic influence: a mid-level of good peer behaviors was associated with lower odds of marijuana use, and a high level of good peer behaviors was tied to lower chances of marijuana use and assault. Residing in a household without both biological parents raised the odds of high frequency drug selling. African-Americans, compared to whites, were more likely to have low frequencies of alcohol use and drug selling. Compared to whites, Hispanics were more likely to have low frequencies of alcohol and marijuana use.

Perhaps most important, the models indicate that even among youth who report having engaged in harmful and dangerous behavior, the amount of risk they experience and the amount of hazard they impose on others respond to influences that, in turn, can be moved by policy. Programs focusing on early intervention that have the effect of delaying onset may reduce the burden of juvenile offender law-violating behavior. Similarly, reducing exposure to gangs, addressing negative social context more generally, and working to retain students in school or to ensure a successful transition to work may all decrease the total costs of law-violating behavior.

Table 5.2 Logit odds ratios: effects of predictor variables on behavior frequencies, youth ages 12 to 17

	Behavior							
Predictor	Alcohol	Marijuana	Vandalism	Major theft	Fraud/ fencing	Assault	Sell drugs	Handgun
Onset age	0.90*	0.75*	0.90*	0.93*	0.88*	0.89*	0.92*	0.93*
Gang friends	1.52*	1.00	1.62*	2.04*	1.69*	2.00*	1.13	1.33
Bad peers, mid level	1.18*	1.07	1.19	1.44	0.86	1.19	0.89	1.05
Bad peers, high level	1.59*	1.69*	1.70*	1.82*	1.53	1.40*	1.29	1.36
Good peers, mid level	1.11	0.70*	0.88	0.83	1.08	0.89	1.00	1.11
Good peers, high level	1.05	0.60*	0.92	1.16	0.99	0.75*	0.79	1.14
Disconnected	1.11	1.75*	0.83	1.41	1.35	1.90*	2.55*	1.25
Male	1.46*	2.03*	1.66*	1.57*	1.34	1.43*	1.47*	2.43*
Families without both biological parents present	1.04	0.96	1.12	1.17	1.18	1.19	1.73*	1.51
African-American	0.52*	0.86	0.86	1.14	0.86	0.92	0.45*	1.26
Hispanic	0.76*	0.71*	1.06	1.00	1.47	0.96	0.88	0.99
Other non-white race	0.77	0.37*	0.55*	0.49	1.06	0.86	0.68	0.65
Observations	6,446	2,656	2,783	937	806	2,552	1,351	692
Individuals	3,796	1,799	1,994	790	650	1,824	1,001	559

*Denotes probability of z-score < 0.05. For details on methods, see Appendix 3.

There emerged fewer significant connections between the predictors and high frequency behavior among young adults than among juveniles (Table 5.3). About one-half of the significant predictors of juveniles' behavioral frequency were not significant effects of adults'. However, the two age groups were similar in relatively pervasive effects from onset age (length of career), gang friends, and sex. For example, having a family member or friend in a gang was connected with greater odds of marijuana use, vandalism, fraud/fencing, and assault. The results for young adults are also notable for the lingering effects of onset age (with younger onset age tied to higher frequencies of drinking, marijuana use, assault, and drug selling) and a high level of bad peer behaviors (tied to more frequent drinking and marijuana use). Recall that values for the good peer index and the bad peer index were assigned according to respondent answers to questions

in the first NLSY97 interview, conducted when respondent ages ranged from 12 to 17. Interestingly, both mid and high levels of good peer behaviors were tied to increased frequency of drinking alcohol. Low levels of good peer behaviors among young adults were also associated with odds of high frequency major theft. Effects of race and ethnicity were seen in frequency of drinking alcohol and frequency of drug selling: African-Americans and Hispanics were less likely than whites to report a high frequency of drinking, and Hispanics were more likely than whites to report a high frequency of selling drugs.

Table 5.3 Logit odds ratios: effects of predictor variables on behavior frequencies, young adults ages 18-21

	Behavior							
Predictor	Alcohol	Marijuana	Vandalism	Major theft	Fraud/ fencing	Assault	Sell drugs	Handgun
Onset age	0.92*	0.82*	0.96	0.92	1.03	0.92*	0.89*	0.93
Gang Friends	1.23	1.44*	1.89*	2.11	2.39*	3.24*	1.06	0.85
Bad peers, mid level	1.47*	1.11	0.70	0.89	0.91	1.23	0.71	1.04
Bad peers, high level	1.86*	1.51*	0.77	0.69	1.02	1.45	0.87	1.39
Good peers, mid level	1.25*	1.24	1.04	0.99	0.60	1.27	1.25	0.68
Good peers, high level	1.34*	1.11	1.58	0.22*	0.73	0.99	0.97	1.11
Disconnected	1.14	1.04	1.55	2.57	1.06	1.40	1.95*	1.24
Male	2.60	2.26*	2.87*	1.06	1.16	1.79*	2.76*	1.00
Families without both biological parents present	0.87	1.21	1.03	1.29	0.89	1.07	1.12	0.72
African-American	0.37*	1.01	0.75	0.91	1.57	0.57	0.82	1.36
Hispanic	0.58*	0.93	1.23	1.15	0.98	1.20	1.70*	0.72
Other non-white race	0.66	0.64	0.78	5.25	0.81	1.44	0.55	0.97
Observations	6,915	2,501	681	311	274	1,017	840	434
Individuals	3,705	1,575	570	274	239	786	614	351

*Denotes probability of z-score < 0.05. For details on methods, see Appendix 3.

Early Onset and Very High Frequency Offending

To compare the impacts on current offending of early onset offending, later onset offending, and recent offending, we developed equations that predicted the presence of very high frequency serious offending ("intense" offending) among respondents who were age 18 or older at the time of interview. This group was selected because it has enough years of data to allow creation of career history variables. To characterize career history, we use indicators of types of offending defined according to when in a career the offending occurred. Early onset offending was defined as any self-report of initiation at age 12 or earlier among the behaviors for which onset was assessed explicitly (cigarette smoking, alcohol use, marijuana use, runaway, gang membership, vandalism, major theft, fraud/fencing, assault, drug selling, and handgun carrying). To be distinct from early onset offending and recent offending, later onset behaviors were defined as any initiated between age 13 and the age at two waves prior to the current interview period. Recent offending was defined as offending that was reported in the interview at the wave prior to the current interview. [Offending reported for the current interview period was not included because of colinearity with the dependent variable.] For a respondent at age 19 at the time of interview, if the interval between interviews for that person was 12 months, then later onset offending would apply to any behavior initiated between age 13 and age 17, recent offending would be that reported at age 18 (regardless of age of onset). Controls included age at time of interview, family structure in 1997 (families without both biological parents present as opposed to families with both biological parents present), and disconnection from work and school (neither employed nor enrolled in school or a college graduate).

The dependent variable, "very high frequency serious offending," made use of respondent answers to questions asking them how many times during the prior 30 days or during the period between the prior and current interviews they had engaged in a particular behavior. Frequencies of five serious behaviors were used: major theft, fraud/fencing, assault, drug selling, and handgun carrying. If a respondent's behavior frequency fell within the top third of the annualized or monthly frequency distribution for respondents of the same age who also reported the same behavior, then that respondent was classified as a very high frequency (intense) offender. No further discrimination was made, regardless of whether the respondent ranked as very high frequency on one, two, three, four, or all five of the behaviors. About 5% of respondents age 18 or older were intense offenders—7.1% of males, and 2.9% of females—with about 1% ranking as intense offenders for two or more behaviors. The intense offending variable has reasonable predictive validity; of all young adult intense offenders, 52% had ever been arrested (with 24% arrested in the current reporting period), significantly greater than the 37% of other young adult respondents with only low frequency serious offending (14% arrested in the current reporting period).

Separate equations were developed to assess the impact on young adult offending of early onset for each behavior. For example, the following table shows the impact of assault career details on the likelihood (expressed as odds ratios) of current intense offending among young adults. The results indicate that early onset assault, later onset assault, and recent assault all elevated the probability of young adult intense offending, as did male gender and disconnected status. Greater age at interview—age 20 or 21 in comparison with age 18 or 19—was associated with lower probabilities of intense

offending. The impact of family structure on the likelihood of intense offending was neither substantively nor statistically significant; however, given its significance in equations for the impact of other behaviors—in particular for white respondents and for female respondents—the family structure predictor was retained in all equations reflected in the remainder of this section. Controls for race/ethnicity were evaluated, but never approached statistical significance, and so were omitted. Instead, separate equations were estimated for whites, African-Americans, and Hispanics.

Table 5.4 Effects of assault history on very high frequency offending as a young adult

Predictor	Odds Ratio
Early onset assault	2.98*
Later onset assault	2.91*
Recent assault	3.64*
Age 20 or 21	0.70*
Disconnected status	1.64*
Male	3.17*
Non-both biological parent family, 1997	1.08
Observations	12,156
Individuals	5,621

* Probability of z-score < 0.05. For details on methods, see Appendix 3.

The following tables show predicted probabilities of high-frequency offending among young adults, controlling for offending history. The probabilities used as a base a person who was either age 18 or 19, who either was enrolled in school or actively employed, and who had lived in a household where both biological parents were present in 1997. Equations for males and females were estimated separately.

Table 5.5, the table of predicted probabilities for males, indicates that early onset of any of a range of problematic behaviors by itself generally increases the likelihood of

intense offending during early adulthood. For example, the predicted proportion of intense offenders at age 18 or19 among those with no reports of smoking up until the age at the prior interview wave would be 1.4%. Among individuals who reported early onset but no smoking in the prior interview period, the expected proportion of intense offenders is 2.9%, and among those with later onset smoking but no recent smoking, the predicted level of intense offenders of 3.8%. So, even if the respondent has not smoked recently, he still carries an elevated risk of intense offending if there is any history of smoking, whether early or late onset. Among those with both early onset and recent smoking, the predicted proportion of intense offenders is 7.6%, or several times greater than the level among those who never smoked.

It is important to notice both that the probabilities of intense offending associated with either early or later onset in combination with recent behavior are greater than the probabilities associated with either early or later onset alone, or recent reports alone. In other words, continuity in offending behavior increases the probability of current offending. Whether the history of problem behavior was one of early onset or later onset, young adults with a more extensive history of problem behavior were more likely than those with no prior history of problem behavior to be intense offenders who are probably more likely than others to come into contact with the justice system. About 24% of young adult intense offenders reported they were arrested in the year prior to interview, significantly greater than the 5% arrested among all other young adult respondents. Those who only recently initiated a problem behavior were much less likely than those with continued problem behavior to be intense offenders. Indeed, those who recently initiated

all behaviors except major theft and drug selling were less likely than the average 18- or 19-year-old male to report very high frequency offending.

Table 5.5 Estimated probabilities of very high-frequency offending among males ages 18 or 19*

	Onset timing and later offending					
Behavior	No reports	Early onset only	Later onset only	Recent report only	Later onset and recent report	Early onset and recent report
Cigarette smoking	1.4%	2.9%	3.8%	2.9%	5.8%	7.6%
Drinking alcohol	0.9	2.0	3.7	1.9	4.3	7.6
Marijuana use	1.5	4.4	9.1	3.9	10.9	20.9
Gang membership	2.0	8.3	8.1	6.8	24.7	24.3
Vandalism	1.4	4.9	4.8	3.0	10.1	9.9
Major theft	2.6	6.4	8.7	9.4	21.4	27.4
Fraud/fencing	2.4	8.1	5.7	6.0	18.9	13.6
Assault	2.4	6.7	7.0	6.5	17.3	17.9
Drug selling	2.9	6.9	20.4	11.8	24.7	53.2
Carry a handgun	2.2	6.4	6.7	5.0	13.8	14.4

* Unless otherwise indicated, the early onset, later onset, and recent report variables are all significantly related to the presence of very high frequency offending.

Although the overall pattern of results for females bears some resemblance to that found for males, there are several differences. First, the overall level of very high frequency offending among females was much lower than that of males; among all female respondents ages 18 to 21, the prevalence of very high frequency offending was 2.9% (2.7% among females ages 18 or 19), compared to 7.1% among males ages 18 to 21. Second, the effects of behavior history, especially early onset behaviors, were less likely to be significant than was the case with male respondents, with no significant effect for gang membership, major theft, or handgun carrying. For other behaviors, either early or later onset in combination with recent behavior were associated with higher probabilities of very high frequency offending than with recent onset only; young women

who reported both early and recent assault were about three times more likely (at 7.4%) than average to report very high frequency offending.

Table 5.6 Estimated probabilities of high frequency offending among females ages 18 or 19*

	Onset timing and later offending					
Behavior	No reports	Early onset only	Later onset only	Recent report only	Later onset and recent report	Early onset and recent report
Cigarette smoking	0.1%	0.5%	0.2%	0.3%	0.5%	1.2%
Drinking alcohol	0.1	0.5	0.2	0.2	0.4	1.2
Marijuana use	0.2	1.1	0.5	0.6	2.0	4.2
Gang membership	0.3	1.0	1.3	1.3	5.9	4.6
Vandalism	0.2	0.7	1.0	0.4	2.4	1.8
Major theft	0.3	0.5	0.9	1.2	3.8	2.4
Fraud/fencing	0.2	1.8	1.0	0.5	2.2	4.2
Assault	0.5	1.2	1.1	3.1	7.3	7.4
Drug selling	0.4	2.8	1.6	2.1	8.9	14.5
Carry a handgun	0.3	0.2	0.9	1.0	3.5	0.8

* Unless otherwise indicated, the early onset, later onset, and recent report variables are all significantly related to the presence of very high frequency offending.

