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# THE TIMING OF DELINQUENT BEHAVIOR AND ITS IMPLICATIONS FOR AFTER- SCHOOL PROGRAMS\*

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## **Research Summary:**

*This study examines self-reports from two samples to assess the timing of delinquency. Results imply that the after-school hours are a time of elevated delinquency, but that the peak is modest compared with that observed in official records. Additionally, children who are unsupervised during the after-school hours – the primary target population for after-school programs – are found to be more delinquent at all times, not only after-school.*

## **Policy Implications:**

*This finding suggests that factors (including social competencies and social bonding) in addition to inadequate supervision produce delinquency during the after-school hours and that the effectiveness of after-school programs for reducing delinquency will depend upon their ability to address these other factors through appropriate and high quality services.*

Sixty-nine percent of all married-couple families with children ages 6 to 17 have both parents working outside the home. In 71% of single-mother families and 85% of single-father families with children ages 6 to 17, the custodial parent is working. The gap between parents' work schedules and their children's school schedules can amount to 20 to 25 hours per week (U.S. Departments of Education and Justice, 2000). Public concern over

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the welfare of unsupervised children and adolescents is evident in public opinion polls and surveys. Most people polled believe that we do not offer enough constructive activities or meaningful roles to young people, and 60% viewed after-school programs as a practical way to help today's youth (Farkas and Johnson, 1997). Most parents prefer that their children attend after-school programs (U.S. Department of Education, 1998). After-school programs are of potential benefit for youth because they provide a "safe haven" off the streets; supply structured, supervised, productive, and fun activities; introduce children to adult role models; and offer academic assistance and community opportunities. Such programs may also prevent school dropout, teenage pregnancy, drug abuse, victimization, and juvenile delinquency.

Interest in after-school programs as a delinquency prevention lever has risen recently. Snyder et al. (1996) and Sickmund et al. (1997) reported that juvenile crime peaks during between 2 p.m. and 6 p.m. on school days—just after-school is dismissed. This fact has sparked the attention of prevention practitioners and policymakers and encouraged criminologists to explore the potential of after-school programs for reducing delinquency. This article examines the assumptions behind the use of after-school programs as a delinquency prevention tool and provides new data based on self-reports of juveniles about when they engage in delinquent activities.

### AFTER-SCHOOL PROGRAMS AS A DELINQUENCY PREVENTION TOOL

Criminologists have been aware of a peak in juvenile crime rates after school hours for half a century. Kvaraceus (1945) reported on a study of journal court referrals to the New Jersey Juvenile Delinquency Commission during the years 1937 and 1942. In 1937, more juvenile crime occurred on weekdays than on weekends, and the peak time for juvenile crime was in the midafternoon, following the close of school. A secondary peak occurred in the early evening hours. For 1942, the same general pattern was found with respect to days of the week, but during this war period, the major peak time was in the evening from 7:30 to 9:30 p.m., with a secondary peak from 3:30 to 5:50 p.m.

Fifty years later, Snyder et al. (1996) examined the proportion of violent juvenile crimes reported to law enforcement agencies committed at various times of the day. The intent of the study was to evaluate the potential utility of the enforcement of curfew laws. Data from the National Incident-Based Reporting System data from South Carolina for 1991 and 1992 showed that more violent crimes were reported during the after-school hours than during hours in which curfews would be in effect. The study

found that although 17% of the violent crimes occurred between 10 p.m. and 6 a.m. on weekdays and between midnight and 6 a.m. on weekends, 22% occurred between the hours of 2 p.m. and 6 p.m. on weekdays. Snyder, et al. (1997) later analyzed data from the National Incident-Based Reporting System data from eight states for the three-year period between 1991 and 1993. They showed that one in five violent crimes committed by juveniles occurred in the four-hour period following the end of the school day. They concluded that more crimes occur during these after-school hours than during hours in which curfews would be in effect.

The most common understanding of the reason for higher rates of crime during the after-school hours is that youths experience lower levels of adult supervision during these hours. Students are more likely to be unsupervised during the hours between school dismissal and dinner time, when parents return from work. Children and adolescents who are not supervised by an adult for extended periods of time are at an especially elevated risk for engaging in problem behavior. Richardson et al. (1989) showed that eighth-grade children who care for themselves for 11 or more hours per week without an adult present are twice as likely to use drugs as those who are always supervised. The researchers found that this was true even when youth characteristics that may explain the relationship—e.g., socioeconomic status and living with a single parent—were held constant. Their statistical model implied that the higher levels of drug use among the unsupervised teens may be explained in large part by their greater association with delinquent peers.

These facts about the timing of delinquent acts and the importance of adult supervision are among the explanations for increased public support for government-funded after-school programs in recent years. A poll of Maryland residents found that more than 75% of voters in the state favored expanded after-school programs, and the Maryland State Legislature is considering an after-school tax credit for parents who send their children to such programs (Advocates for Children and Youth, 1999). Many other states have created mechanisms to support after-school programming (Vandell and Shumow, 1999). Federal funding for after-school programs is also on the rise: The 21<sup>st</sup> Century Community Learning Center program, authorized under Title X, Part I, of the Elementary and Secondary Education Act, was a key component of the Clinton-Gore administration's commitment to help families and communities keep their children "safe and smart." These Centers were meant to enable school districts to fund public schools as community education centers keeping children safe in the after-school hours. The U.S. Department of Education has funded over 3,600 schools in more than 900 communities to become community learning centers ([http://www.ed.gov/pubs/Providing\\_](http://www.ed.gov/pubs/Providing_)

Quality\_Afterschool\_Learning/ report.html). In 1999, Congress appropriated \$200 million to create after-school programs in schools. In 2000, the level of funding for 21<sup>st</sup> Century Community Learning Centers was \$453 million, and it nearly doubled to \$846 for FY 2001 (<http://www.ed.gov/21stccle>).