[1] Coefficient for early onset not significant at $p<0.05$.

[2] Coefficient for recent report not significant at $p<0.05$.

The next table presents predicted probabilities of very high frequency offending among whites, African-Americans, and Hispanics; sex (male) was included as a control variable. The probabilities used as a base were those of 18 or 19 year-old males who were either employed or in school at the time of interview and who had lived in a household with both biological parents in 1997. When respondents of different races/ethnicities are examined separately, the same overall pattern seen above for either males or females again emerges. Early onset by itself elevates the probability of very high frequency offending among young adults. If either early or late onset illegal or problematic behaviors are combined with recent activity, then current very high frequency offending becomes much more likely than in the presence of recent activity alone.

Table 5.7 Estimated probabilities of very high frequency offending among males at ages 18 or 19*

	Onset timing and later offending					
Behavior	No reports	Early onset only	Later onset only	Recent report only	Later onset and recent report	Early onset and recent report
White						
Cigarette smoking	1.0%	1.7%	3.0%	2.1%	3.6%	6.4%
Drinking alcohol	0.6	1.4	3.2	1.1	2.5	5.8
Marijuana use	1.2	3.3	7.8	2.9	7.8	17.6
Gang membership	1.7	5.2	10.6	6.7	18.5	32.9
Vandalism	0.9	3.8	3.5	1.7	7.2	6.6
Major theft	1.9	5.2	7.2	6.2	15.9	21.0
Fraud/fencing	1.6	6.7	4.8	4.4	17.2	12.7
Assault	2.0	6.2	6.3	7.8	21.3	21.7
Drug selling	2.1	5.4	12.7	10.6	23.8	44.5
Carry a handgun	1.6	3.6	3.6	3.8	8.4	8.3
African-American						
Cigarette smoking	1.3%	2.5%	2.5%	2.7%	5.3%	5.3%
Drinking alcohol	1.0	2.0	2.6	2.1	4.3	5.5
Marijuana use	1.4	4.3	6.3	2.7	8.3	11.9
Gang membership	1.5	5.5	6.6	4.3	14.2	16.7
Vandalism	1.3	5.9	3.8	3.1	13.2	8.7
Major theft[1]	2.0	4.9	3.6	9.3	20.5	15.5
Fraud/fencing[2]	1.8	7.1	4.6	3.1	11.8	7.8
Assault	1.9	4.4	3.9	6.5	13.7	12.3
Drug selling	2.5	6.5	25.4	8.5	20.1	55.4
Carry a handgun	1.9	5.7	8.6	4.4	12.6	18.4
Hispanic						
Cigarette smoking	1.8%	2.9%	1.8%	2.8%	3.8%	2.8%
Drinking alcohol	0.6	1.7	4.0	2.2	6.5	14.1
Marijuana use	0.9	3.6	6.8	5.5	18.9	31.4
Gang membership[3]	1.5	11.8	3.4	7.3	41.7	16.0
Vandalism	1.4	5.2	6.8	3.9	14.0	17.7
Major theft	2.2	5.4	9.0	11.8	25.4	36.9
Fraud/fencing	2.1	4.5	5.5	6.6	13.4	16.3
Assault	1.9	6.7	8.8	5.1	16.6	21.2
Drug selling	2.4	8.8	20.6	9.7	29.4	52.8
Carry a handgun	1.9	8.5	8.2	4.3	17.8	17.4

* Unless otherwise indicated, the early onset, later onset, and recent report variables are all significantly related to the presence of very high frequency offending.

[1] Coefficient for early onset not significant at $p<0.05$.

[2] Coefficient for recent report not significant at $p<0.05$.

[3] Coefficient for early onset not significant at $p<0.05$.

6. Comorbidity: Co-occurrence of Problem Behaviors

The issue of comorbidity (multiple problem behaviors occurring during the same period in the same person) bears strongly on questions of prevention and treatment. It is important to know whether an individual who has been identified as engaging in one problem behavior is at elevated risk of engaging in one or more other problem behaviors.

This section begins with an examination of co-morbidity among the grouped offense categories described in Section 2: status offenses (cigarette smoking and drinking alcohol), illegal drug offenses (marijuana use, hard drug use, and drug selling), property offense (vandalism, minor theft, major theft, and fraud / fencing), and person offenses (assault, carrying a handgun). Then follows an analysis of which behaviors are more likely to occur along with gang membership and with a set of five relatively serious offending behaviors covered by the NLSY97, behaviors that are more likely to lead to contact with the justice system: major theft, fraud/fencing, assault, drug selling, and handgun carrying. For both the grouped offenses analysis and the serious behaviors analysis, multivariate model estimation was restricted to NLSY97 respondents who were between the ages of 13 and 21 at the time of interview. Questions about current prevalence of three behaviors used as predictors—school suspension, hard drug use, and minor theft—were not asked during the first interview round; consequently, there are no responses from 12-year-olds for these behaviors.

Table 6.1 contains the correlation coefficients obtained for four offense groups from the sample of juveniles (ages 13 to 17), and Table 6.2 contains the coefficients obtained from the sample of young adults (age 18 to 21). The sizes of coefficients are very similar for juveniles and young adults. The strongest relationship between offense

groups is seen between cigarettes/alcohol and use/sale of illegal drugs (correlation coefficient of 0.41 for juveniles and 0.40 for young adults); the next strongest relationship is seen between use/sale of illegal drugs and property offending (0.33 for juveniles and 0.31 for young adults). The weakest relationship occurred with gang membership and cigarettes/alcohol (0.10 for juveniles, 0.09 for young adults). Gang membership is most closely tied to person offending (0.23 for juveniles and young adults). For both juveniles and young adults, person offending is about equally related to illegal drug behaviors, property offending, and gang membership.

Table 6.1 Zero-order correlations of grouped offenses and gang membership, ages 13 to 17

	Cigarettes / alcohol	Illegal drugs	Property	Person
Illegal drugs	0.41			
Property	0.24	0.33		
Person	0.19	0.25	0.27	
Gang	0.10	0.19	0.17	0.23

Table 6.2 Zero-order correlations of grouped offenses and gang membership, ages 18 to 21

	Cigarettes / alcohol	Illegal drugs	Property	Person
Illegal drugs	0.40			
Property	0.21	0.31		
Person	0.18	0.24	0.26	
Gang	0.09	0.17	0.17	0.23

Table 6.3 presents a multivariate analysis of co-occurrence that generally follows the pattern seen in the zero-order correlations. The table contains the odds ratios resulting from logit regression equations predicting the current prevalence likelihood for each of the four offense groups for youth ages 13 to 17. The explanatory variables are current prevalence indicators for three of the four offense groups and indicators of current school suspension, running away from home, and gang membership. Table 6.3 shows that

probability of a youth reporting any of the four behavior groups is increased by the report of any of the remaining three. For example, the presence of drug use or selling increases the odds that a youth will also report cigarette or alcohol use by a factor of 17.75, in comparison to youth who do not report drug use or drug selling. In general, the presence of the other specific behaviors—school suspension, running away from home, and gang membership—also increase the odds of reporting any of the grouped offenses, with the exceptions of cigarette/alcohol use, for which neither school suspension nor gang membership are significant predictors. From the table, it appears that the strongest effect on reporting cigarette/alcohol use comes from drug use/selling, the strongest effect on drug use/selling comes from cigarette/alcohol use, and the strongest effect on person offending comes from gang membership. In contrast, there is no single, clearly dominant predictor for property offending.

Table 6.3 Co-occurrence of grouped problem behaviors among youth ages 13 to 17 (logit odds ratios)

	Predicted behavior groups			
Predictor variables	Cigarettes or alcohol	Drug use or selling	Property offenses	Person offenses
Cigarettes or alcohol		14.89*	2.10*	1.78*
Drug use or selling	17.75*		3.67*	1.85*
Property offenses	2.03*	3.83*		3.23*
Person offenses	1.75*	1.96*	3.36*	
School suspension	1.16	1.90*	1.62*	3.70*
Runaway	2.27*	2.76*	2.12*	2.91*
Gang membership	1.40	4.05*	2.71*	7.25*
Observations	16,132	16,132	16,132	16,132
Individuals	6,855	6,855	6,855	6,855

*Denotes probability of z-score < 0.05. See Appendix 3 for methods.

Table 6.4 reports results of co-occurrence analysis applied to the sample of 18 to 21-year-olds. Because the respondents are age 18 or older, the predictor variables for school suspension and running away have been dropped. The overall pattern of results

matches, without exception, that from Table 6.3: status substance offenses are strongly related to illegal drug offenses and gang membership is the strongest predictor of person offending. Again, illegal drug offending, person offending, and gang membership have similar (and statistically indistinguishable) effects on property offending.

Table 6.4 Co-occurrence of grouped problem behaviors among youth ages 18 to 21 (logit odds ratios)

	Predicted behavior groups			
Predictor variables	Cigarettes or alcohol	Drug use or selling	Property offenses	Person offenses
Cigarettes or alcohol		17.03*	1.54*	2.16*
Drug use or selling	17.93*		4.46*	2.96*
Property offenses	1.50*	5.36*		3.94*
Person offenses	2.15*	3.16*	3.72*	
Gang membership	1.37	2.73*	4.52*	15.43*
Observations	15,151	15,151	15,151	15,151
Individuals	6,658	6,658	6,658	6,658

*Denotes probability of z-score < 0.05. See Appendix 3 for methods.

Table 6.5 presents an analysis of six specific, relatively serious behaviors. The table contains the odds ratios from logit regression equations predicting the current prevalence likelihood of gang membership, major theft, fraud/fending, assault, drug selling, and carrying a handgun; the predictor variables are current prevalence indicators for all of the remaining problem behaviors tracked by the NLSY97. In general, the table shows that several behaviors, such as school suspension, vandalism, fraud/fencing, assault, drug selling, and carrying a handgun, were significantly associated with most or all of the behaviors being predicted. For example, school suspension elevated the odds of belonging to a gang, major theft, drug selling, and handgun carrying; school suspension raised the odds of assault.

Table 6.5 Co-occurrence of problem behaviors among youth ages 13 to 17 (logit odds ratios)

	Predicted behaviors					
Predictor variables	Gang	Major theft	Fraud/ fencing	Assault	Sell drugs	Handgun
Cigarette smoking	1.46	1.09	1.28	1.60*	2.10*	1.22
Drinking alcohol	1.32	1.08	1.62*	1.35*	1.40*	1.48*
Marijuana use	1.92*	1.32	0.88	1.13	5.63*	0.99
Hard drug use	0.88	1.32	1.18	1.03	6.57*	1.26
School suspension	2.40*	2.00*	1.14	3.64*	1.55*	2.06*
Runaway	1.34	1.66*	1.08	2.65*	1.48*	1.82*
Gang membership		2.07*	1.54*	4.30*	3.27*	5.02*
Vandalism	1.95*	2.18*	4.22*	3.25*	2.10*	1.56*
Minor theft	1.02	9.87*	3.06*	1.25*	2.46*	0.84
Major theft	2.00*		4.38*	1.18	1.82*	1.77*
Fraud/fencing	1.75*	4.02*		2.16*	3.30*	2.78*
Assault	4.87*	1.33*	2.39*		2.22*	2.50*
Drug selling	3.57*	1.72*	3.15*	1.90*		2.36*
Carrying a handgun	5.36*	1.89*	2.84*	2.44*	2.49*	
Observations	16,132	16,132	16,132	16,132	16,132	16,132
Individuals	6,855	6,855	6,855	6,855	6,855	6,855

*Denotes probability of z-score < 0.05. See Appendix 3 for methods.

If attention is confined to factors with odds ratios of 2.0 or greater in Table 6.5, it can be seen that school suspension, major theft, assault, drug selling, and handgun carrying were all associated with greater odds of belonging to a gang. As might be expected, property related behaviors were connected to both major theft and fraud/fencing; however, assault, drug selling, and handgun carrying had comparatively greater effects on fraud/fencing than on major theft. All behaviors but marijuana use, hard drug use, and major theft were significant predictors of assault. Smoking, gang membership, minor theft, fraud/fencing, and carrying a handgun were all associated with increased odds of drug selling, and marijuana and hard drug use were strongly tied to drug selling. Suspension from school, gang membership, fraud/fencing, assault, and drug selling all raised the odds of handgun carrying.

Table 6.5 shows that a broad range of behaviors were interconnected or interdependent. In general, engaging in one problem behavior tends to be a reliable

predictor of greater likelihood of engaging in other problem behaviors. At the same time, there is some evidence of specialization—for example, use of hard drugs and use of marijuana both significantly affect the odds of drug selling, but marijuana use is significantly related to just one other serious behavior (gang membership), and hard drug use is significantly related to drug selling only; also, each property-related behavior (vandalism, minor theft, major theft, fraud/fencing) is tied to greater odds of engaging in major theft or fraud/fencing. Such a consistent relationship is also seen between property offenses and drug selling, but not gang membership, assault, or handgun carrying.

Table 6.6 shows the results of applying the co-occurrence models from Table 6.5 to the sample of 18 to 21-year-olds. Again, predictor variables for school suspension and running away have been dropped. The pattern of odds ratios and significance, indicated by the asterisks, generally resembles that seen in Table 6.5, with a few clear exceptions—most of the exceptions relate to the predictive power of substance-related behaviors. In comparison with the gang membership results for juvenile respondents, cigarette smoking among adults was tied to greater chances of belonging to a gang (the effect was not significant among juveniles). Adult respondents who drank alcohol were significantly less likely than other adults to belong to a gang (as opposed to greater odds but no statistical significance for juveniles). And drug selling was not significantly related to adult gang membership, whereas it was significantly related in the juvenile sample. Among adults, the odds of major theft were not significantly related to assault, in contrast to juveniles for whom assault was associated with greater odds of major theft. Drinking was not connected to increased odds of fraud/fencing among adults. Further, in the adult

sample marijuana use was a significant predictor of increased likelihood of assault, and both marijuana use and cigarette smoking were significantly tied to carrying a handgun.

Table 6.6 Co-occurrence of problem behaviors among youth ages 18 to 21 (logit odds ratios)

	Predicted behaviors					
Predictor variables	Gang	Major theft	Fraud/ fencing	Assault	Sell drugs	Handgun
Cigarette smoking	2.83*	1.31	1.11	1.70*	1.94*	1.45*
Drinking alcohol	0.59*	0.76	0.98	1.27*	1.31*	1.81*
Marijuana use	1.96*	1.12	1.31	1.59*	6.95*	1.36*
Hard drug use	0.70	1.32	1.38	1.25	8.39*	1.22
Gang membership		3.32*	2.48*	8.98*	1.74*	7.21*
Vandalism	2.08*	2.70*	4.94*	4.95*	1.98*	1.67*
Minor theft	0.98	14.42*	2.49*	1.56*	2.26*	1.03
Major theft	4.90*		9.14*	1.25	2.02*	1.65*
Fraud/fencing	2.71*	8.86*		1.68*	3.47*	2.32*
Assault	10.48*	1.35	1.89*		2.64*	4.20*
Drug selling	1.76	1.93*	3.11*	2.55*		2.07*
Carrying a handgun	6.26*	1.87*	2.33*	4.26*	2.50*	
Observations	15,151	15,151	15,151	15,151	15,151	15,151
Individuals	6,658	6,658	6,658	6,658	6,658	6,658

*Denotes probability of z-score < 0.05. See Appendix 3 for methods.

In relation to treatment or prevention efforts, the results in the preceding tables accentuate the need for comprehensive assessments of behavior at the time that any problematic juvenile or young adult behavior becomes known. The reason for this is that the observation of any specific problem behavior on the part of a youth increases the probability that the youth is also engaged in other problem behaviors. Workers in the justice system, school personnel, or other service providers should have the capacity to explore the possibility of an individual's participation in a range of harmful and dangerous activities.

Comorbidity and Development

Figures 6.1 thru 6.6 show age-related patterns of co-morbidity between one problem behavior and others and illustrate that patterns of comorbidity change as age increases. The data for the graphs come from bivariate analysis of the current prevalence levels of pairs of behaviors. For example, the data depicted in Figure 6.1 reflect the percentage of respondents who reported current assault, drug selling, or carrying a handgun, out of the pool of respondents who reported current vandalism. Thus, out of all respondents age 12 who said they had destroyed property during the year leading up to the time of interview, about 30% also said they had assaulted another person during that interval.

The graphs show that the association between two behaviors can 1) remain relatively constant across increasing years of age, or 2) increase in strength across increasing age so that the presence of one behavior grows ever more likely, given the presence of another behavior, or 3) decrease in strength with increasing age. Figure 6.1 shows a relatively stable association between vandalism and assault; the percentages across ages are confined to a narrow range of between 30% and 34%. From age 12 to age 18, the relationship of vandalism to drug selling strengthened, as persons who reported acts of vandalism were increasingly likely to report drug selling, with the percentage reporting drug selling increasing from about 5% at age 12 to about 32% at age 18. In contrast, the percentage of vandals who also reported carrying a handgun appears to fluctuate across ages, resembling the age-related prevalence for carrying a handgun seen in Figure 4.3, but at levels that are 2 to 3 times greater than those seen in the general juvenile population.

Figure 6.1 Percentage of respondents reporting vandalism who also reported assault, selling drugs, or carrying a handgun, by age

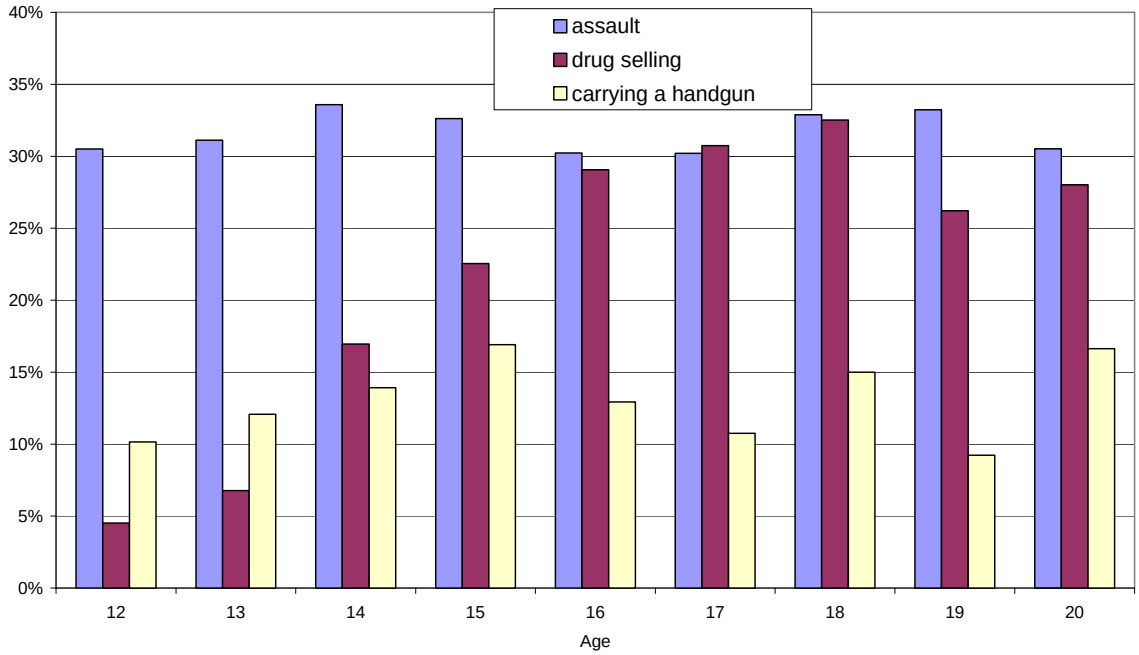


Figure 6.2 shows the level of assault, drug selling, or handgun carrying among respondent who reported minor theft. It depicts a strengthening relationship between minor theft and drug selling from age 13 to age 17. At age 13, about 9% of youth who reported minor theft during the prior 12 months also said they had sold drugs. The level increased to 15% at age 14, to over 25% at age 15, and to 29% at age 18. In contrast, in the sample of all respondents, the prevalence of drug selling grew from age 12 to age 17 and then declined steadily through age 21. The percentage of persons reporting minor theft who also reported assault was over 50% at age 13 and then declined to a level of about 22% at age 16, where it remained until age 20; in the sample of all respondents, assault prevalence peaked at age 15 (12%) and then declined thereafter. Lastly, the percentage of persons reporting minor theft who also reported carrying a handgun gradually declined across the age range from 13 to 20, from 18% to 9%, also in contrast

to the sample of all respondents, for which the prevalence of carrying a handgun fluctuated between 4% and 6% across the range of ages from 12 to 21. The overall pattern of results suggests that juveniles who engaged in minor theft at a relatively younger ages—13 or 14—were much more likely than their peers to practice other risky behaviors and that this relationship declined with increasing age, but never to the point of prevalence rates of other risky behaviors matching that of the general population.

Figure 6.2 Percentage of respondents reporting minor theft who also reported assault, selling drugs, or carrying a handgun, by age

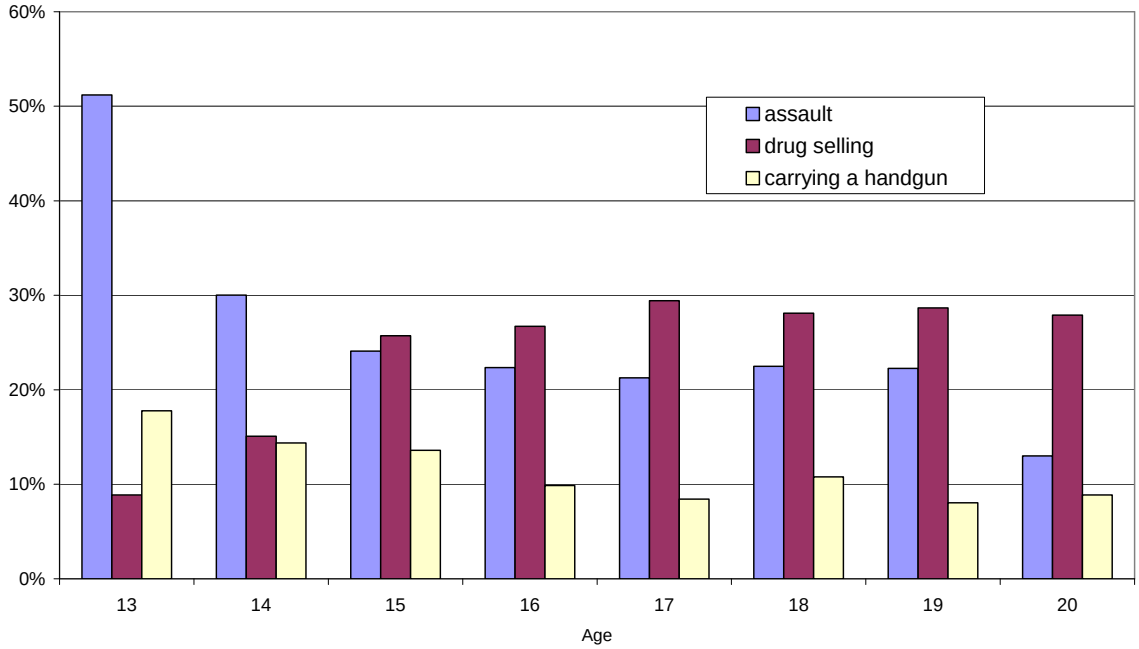


Figure 6.3 shows the percentage of gang members who also assaulted, sold drugs, or carried a handgun, by age. Gang membership had some of the highest levels of comorbidity with other serious behaviors. From ages 12 to 20 the prevalences of assault, drug selling, and carrying a handgun were much higher for gang members than the general population, and prevalence rates for these behaviors tended to peak at younger ages among gang members. For all except one of the ages 12 to 19, a majority of gang

members reported assaulting another person. From ages 14 to 18, over 40% of gang members reported they also sold drugs; from ages 13 to 19, more than 30% of gang members also reported carrying handguns. In comparison, Figure 6.4 shows generally declining comorbidity between drug selling and assault, handgun carrying, or gang membership.

Figure 6.3 Percentage of respondents reporting gang membership who also reported assault, drug selling, or carrying a handgun, by age

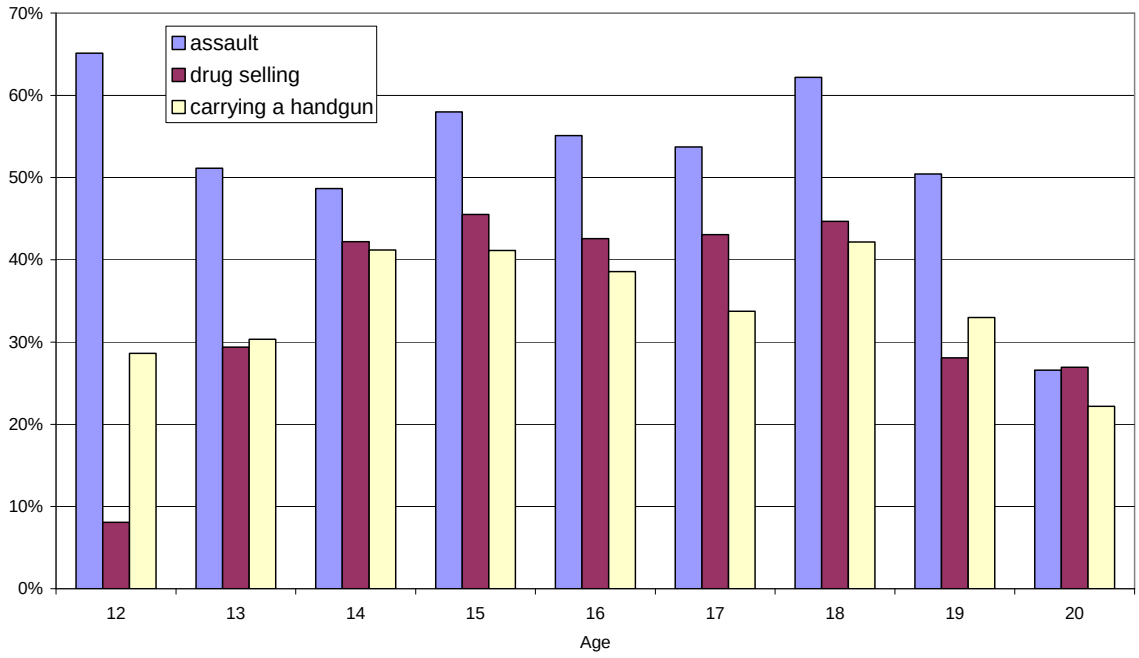


Figure 6.4 Percentage of respondents reporting they sold drugs who also reported assault, carrying a handgun, or belonging to a gang, by age

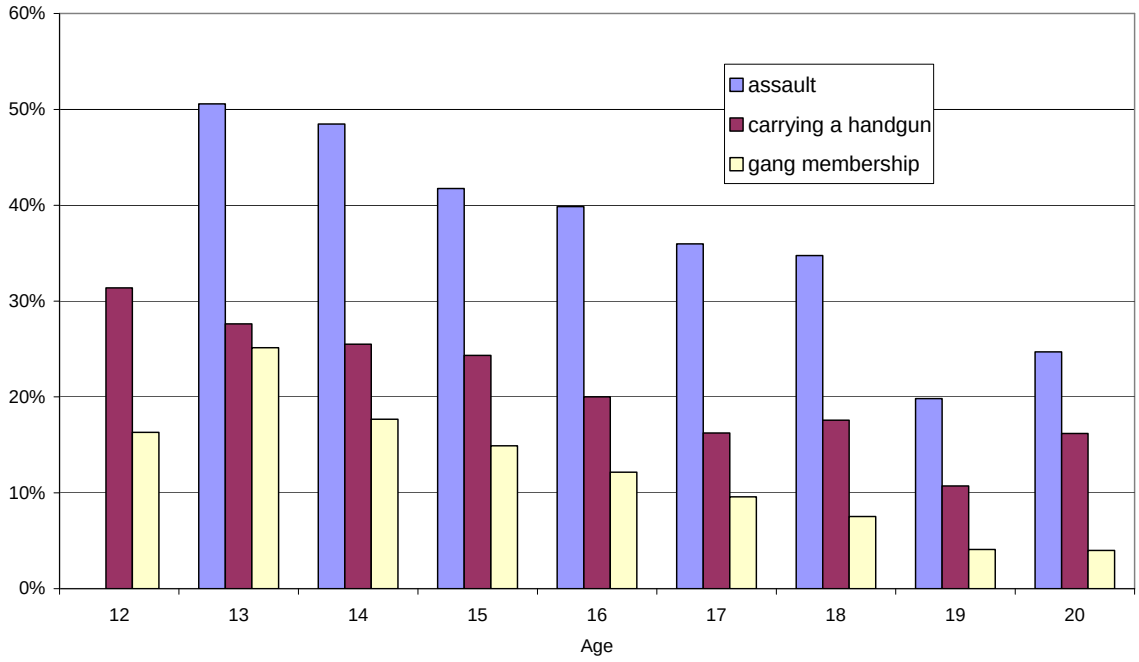
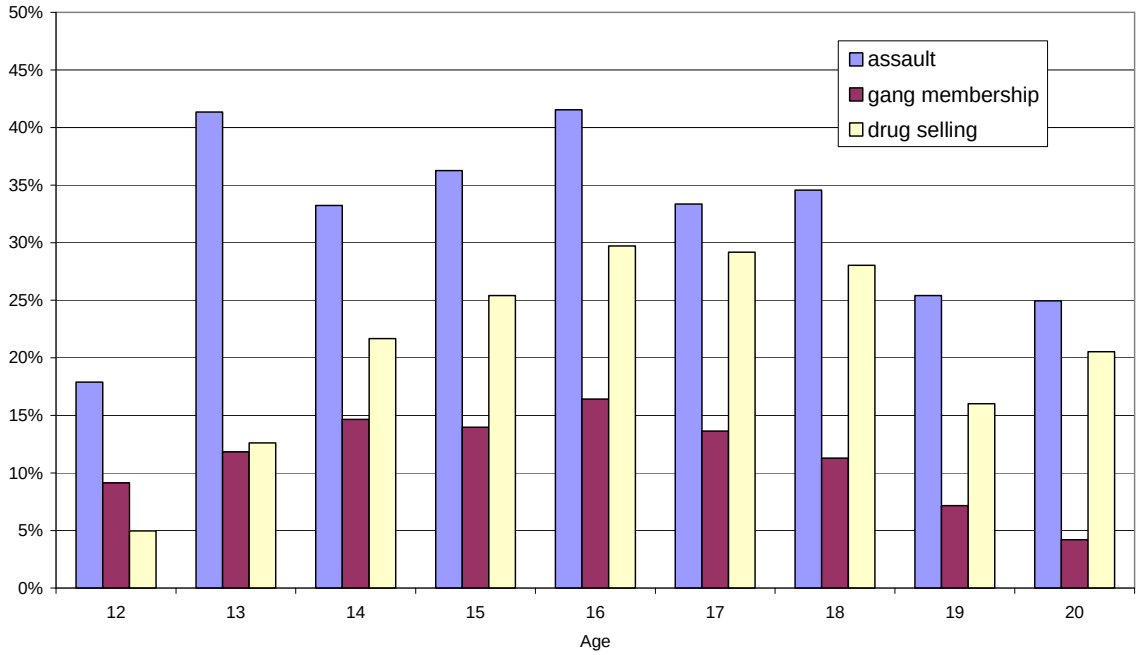


Figure 6.5 shows the associations between carrying a handgun and the behaviors of assault, belonging to a gang, and drug selling. Despite fluctuations in the percentage of gun carriers who also assaulted, the general pattern is one of comorbidity that first increases and then decreases with advancing age. For example, from age 12 to age 16, the percentage of gun carrying respondents who also said they had belonged to a gang during the prior 12 months increased from 9% to 16%, before dropping to about 4% at age 20.

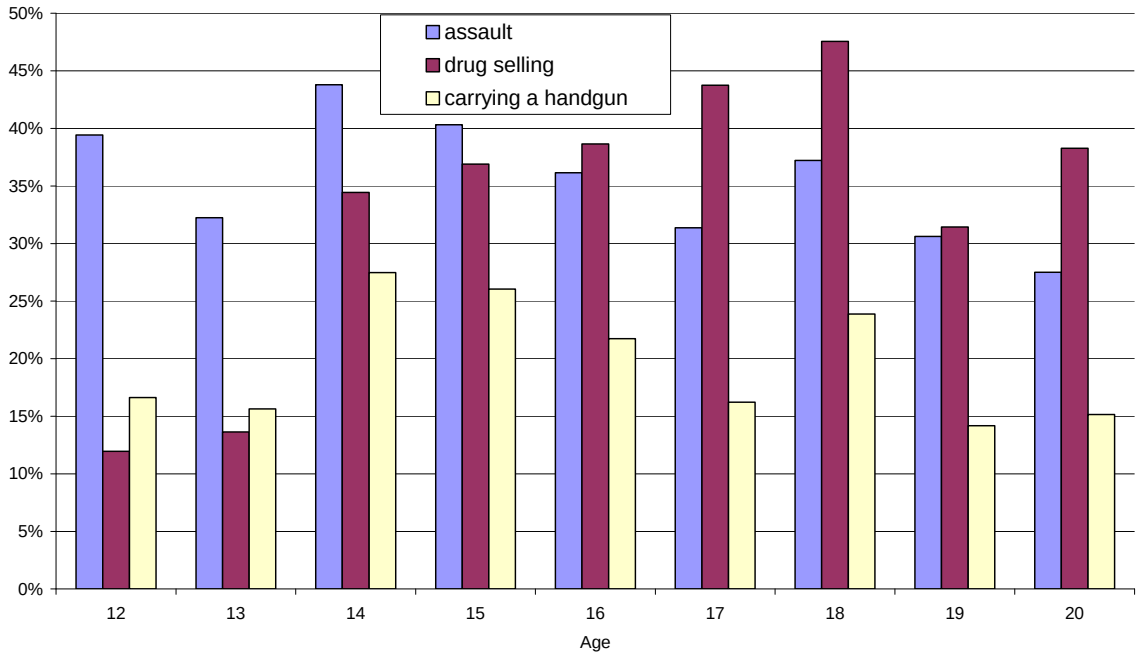
Figure 6.5 Percentage of respondents reporting they carried a handgun who also reported assault, gang membership, or drug selling, by age



Finally, Figure 6.6 depicts the percentage of persons engaging in major theft who said they had assaulted, belonged to a gang, or sold drugs. The graph shows, first, declining co-occurrence of assault with major theft from age 14 (when 44% of those reporting major theft also reported assault) to age 20 (28%). Second, from age 12 to age 18, an increasing percentage of respondents who reported major theft also reported they had sold drugs. Although the percentage declined from more than 45% at age 18 to just over 30% at age 19, the percentage of youth reporting major theft who reported selling drugs remained above 30% from age 14 to age 20. Third, the percentage of persons reporting major theft who also reported carrying a handgun appears to be similar to the co-occurrence of assault with major theft: a spike at age 14 followed by declining co-occurrence until age 17, followed by a second spike at 18 and lower levels at ages 19 and

20. Therefore, the co-occurrence of drug selling with major theft has an exceptional pattern, containing a sizable increase in overlap from age 14 to age 18.

Figure 6.6 Percentage of persons reporting major theft who also reported assault, gang membership, or drug selling



The preceding six graphs illustrate the general point that, even with pairs of problem behaviors that have relatively high comorbidity, the level of overlap can vary substantially across different ages. An example occurs with gang membership and assault: at age 12, 65% of self-reported gang members also reported assault; at age 20, the level had dropped to 27%. The graphs also suggest that, just as the prevalence of most problematic behaviors is lower after age 18 than before, so are the levels of comorbidity among those individuals engaged in the relatively serious behaviors of gang membership (Figure 6.3), drug selling (Figure 6.4), carrying a handgun (Figure 6.5), and major theft (Figure 6.6). For these four behaviors, levels of comorbidity were generally lower at age 19 and 20 than at age 18. This pattern supports the observation that adult offenders have greater specialization in their criminal activities than do juvenile offenders.

7. Transition to Offending and Persistence: Serious Offenses

This section examines patterns of behavior that occur over time. The patterns include the transition from a condition of no law-violating behavior to any level (frequency) of serious offending, the transition from no offending or a low frequency of serious offending to very high frequency serious offending, and persistence in very high frequency serious offending from one survey wave until the next survey wave. To focus attention on behaviors more likely to lead to involvement with the justice system, analysis is limited, as in Section 5, to five relatively serious behaviors tracked by the NLSY97: major theft, fraud/fencing, assault, drug selling, and handgun carrying. Among all respondents ages 12 to 21, the current prevalences were 3.7% for major theft, 3.5% for fraud/fencing, 9.4% for assault, 6.6% for selling drugs, and 5.1% for handgun carrying; 19.1% reported any one of the five behaviors. Among all juveniles ages 12 to 17, the current prevalences were 4.3% for major theft, 4.0% for fraud/fencing, 10.6% for assault, 6.4% for selling drugs, and 5.2% for handgun carrying; 20.2% reported any one of the five behaviors.

The analysis that follows will first assess which factors influence the transition from reporting none of the serious behaviors in one survey round to reporting one or more of them in the next survey round. The explanatory variables are those used before to examine prevalence and frequency: the social context measures of friends or family in gangs, mid- and high-level bad peer categories, mid- and high-level good peer categories; disconnection from both school and work; demographic indicators of sex, race and ethnicity; and family structure.

The subsequent analyses of transition from no offending or a low frequency of serious offending to very high frequency serious offending and of persistence in very high frequency serious offending use the designation of behavior frequency detailed in the analysis of early onset's connection to very high frequency serious ("intense") offending. Within age groups, respondents were classified as either low, medium, or very high frequency for each of the five serious behaviors. A very high frequency ranking on one or more of the five behaviors resulted in the respondent being designated as a "very high frequency, serious offender." Then the indicators of social context, disconnection, demographics, and family structure are used to assess which respondents were more likely to move from a state of no offending or low frequency offending (defined as the lower one-third of the frequency distribution) in one survey period to very high frequency offending in the following survey period, as opposed to remaining in a state of no or low frequency offending. Then the indicators were used to describe which respondents were more likely to persist in a state of very high frequency offending from one survey period to the next, as opposed to moving to a state of no or low frequency offending.

For both transitions and persistence, Table 7.1 contains a demographic model followed by a full model with all predictor variables. The demographic model compares males against females; compares African-Americans, Hispanics, and "other non-white race" individuals against whites; and compares juveniles (ages 12 to 17) against older respondents. The model also controls for the length of the interval between interviews. Results from the demographic model are useful for understanding the influences of sex, race/ethnicity, and juvenile age before other individual-level characteristics are taken into account, and provide a baseline against which effects in the full model can be compared.

In turn, the full model adds controls for predictors previously described in Section 4: gang friends (whether any siblings, cousins, or friends belong to a gang); the bad peer index and the good peer index (the prevalence of negative behaviors and positive behaviors among school-based peers, measured in 1997 only); disconnected status (whether the respondent is both out of school and out of work); and the family structure indicator, denoting individuals who, in 1997, lived in a household without both biological parents.

Table 7.1 shows males were significantly more likely than females and juveniles were significantly more likely than young adults to make the transition from no offending in one period to any level of serious behaviors in the following survey period. The odds ratios for the effects of African-American race and Hispanic ethnicity (1.08 and 0.96) were close to 1.0 (corresponding to no effect on the transition), and neither was statistically significant. In contrast, after other predictor variables are introduced, the odds ratios for both African-American and Hispanic dropped to below 1, and both were significant. This indicates that that, among respondents who had not reported any serious behavior in the prior survey, African-Americans and Hispanics were less likely than whites to report levels of serious offending in the subsequent survey. Also for the full model, all other risk and protective factors were significant predictors. The presence of friends or family in a gang, either a mid or high level of negative peer behaviors, disconnection from school and work, and having resided in a household without both biological parents present all increased the odds of making the transition to any level of serious offending, whereas either a mid or high level of peers engaged in positive

behaviors reduced the likelihood of a respondent moving from no offending in one period to at least one instance of serious offending in the following period.

A very similar pattern of results appears when the transition examined is from no serious offending or low frequency serious offending to very high frequency serious offending. An exception in the demographic model is that juveniles were not more likely than adults to move from low frequency to very high frequency problem behaviors—before controls are introduced for the effects of context in the form of peers and family, respondents younger than age 18 were neither more nor less likely than those ages 18 to 21 to make the transition. However, after controlling for context in the full model, juvenile age was linked to a greater chance of moving from a low frequency to a very high frequency of serious offending. Also in the full model, mid and high levels of positive peer influence no longer provided a protective effect. Just as they were with the transition from no serious offending to any level of serious offending, the effects of gang friends, mid or high level of bad peer behaviors, disconnected status, and having lived in a household without both biological parents present were all significant predictors of increased likelihood of transitioning from low frequency to very high frequency serious offending.

The model of persistence in very high frequency serious offending from one period to the next bears both similarities to and distinctions from the transition models. In the demographic model for persistence, significant predictor variables were sex and age—both males and juveniles were more likely to persist than were females or young adults—and African-American race, which decreased the odds of persistence to a level below that of white respondents. This suggests that serious, very high frequency

offending careers were relatively shorter or more episodic among African-Americans than among whites. Similar effects for male sex, juvenile age, and African-American race can be seen in the full model. Also in the full model, gang friends and a high level of bad peer behaviors increased the chances of persisting in very high frequency serious offending, while Hispanic ethnicity reduced the odds of persistence. Unlike the transition into any serious offending model, but similar to the transition to a very high frequency offending model, in the full persistence model the good peer odds ratios were not statistically significant. In other words, socially positive activities among peers protected individuals from initiating serious offending, but not from the progression from low frequency to very high frequency serious offending or persistence in serious very high frequency offending from one survey period to the next. Differences between the persistence model and both transition models were that neither disconnection from school and work nor family structure had a significant effect on persisting, although both had protected against transitioning to any serious offending or increasing the frequency of serious offending. Taken together, the results suggest that once very high frequency serious offending has begun, factors that otherwise are associated with protection against problematic behaviors (positive peers, school enrollment or employment, and families with both biological parents) are less relevant to continued offending than are the risk factors of gang friends and bad peers.

Table 7.1 Transition to and persistence in serious offending, logit odds ratios

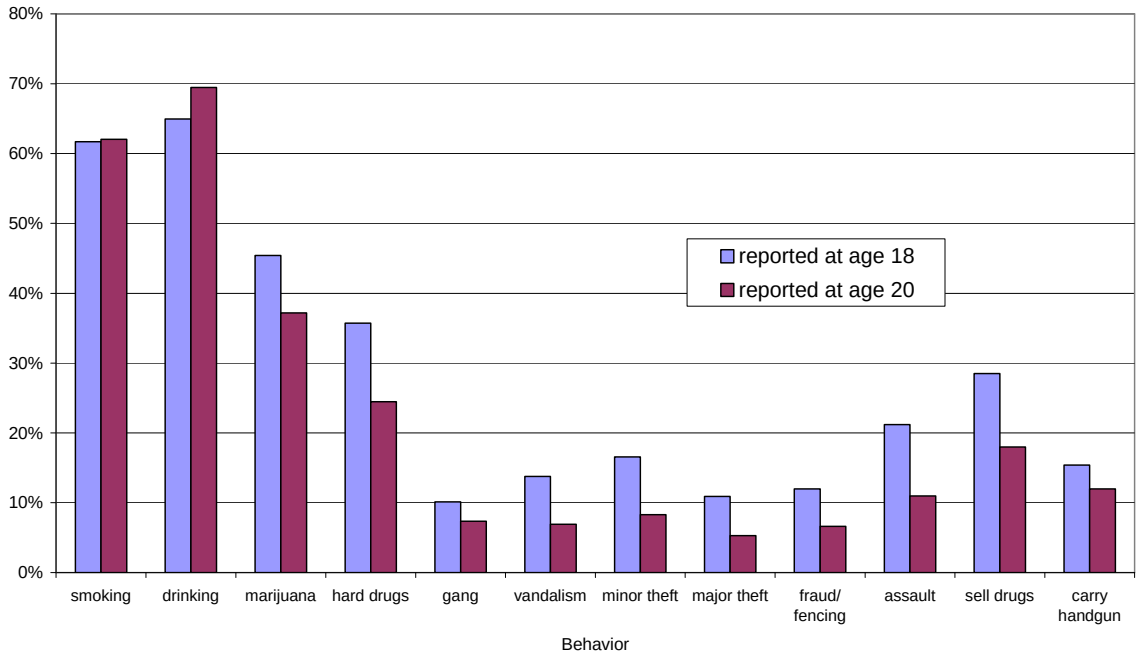
	Transition from no offending to any level of serious behaviors		Transition from no or low frequency to very high frequency		Persistence in very high frequency serious behaviors	
Predictor	Demographic model	Full model	Demographic model	Full model	Demographic model	Full model
Gang Friends		4.51*		4.49*		5.47*
Bad peers, mid level		1.51*		1.39*		0.79
Bad peers, high level		1.97*		1.76*		1.58*
Good peers, mid level				0.92		0.92
Good peers, high level				0.90		0.95
Disconnected		1.42*		1.96*		1.32
Male	2.46*	2.56*	2.53*	2.74*	1.63*	1.94*
Families without both biological parents present		1.34*		1.30*		1.08
African-American	0.80* 1.08 0.77*	0.72*	1.03	0.66*	0.63*	0.43*
Hispanic	0.96	0.69*	1.09	0.76*	0.92	0.60*
Other non-white race	0.77	0.75	1.17	1.12	0.51	0.42
Ages 12 to 17	1.18*	1.39*	0.99	1.22*	1.42*	1.58*
Months between surveys	1.03*	1.02*	0.99	0.98	0.98	0.96*
Observations	25,872	23,848	26,603	24,523	1,513	1,371
Individuals	8,213	7,666	8,173	7,629	1,098	995

*Denotes probability of z-score < 0.05. For details on methods, see Appendix 3.

8. Continuity Between Juvenile and Adult Offending

Are the people who offended as juveniles the same people who offend as young adults? What proportion of juveniles continued their offending behavior over into their adult years? What proportion of adult offenders began offending as adults? The proportion of juveniles who continued juvenile-initiated problem behaviors into their adult years differed greatly across behaviors. Figure 8.1 shows the percentage of persons who reported a problem behavior at age 18 or age 20, out of all those who reported initiating the behavior before age 18.

Figure 8.1 Adult problem behaviors by former juvenile offenders: the percentage of respondents who reported a behavior by age 17 who also reported at ages 18 or 20



The chart shows that most juveniles who did crime or belonged to a gang stopped doing so by the time they reached early adulthood. For example, by age 18 only 11% of the individuals who had engaged in major theft as a juvenile reported major theft, and by age 20 the level dropped to 5%. The clear pattern is that the large majority of juveniles

with law-violating behavior abandon those behaviors before they reach age 18, and even more abandon the behaviors by age 20. Some behaviors are more likely than others to persist from age 17 or younger to age 18 or older. In general, substance-related behaviors (smoking, drinking, marijuana use, hard drug use, and drug selling) were much more likely than the other behaviors to have been carried over from juvenile to adult ages. For example, among respondents who, by age 17, said they had ever used marijuana, 45% also reported marijuana use at age 18 and 37% also reported marijuana use at age 20. Among the substance-related behaviors, smoking and drinking were exceptional, with persistence rates above 60%, whether measured at age 18 or 20, and no clear pattern of declining persistence with increasing age. For all other behaviors—gang membership, vandalism, minor theft, major theft, assault, and gun carrying—persistence levels were lower than those seen with substance-related behaviors, and range from 21% at age 18 for assault to 10% at age 18 for gang membership.

Overall, the pattern seen in Figure 8.1 is repeated in Figure 8.2, which displays persistence levels at age 18 for males and females. Both males and female were likely to leave behind criminal behavior and gang membership as they aged into adulthood. Further, substance related behaviors—smoking, drinking, marijuana and hard drug use, and drug selling—were more likely than other behaviors to be reported by 18-year-old respondents who had previously reported the behavior while a juvenile. Where significant differences between males and females appeared in persistence levels—as they did for vandalism and carrying a handgun—males were more likely than females to have persisted in the behavior. However, for smoking, drinking, marijuana use, hard drug use,

minor theft, major theft, assault, and drug selling, the level of behavior persistence among females matches or nearly matches that of males.

Figure 8.2 Adult problem behaviors by former juvenile offenders: respondents who reported a behavior by age 17 who also reported at age 18, by sex

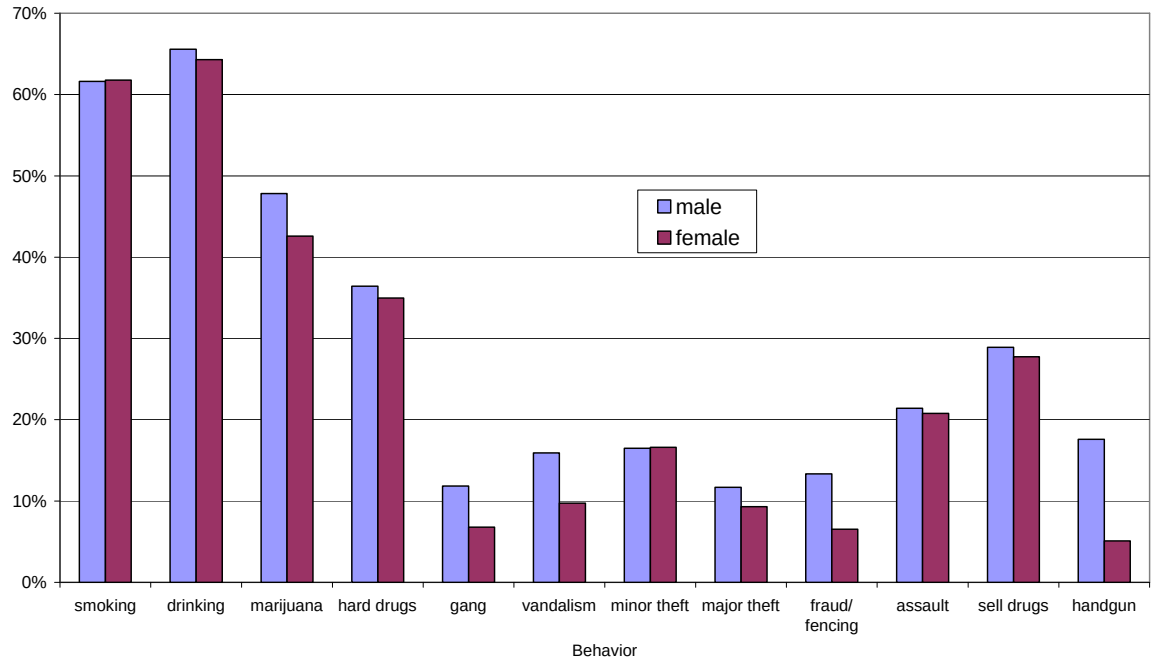


Figure 8.3 shows persistence of problem behaviors from juvenile ages to age 18 for whites, African-Americans, and Hispanics. In general, the same pattern seen in Figure 8.1 appears again, regardless of race/ethnicity—most individuals who engaged in problem behaviors as juveniles ceased doing so by age 18. Again, the chief exception to the general pattern occurs with smoking and drinking—for example, 65% of white and 53% of Hispanic juveniles who had ever smoked also did so at age 18. Where significant differences in persistence levels emerged among races/ethnicities, African-American persistence levels were lower than those of whites for marijuana use, vandalism, minor theft, and drug selling and lower than those of both whites and Hispanics for drinking and

hard drug use. Whites' persistence levels were higher than those of either African-Americans or Hispanics for cigarette smoking and drinking alcohol.

Figure 8.3 Adult problem behaviors by former juvenile offenders: respondents who reported a behavior by age 17 who also reported at age 18, by race/ethnicity

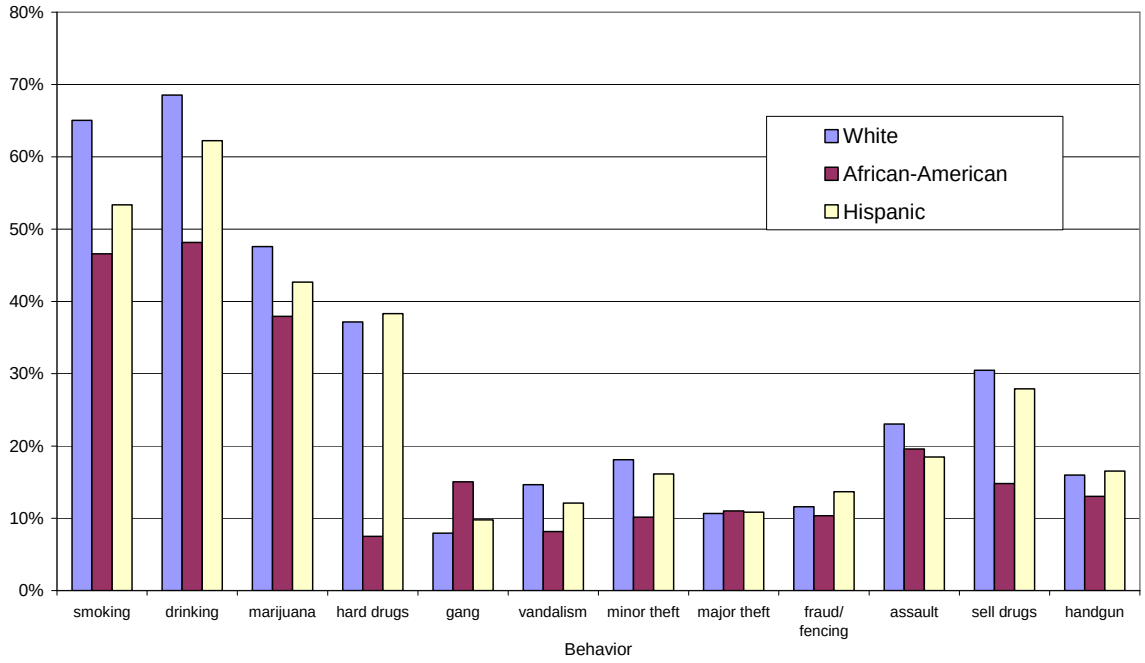
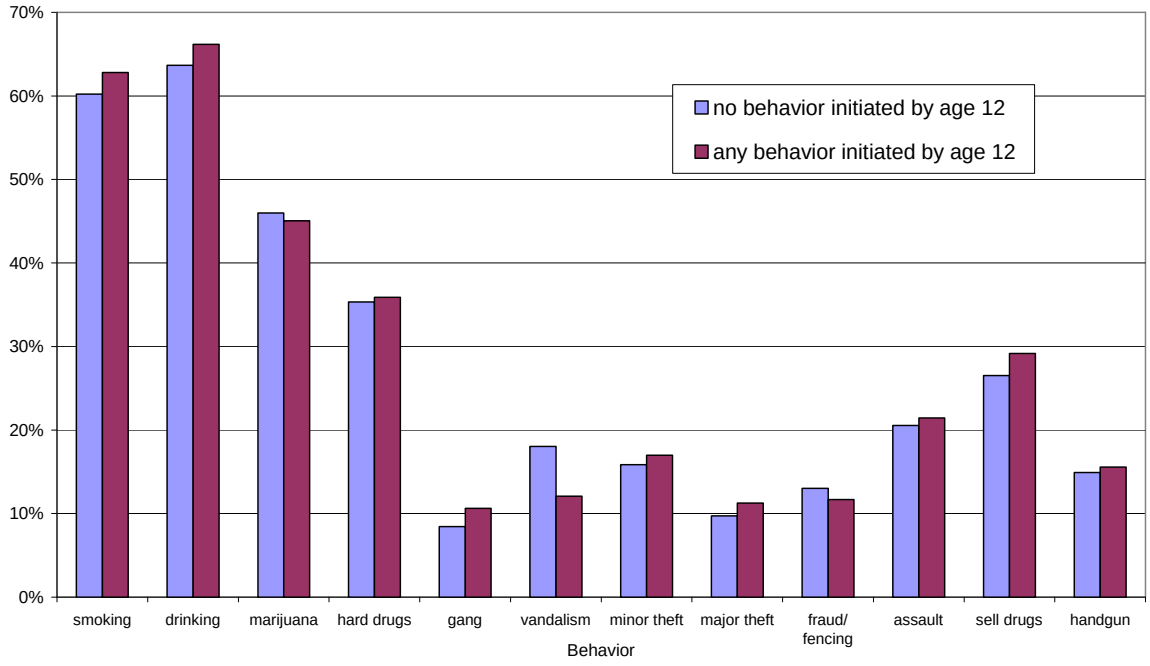


Figure 8.4 shows the level of persistence in problem behaviors for two groups defined by early onset (by age 12) of problem behaviors. Across all behaviors except vandalism there is almost no difference in persistence between respondents who reported any early onset and those who reported no early onset. For both groups, juvenile problem behaviors—except smoking and drinking—tended to not persist into age 18. Just one significant difference in persistence appears between the groups, and that is the unexpected divergence for vandalism—individuals with no early onset were significantly more likely (at 18%) than those with early onset (at 12%) to also report vandalism at age 18.

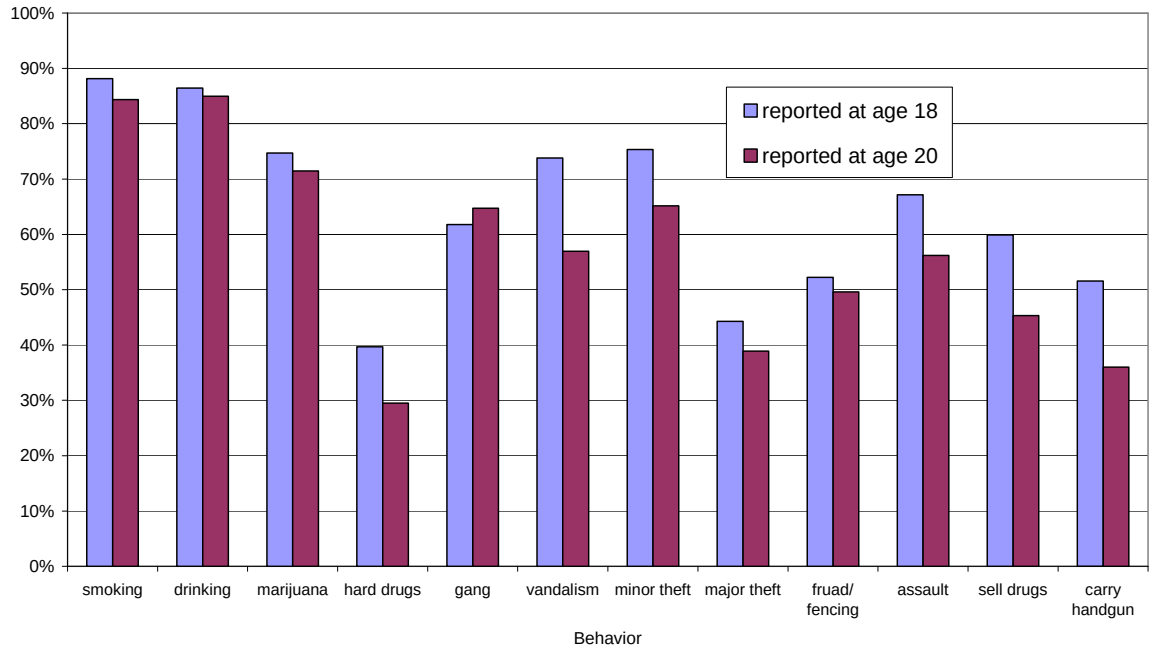
Figure 8.4 Adult problem behaviors by former juvenile offenders: respondents who reported a behavior by age 17 who also reported at age 18, by early onset status



As for the proportion of adults who initiated problem behaviors as juveniles, Figure 8.5 shows the percentage all young adults (either age 18 or age 20) reporting problem behaviors who first reported the behavior before age 18. In general, the behaviors with greater percentages of juveniles persisting into adulthood—especially smoking and drinking—also had relatively greater percentages of adults who had initiated the behavior before age 18. For example, 88% of 18-year-olds who reported smoking first smoked before age 18, and 86% of 18-year-olds who drank first did so before age 18. For marijuana use, vandalism, and minor theft, more than 70% of respondents who reported the behavior at age 18 initiated it prior to age 18. In contrast, the young adult behaviors with the lowest percentage of juvenile initiates—and the highest levels of adult initiation—were hard drug use, major theft, and, among 20-year-olds, carrying handguns. At age 20, juvenile initiates were one-half or fewer of the

individuals reporting hard drug use and four of the five behaviors previously described as relatively serious, i.e., major theft, fraud/fencing, selling drugs, and carrying a handgun. Thirty percent (30%) of respondents who reported hard drug use at age 20 had ever engaged in hard drug use while a juvenile; 70% had no juvenile history of hard drug use. Similarly, at age 20, 39% of the individuals engaged in major theft, 50% of those engaged in fraud/fencing, 45% of those who sold drugs, and 36% of those who carried a handgun had a juvenile history of such behaviors. **It is worth emphasizing that most of the juveniles who reported any particular serious problem behavior did not report that behavior as an adult and, by age 20, most of the adults who reported serious problem behaviors had experienced adult onset of those behaviors**.

Figure 8.5 Percentage of young adults reporting problems behaviors who first engaged in the behavior at or before age 17



Figures 8.6 and 8.7 show, by sex (Figure 8.6) and by race/ethnicity (Figure 8.7) the percentage of 18-year-olds reporting problem behaviors who first experienced

juvenile onset for the behavior. In general, the graphs are similar to that in Figure 8.5—at age 18, relatively greater levels of juvenile onset were seen in smoking, drinking, marijuana use, gang membership, vandalism, minor theft, assault, and drug selling, and relatively lower levels of juvenile onset were seen in hard drug use, major theft, fraud/fencing, and carrying a handgun. With males and females (Figure 8.6) carrying a handgun was the one behavior with a significant difference in juvenile onset levels, with a majority (58%) of 18-year-old males and a minority (18%) of 18-year-old females who carried a gun also reporting they had first done so as a juvenile. There were more differences across groups defined by race/ethnicity—compared with white respondents, African-Americans had significantly lower levels of juvenile onset (and higher levels of adult onset) with smoking, drinking, and vandalism; both whites and Hispanics who used hard drugs at age 18 had higher levels of juvenile onset than did African-Americans.

Figure 8.6 Percentage of 18-year-olds reporting problems behaviors who first engaged in the behavior at or before age 17, by sex

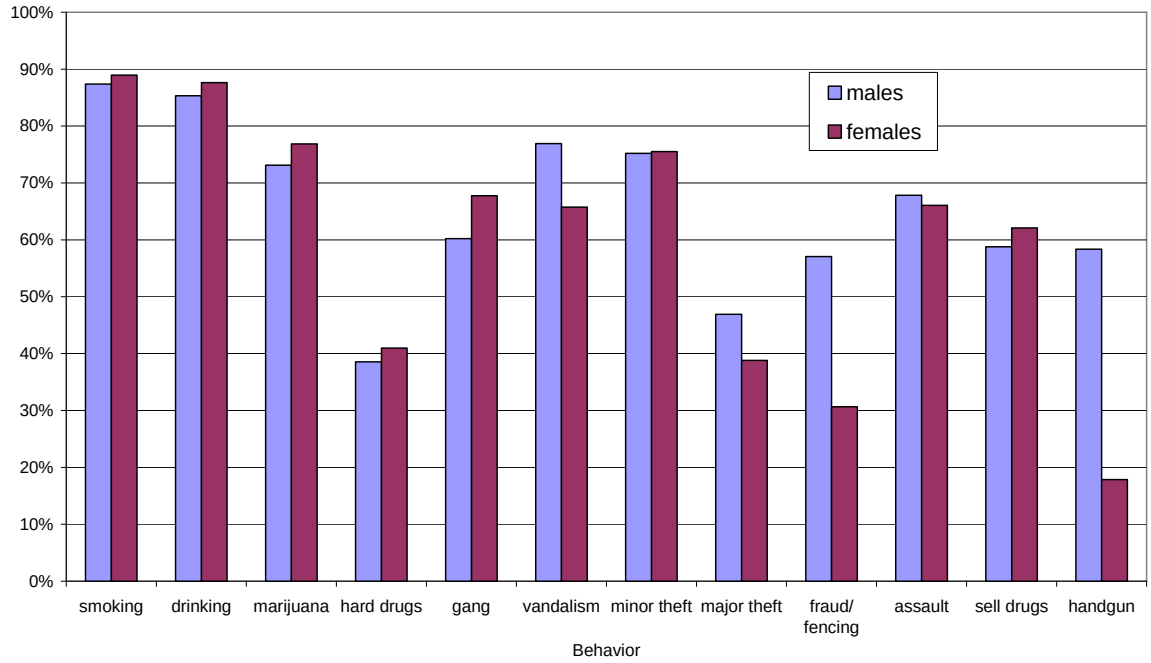
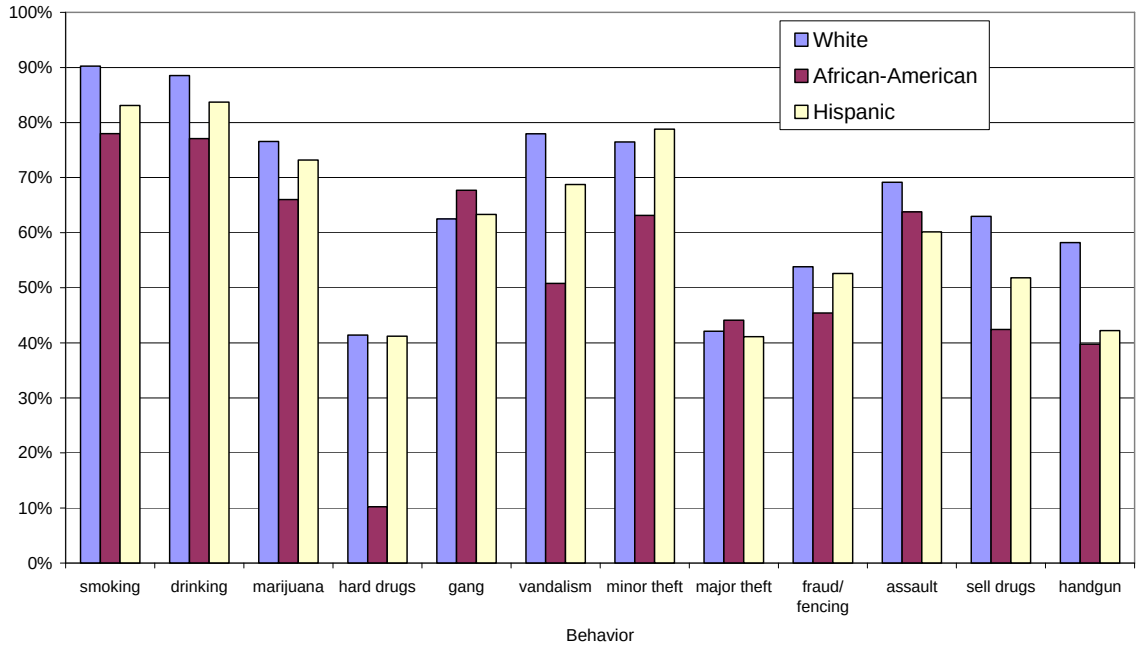


Figure 8.7 Percent of 18-year-olds reporting problems behaviors who first engaged in the behavior at or before age 17, by race



The Persistence of Offending from Juvenile to Adult Years

The following analysis examines offending across juvenile and adult ages. It examines offending persistence for any of a broad range of delinquent/criminal offenses first described in Section 2 and for any of five relatively serious behaviors. The summary delinquent/criminal behavior measure draws on indicators of illegal drug behaviors (using marijuana, using hard drugs, selling drugs), property offending (vandalism, minor theft, major theft, fraud / fencing), person offending (assault, carrying a handgun). The relatively serious behaviors include major theft, fraud/fencing, assault, drug selling, and handgun carrying. The analysis below uses only current (contemporaneous with the survey period) reports of serious problem behaviors.

We compare individuals who were present as respondents in four survey rounds and who were interviewed at ages 16, 17, 18, and 19. This allows us to compare two juvenile-age observations (at 16 and 17) with two adult-age observations (at 18 and 19). Table 8.1 reports the levels of any measured offending behavior and for the group of five relatively serious offenses.

Table 8.1. Percent reporting offending while juvenile (age 16 or 17) or adult (age 18 or 19)

Offense occurrence	Any offending	Serious offending
All respondents:		
As juvenile	62[a]%	32[b]%
As adult	48[a]	27[b]
As juvenile and adult	38[a]	18[b]
Offenders only:		
Juveniles with adult offenses	61[a]	55[a]
Adults with juvenile offenses	78[a]	66[b]
Sample size	1,557	

From the table it can be seen that more than 3 out of every 5 (62%) of juvenile-age (16 or 17) youth reported at least one instance of offending behavior, as did 48% of adult-age (18 or 19) youth. Sixty-one percent (61%) of juveniles who reported offending as a juvenile also reported offending as an adult, in comparison to 78% of adult offenders who reported offending as juveniles. Overall, the results in Table 8.1 show that for about 6 out of every 10 offenders age 16 to 17, offending persists into young adulthood. To a great extent offending among young adults at ages 18 and 19 is a continuation of behaviors initiated by juveniles. The pattern of results is similar when one looks at serious offending only, although prevalence rates are lower for the smaller set of offenses. More than one-half of juvenile serious offenders persisted into adult offending (55%) and nearly 7 of every 10 adult serious offenders (69%) had a history of juvenile

serious offending. In general, Table 8.1 shows that offending present at 16 or 17, whether defined broadly or as serious offending only, is likely to persist into young adult age (18 or 19). Programs that effectively address juvenile offending could have the further beneficial effect of reducing the costs of young adult crime.

9. The NLSY97 and the National Youth Survey of 1976

Detailed Comparisons

Major challenges emerge when attempting to compare behavior prevalence and frequency estimates from the NLSY97 and the previous, major, nationally-representative survey of youth problem behavior, the National Youth Survey (NYS). Nevertheless, it is possible to search for resemblances between the two. The discussion that follows is based on a comparison of results from the first five rounds of the NLSY97 with results from the first five rounds of the NYS[6].

The NYS was initially fielded in 1976, with surveys of 1,655 youth ages 11 to 17. The survey questions pertaining to problem behaviors in the NLSY97 and the NYS cover many similar topic areas. The two studies differ in that questions about deviant and conforming behaviors in the NYS are, with the exception of questions about gang activity, generally more extensive and detailed than in the NLSY97. For example, five questions ask about assault in the NYS (aggravated assault with intent to injure or kill, gang fights, hitting teachers, hitting parents, and hitting students), in comparison to a single question about assault in the NLSY97. One behavior probed in a similar manner in the NLSY97 and the NYS is theft of something worth more than $50. The NLSY97 question asks whether the respondent has "stolen something from a store, person or house, or something that did not belong to you worth 50 dollars or more, including stealing a car?" The NYS asks whether the respondent has "stolen or tried to steal something worth more than $50?" There are clear differences between the questions: the

[6] Elliot, D.S., S.S. Ageton, D. Huizinga, B.A. Knowles, and R.J. Canter. 1983. *The Prevalence and Incidence of Delinquent Behavior: 1976 – 1980.* Boulder, CO: Behavioral Research Institute

NLSY97 question specifies "store, person, or house" and explicitly includes auto theft, but does not refer to attempts to steal; the NYS asks about auto theft in a separate question. Therefore, it is unclear whether the 2.6% prevalence estimate for major theft based on the 1978 NYS sample of 13- to 19-year-olds is similar to or different from the 3.8% prevalence for 13 to 19-year-olds questioned between 1997 and 2001 by the NLSY97.

Further, the NYS places greater emphasis on assessment of deviant and conforming behaviors (the NLSY97 is, after all, primarily a survey of workforce participation). The two studies also differ in the time intervals referenced in questions (the NYS typically uses the prior year and the NLSY97 either 30 days, 12 months, or "since the date of the last interview") and topic ordering (for example, questions about substance use generally precede questions about delinquent activity in the NLSY97, in contrast to the NYS). The differences just mentioned, in addition to differences in sample composition (the initial NYS sample was composed of youth ages 11 to 17, the NLSY initial sample was youth ages 12 to 16) and the fact that both samples are approximations of the population of American youth, create uncertainty to the point that any comparison of the NLSY97 with the NYS is problematic.

Despite the serious caveats against comparison of estimates for specific behaviors, one particularly noteworthy difference emerges in estimates of participation in gangs. The NLSY97 question about belonging to a gang is immediately preceded by a question asking about gang presence in the respondent's neighborhood or school and another question that asks whether any of the respondent's friends or close relatives belong to a gang. The gang presence in neighborhood/school question explicitly describes a gang as

"a group that hangs out together, wears gang colors or clothes, has set clear boundaries of its territory or turf, protects its members and turf against other rival gangs through fighting or threats." The NLSY97 ages 13 to 19 prevalence for gang membership, either in the previous 12 months or "since the date of the last interview" was 1.7%. In contrast to the NLSY97's survey instrument's repeated prompting about gang activity, the NYS questionnaire in 1978 referred once to gangs, asking about involvement during the past year "in gang fights," and the estimated prevalence for gang fighting in the 1978 NYS sample of youth ages 13 to 19 was 7.9%. On the face of it, the different estimates suggest a greater level of involvement with gangs for the earlier generation. However, it is unknowable the extent to which any difference should be attributed to differences in gang involvement, differences in the nature of gang activity, differences in question wording, or differences in sampling.

Comparisons of Patterns

It is important to keep in mind that results from the NYS and the NLSY97 are not strictly comparable, and that any comparison necessarily involves many approximations and little exactitude. Despite the difficulties encountered in comparing the results from particular survey questions, more general comparisons by demographic categories — sex, race, and age — show evidence of similarity between the youth and young adults in the first five rounds of the NYS (who were ages 11 to 17 in 1976 and ages 15 to 21 in 1980) and those in the first five rounds of the NLSY97. In the discussion that follows, explicit comparisons of results from the two studies are attempted only in those cases where either similarities or differences are relatively evident.

The NLSY97 and NYS are similar in that both support the generalization that males were more likely than females to report law-violating behaviors such as assault, major theft, vandalism, selling hard drugs, and carrying a weapon, but that differences in substance-related behaviors and minor theft are either substantially lessened or altogether absent. In general, in both surveys males were also likely to report greater frequency of problematic behaviors other than smoking and drinking.

Comparison of the NLSY97 and the NYS in terms of patterns of difference by race also suggests some continuity across generations. Analysis of prevalence and frequency levels among whites and African-Americans (the number or Hispanics in the NYS sample was not sufficient to allow comparison) indicates that white respondents were more likely than African-Americans to report substance-related behaviors (marijuana and hard drug use) or minor theft in the NYS. In racial comparisons without controls for social context and family structure, both the NYS and the NLSY97 show an increased likelihood among African-Americans to have reported assault (once social context and family structure are controlled, African-Americans in the NLSY97 were not more likely than whites to have assaulted another person). In terms of behavior frequency, African-American youth in the NYS, as in the NLSY97, reported a lower incidence level of alcohol use.

The NLSY97 and NYS reported similar age-related patterns. Alcohol and marijuana use prevalence steadily increased from early to late adolescence in both samples; however, hard drug prevalence in the NYS increased with each year of age from 11 to 20, in contrast to the NLSY97, which shows a peak around age 18 and then a plateau between ages 19 and 21. Vandalism and assault prevalence also showed similar

patterns in the two studies: vandalism prevalence peaked at either age 12 or 13 in both the NYS and NLSY97 samples; assault prevalence declined after age 17 in the NYS (with its more serious definition of assault) and after age 15 in the NLSY97. Age-related patterns in frequency of problem behavior were also at times similar in the NYS and the NLSY97 samples: the frequency of major theft reached a plateau between the ages of 16 and 18, the frequency of assault declined after age 16, and in the NYS there was a general increase with age in the frequency of the offenses grouped as "illegal services" (prostitution and drug selling), and, in the NLSY97 a similar increase in with drug selling. Two apparent differences between the studies occurred with hard drug use, the frequency of which peaked at age 16 in the NLSY97, but which continued to increase in frequency after age 16 in the NYS, and with vandalism, which showed a decline in frequency with increasing age in the NYS but not the NLSY97.

Even with the qualifications necessary to compare the NYS sample with the NLSY97 sample, a careful assessment indicates at least as much continuity as change across generations in the broad contours of problem behaviors. In both samples males were more likely than females to engage in delinquent behavior, in terms of both prevalence and frequency. In both samples white youth had higher prevalence than did African-American youth with substance-related behaviors and minor theft, and African-American youth had higher assault prevalence than did white youth. Finally, in both samples, substance-use behaviors generally increased in prevalence and frequency with advancing age, while the prevalence of minor delinquent acts generally declined after early adolescence.

Appendix 1. Respondent Retention

It is problematic to use self-reports from a longitudinal survey to assess the state of law-violating behavior among American youth and young adults if law-violating behavior is related to the chances of individuals participating in the survey over time. For example, if respondents who reported theft of something worth more than $50 ("major theft") in the first survey round are more likely to be unavailable or to refuse to respond in subsequent surveys, then estimates based on the remaining participating respondents will likely underestimate the probability of major theft. In general, it seems likely that persons with a greater propensity toward law-violating behavior are less likely to remain in the pool of survey respondents. However, one test suggests that survey attrition does not bias the NLSY97 data. As Table A.1 indicates, of the 8,984 respondents to the first round of the NLSY97, 7,883 were still active participants in the fifth round, i.e., 88% of first round respondents were also fifth round respondents. The comparable figure for respondents who reported major theft in the 12 months prior to the 1997 survey is 83%, a level not dramatically lower than that of all 1997 respondents. Indeed, as the following table shows, among respondents who reported any problem behavior during the days or months preceding the first survey, youth who reported major theft had one of the lowest retention rates—retention rates for youth reporting other problem behaviors were no lower than 84%. Nevertheless, it should be kept in mind that problem behavior estimates are biased toward underreporting if they are based on data from the second or later rounds.

Table A.1. Percentage of first round respondents present in the fifth NLSY97 round, by behavior reported in the first round

Respondents	Percent participating in 5th round
All respondents	88%
Respondents with problem behaviors:	
Cigarette smoking	86
Drinking	86
Marijuana	85
Suspended	84
Gang	88
Vandalism	88
Major theft	83
Fraud/fencing	87
Assault	87
Sell drugs	86
Handgun	84

Appendix 2. Survey Design and Weighting

The NLSY97 has a multistage sample design that uses stratification and clustering; when data from multiple rounds of the NLSY97 are used, the data from it are also longitudinal. Stratification is the process of requiring the sample to reflect relevant, known population parameters — for example, requiring the sample to mirror the population in terms of the proportion of males and females, or the proportion of urban, suburban, and rural residents. In general, stratification increases the precision of estimates, reduces the size of the confidence interval relative to the confidence interval under simple random sampling, and reduces the sample size needed to achieve a desired margin of error. Clustering is the practice of concentrating sample selection within a relatively small number of geographic areas (generally no more than 200) rather than across the entire continental U.S. Respondents from any particular geographic area — such as metropolitan Minneapolis — are likely to have some resemblance to each other in their attitudes, behaviors, and histories. This resemblance acts to suppress the variation of the sample below what would be present in a simple random sample. Confidence intervals calculated with standard statistical packages, such as SPSS, assume that the sample was collected using simple random sampling; the confidence intervals will tend to be erroneously small because of suppressed variance within the clusters. Too-small confidence intervals are especially likely in calculations of means, totals, and proportions, but survey design effects also should be explicitly controlled for in multivariate analysis. To produce accurate confidence intervals, variance calculations must take into account the data clustering. Ideally, variance calculations would take account of both stratification and clustering. However, the Bureau of Labor Statistics (the study sponsor)

and the National Opinion Research Center (the study administrator) have not released stratification information for the NLSY97. To test the ability of the cluster identifiers—which are called Primary Sampling Units, or PSU's—by themselves to account for NLSY97 design effects, NCJJ (using PSU's only) and NORC (using both strata and PSU's) produced and compared several hundred point estimates and variance estimates; results indicate no stratification effect large enough to affect hypothesis testing.

A second source of suppressed variance arises from the NLSY97 practice of attempting to interview all eligible respondents from a single household, a practice that led to the inclusion of up to five respondents from a single household. In the initial round of the NLSY97, 45% of respondents (4,027 out of 8,984) were from multiple respondent households. Of the 4,027 respondents from multiple respondent households, the great majority (3,855) were siblings of other NLSY respondents. Households are nested within PSUs, and any restraint of variance arising from multiple respondent households is also reflected at the PSU level. Consequently, we control for clustering at the PSU level in the calculation of standard errors and confidence intervals. Analyses in this report used standard errors corrected for the effect of clustering.

A third source of suppressed variance in the NLSY97 data is the correlation of observations for the same subjects across different survey rounds. When the data were longitudinal—tracking the responses of individuals across time—then the variance computations were corrected to take into account repeated measures from single individuals with random effects models that controlled for suppression of variance at the individual level.

Whenever results are presented in this report as nationally representative, the analysis has relied on weighting the data. Cross-sectional weights have been created for each survey round to adjust for the probability of selection, differential response rates, and the difference between the characteristics of the sample and the characteristics of the population as measured by the U.S. Census Bureau. Analysis of data that combines responses from two or more rounds of the NLSY97 requires survey weights appropriate for both the complex survey design and data from multiple years. A failure to weight cases properly will result in biased estimates, i.e., estimates erroneously larger or smaller than accurate estimates.

Appendix 3: Data Structure and Methods

The NLSY97 data were collected using a complex sampling structure involving weighting, stratification, clustering at the Primary Sampling Unit (PSU) and household levels, as well as multiple-wave panels. The statistical methods used to analyze the data were selected to accommodate the structure of the sample. In general, three accommodations were made. First, in all analyses other than multinomial regression or logit (e.g., in estimating prevalences or frequencies for the population or the population grouped by age, sex, race/ethnicity, or family structure) the sample was weighted to produce nationally-representative estimates for the designated group. Second, whenever the data being analyzed used only one set of responses from a single survey subject, as with the measurement of lifetime prevalences at age 17, then the analyses made use of survey commands available in the Stata data analysis program to adjust variances to take account of reduced variance at the PSU level. Third, whenever data being analyzed used more than one set of responses from a single subject, then variance estimation took account of clustering at the subject level across time. Comparison of results from procedures that controlled for clustering at the subject level alone or the PSU level and subject level combined (estimated using the GLLAMM Stata program) showed only very small effects from controlling for both levels of clustering, effects with no impact on reported results.

Appendix 4: Test for History Effects

In any analysis of longitudinal data, there always exists the possibility of a history effect. For the 1997 National Longitudinal Survey of Youth (NLSY97) data a history effect would exist if, for example, the responses of 16-year-olds in the first wave of data collection were different from those of 16-year-olds in any of the other waves. The null hypothesis for this analysis of the NLSY97 data is that, while it is assumed the lifetime prevalence responses of individuals change as they age, the responses are the same for individuals in different waves who are the same age at the date of interview.

To test this hypothesis an analysis was conducted of the cohort of youth that reported in each of the first five waves of the survey. The 36,103 responses of these 7,203 youth were used to calculate the lifetime prevalence rates of each of the five grouped offense behavior categories for each of the age groups at each wave. [See Section 2 for the details of how these measures were developed.] For example, some youth interviewed at each wave were 16-years-old; in total, these 5,680 responses coming from waves one, two, three, four, or five were analyzed to produce the lifetime prevalence rates for 16-year-olds at waves one, two, three, four, and five. T-tests were then conducted to compare the wave-specific lifetime prevalence rates to determine if, for example, 16-year-olds in one wave gave a different response than 16-year-olds in another wave.

It should be noted that the number of waves for which there were adequate data to support inter-wave comparisons varied with age. For example, the only wave with 12-year-old respondents was the first wave; so there was no opportunity to test the internal consistency of the responses of 12-year-olds. For other age groups, there were so few

respondents of that age in the wave's data that the results of any comparison would be misleading. To deal with this small-sample issue, wave-to-wave comparisons were made only when the responses of at least 125 youth were available for analysis. Table 4-1 displays the number of respondents at each age level in each wave for the cohort of youth that responded in all of the first five waves. The analysis that follows compares the lifetime prevalence rates of the five grouped behaviors for youth of equal age across the five waves of data collections

Appendix Table 4-1: Number of responses at each age at each wave of data collection

	Age at Interview											
Wave	12	13	14	15	16	17	18	19	20	21	22	**Total**
1	958	1,387	1,465	1,478	1,411	493	11	0	0	0	0	7,203
2	0	105	1,373	1,388	1,472	1,463	1,311	90	0	0	0	7,203
3	0	0	106	1,441	1,361	1,498	1,402	1,341	54	0	0	7,203
4	0	0	0	60	1,370	1,407	1,437	1,419	1,405	104	0	7,203
5	0	0	0	0	66	1,385	1,380	1,452	1,443	1,375	102	7,203

Table 4-2 shows the estimated lifetime prevalence rates for the overall grouped behavior of combined delinquent or criminal offending. The convention used in the tables in this Appendix is to **bold** the entries that are significantly different (i.e., either greater or smaller) from the others within their column. As Table 4-2 shows, the within-age-group lifetime prevalence rates for combined delinquent or criminal offending were not statistically across each wave of data collection.

Appendix Table 4-2: Lifetime prevalence of combined delinquent or criminal offending

	Age at Interview						
Wave	14	15	16	17	18	19	20
1	0.54	0.60	0.63	0.64			
2	0.55	0.57	0.64	0.67	0.70		
3		0.61	0.64	0.69	0.70	0.74	
4			0.67	0.68	0.72	0.73	0.77
5				0.72	0.72	0.76	0.76

Table 4-3 shows the estimated lifetime prevalence rates of person offending. For these behaviors the cohort that was generally age 13 in wave one (i.e., age 14 at wave two, age 15 at wave three, etc.) reported greater lifetime prevalence of person offending at each data collection wave than did the older respondents.[7]

Appendix Table 4-3: Lifetime prevalence of person offending

	Age at Interview						
Wave	14	15	16	17	18	19	20
1	0.21	0.26	0.26	0.27			
2	**0.28**	0.27	0.30	0.33	0.34		
3		**0.33**	0.31	0.34	0.37	0.37	
4			**0.37**	0.34	0.37	0.39	0.39
5				**0.39**	0.37	0.38	0.41

Table 4-4 shows the estimated lifetime prevalence rates of property offending. For these behaviors the within-age-group prevalence rates were statistically equal across each wave of data collection.

Appendix Table 4-4: Lifetime prevalence of property offending

	Age at Interview						
Wave	14	15	16	17	18	19	20
1	0.47	0.50	0.51	0.48			
2	0.47	0.49	0.54	0.54	0.54		
3		0.51	0.55	0.58	0.55	0.59	
4			0.55	0.57	0.59	0.57	0.60
5				0.59	0.58	0.60	0.58

Table 4-5 shows the estimated lifetime prevalence rates of drug use/selling. The primary pattern in this table is that youth ages 14, 15 and 16 in wave one (reflecting data generally collected in 1997) reported greater lifetime prevalence rates than did the youth

[7] The "generally" in this sentence is used to denote the fact that the time between a youth's wave N and wave N+1 interviews was often not 12 months; so there were situations, for example, in which a youth who was 14 at wave 2 was age 16 at wave 3. However, for the large majority, a youth who was age 14 at wave two was age 15 at wave three.

of a similar age in the later waves. The table also has two other bolded entries reflecting statistically significant differences within the column. The first is a higher rate for 17-year-olds in wave five compared with 17-year-olds in wave four. The second shows a lower lifetime prevalence rates for 19-year-old youth in wave four. The meaning of these later two findings is illusive and may simply reflect differences that are found by chance.

Appendix Table 4-5: Lifetime prevalence of drug use/selling

	Age at Interview						
Wave	14	15	16	17	18	19	20
1	**0.17**	**0.27**	**0.35**	0.39			
2	0.14	0.19	0.30	0.37	0.45		
3		0.22	0.28	0.36	0.42	0.51	
4			0.30	0.35	0.43	**0.45**	0.54
5				**0.41**	0.46	0.50	0.51

Table 4-6 shows the estimated lifetime prevalence rates for cigarette and alcohol use. As found with drug use/selling above, the primary pattern in this table is that youth ages 14, 15, and 16 in wave one reported greater lifetime prevalence rates the youth of similar ages in the later waves.

Appendix Table 4-6: Lifetime prevalence of cigarette and alcohol use

	Age at Interview						
Wave	14	15	16	17	18	19	20
1	**0.52**	**0.64**	**0.72**	0.77			
2	0.43	0.54	0.65	0.74	0.82		
3		0.55	0.64	0.74	0.81	0.86	
4			0.63	0.70	0.80	0.85	0.89
5				0.74	0.82	0.88	0.90

In summary, there do appear to be history effects in the responses of youth in the 1997 National Longitudinal Survey of Youth. Youth ages 14 through 16 in the first wave reported higher lifetime prevalences of drug use/selling and cigarette/alcohol use than did similarly aged youth in the later waves. One explanation for these findings is that youth

who were at impressionable ages during the peak period for juvenile crime in the U.S. (i.e., in the mid-1990s) were more exposed to these behaviors and, therefore, more likely to try them than were youth who were younger during the period. Another explanation is that the conditions in 1997 supported greater cigarette, alcohol, and drug use among younger teenagers than did the later years.

The first explanation above also supports the pattern found in the reporting of person offending. The pattern indicates that the youngest cohort reported greater levels of person offending at each wave. These youth would have had the most exposure during their later pubescent years to the high levels of juvenile violence in the U.S. and it might have influenced their own levels of person offending.

In contrast to these behaviors apparently influenced by history effects, measures of overall delinquent behavior and property offending appear to be immune to such factors. These two measures appear to tap an underlying, or baseline, level of delinquent behavior that is independent of time (or at least in the time period covered by the NLSY97). The levels of other behaviors (i.e., person offending, drug use/selling, and cigarette/alcohol use) appear to be more influenced by societal characteristics.

In all, the NLSY97 data can be used to study history effects on self-reported offending, but the actual influence of these effects on most general analyses of the NLSY97 data appears to be rather minimal.