However, the popularity of after-school programs and their appeal to parents is based on something other than hard evidence of the effectiveness of such programs for reducing substance use and crime. In fact, little evidence is available to support claims that such programs actually reduce such problem behaviors. Empirical support for effects on problem behavior of after-school programs comes from three types of studies: survey research relating self-reports of adolescent problem behavior with the same adolescents' reports of their involvement in extra-curricular activities; survey research relating measures of children's problem behavior to measures of the type of care they receive after school; and evaluations of after-school programs that have directly measured effects of participation on problem behaviors.

Survey research on involvement in extracurricular activities and delinquency suggests that greater involvement in extracurricular activities is unrelated to the commission of delinquent acts (Gottfredson, 1984; Hirschi, 1969). Some studies find substance use to be higher among students who report no involvement in extracurricular activities (Jenkins, 1996; Shilts, 1991; Van Nelson et al., 1991; Yin et al., 1996), whereas other studies find that involvement in extracurricular activities is unrelated to or increases substance use or substance-related risk behaviors (Carlini-Cotrim and de Carvalho, 1993; Mayton et al., 1991; Pope et al., 1990). Because these correlational studies often do not control for any potentially confounding factors, it is impossible to interpret their results. An inverse association between involvement and substance use may imply that involvement reduces use, that users avoid extracurricular activities, or both. Also, these studies are not entirely relevant for understanding the effects of participation in after-school programs on problem behavior because involvement in extracurricular activities, as measured in the studies reviewed here, may or may not be as a result of participation in after-school programs, and in fact may not even occur during the after-school hours.

Several studies have examined forms of child care and their relationship to problem behavior. One study (Posner and Vandell, 1999) showed that third-grade students who were better adjusted to begin with spent more time in after-school activities between third and fifth grade than did the less well-adjusted students. But controlling on this selection artifact did not erase a positive association between participation and emotional adjustment at grade 5. However, Elkind (1988) showed that the amount

of time spent in activities is curvilinearly related to adjustment. Less than one hour per week and more than three hours per week of activity involvement were related to poorer social competency outcome than one to three hours per week. Posner and Vandell (1994) found that third graders who attended programs had fewer antisocial behaviors than did students in other forms of after-school care (including self-care, mother care, and informal adult supervision), but other studies found that program participation is in general unrelated to child adjustment (Marshall et al., 1997) or that it is related to more negative outcomes (e.g., more negative peer nominations, grades, and test scores; Vandell and Corasaniti, 1988). Vandell and Shomow (1999) speculate that these disparate findings across studies reflect the presence of moderator variables: After-school programs may have more beneficial effects for children who live in unsafe or risky areas, especially when the alternative to involvement is self-care. They also summarize evidence suggesting that such programs may be more beneficial for younger children and for boys. In short, this body of research has produced inconsistent findings with regard to the potential negative effects of self-care and the potential positive effects of participation in after-school programs.

Attempting to clear up some of these inconsistent findings, Petit et al. (1997) carried out a longitudinal study that more carefully measured amount and type of after-school activities and several potential moderator variables. Findings indicated that high amounts of self-care (four or more hours per week) in the early grades (grade 1, and to a lesser extent, grade 3) was related to higher levels of problem behavior in grade 6, controlling for early adjustment. This negative effect of self-care was heightened for lower SES children, children already displaying high levels of problem behavior prior to the self-care experience, and for children not participating in extracurricular activities. No main effects were found on problem behavior measures for day care or school-based programs. Replicating Elkind (1988), Pettit et al. (1997) found that small amounts (one to three hours per week) of adult-supervised, activity-oriented care was associated with more social competency and less externalizing behavior, compared with none or larger amounts (four or more hours per week) of this type of care. This was especially true for girls. The results are consistent with the interpretation that self-care limits opportunities for the development of social competencies that are available with other forms of adult-care and activity-oriented day care situations, but that more than three hours per week of adult-supervision, activity-oriented care may be harmful.

The most relevant literature pertaining to the effects of participation in after-school programs on delinquent behavior are a handful of experimental and quasi-experimental studies that have compared the levels of delinquent behavior for students who did and did not participate in such a

program. After-school programs are often considered to be a subset of a larger class of community-based programs, some of which have been found to effectively reduce problem behavior. Often-cited effective community-based programs include a mentoring program provided by Big Brothers/Big Sisters of America whose evaluation (Tierney et al., 1995) showed that involvement of an adult mentor in a young person's life for 12 hours a month for one year decreased first-time drug use by 46% and cut-school absenteeism by 52%; a community service program (Teen Outreach) whose evaluation (Allen et al., 1990) showed that participants were significantly lower on a composite measure of suspension, school dropout, and pregnancy than were controls subjects; and the Youth At Risk Program—a multiphase program for at-risk youth, the focal point of which was a 10-day, 120-hour residential intervention—whose evaluation found that two years after the intervention, participants reported significantly fewer arrests than did matched controls (Delinquency Research Group, 1986).

The studies of these community-based programs show that some activities provided by community-based organizations or that involve youth interaction with the community have beneficial effects on measures of problem behavior. But they contain elements that are not typically found in after-school programs and are therefore not directly relevant to understanding the potential effects of such programs. Although each of these activities takes place at least partially during the after-school hours, it also contains school-based activities (e.g., Teen Outreach), a residential component (Youth At Risk), or an unusually intensive, one-on-one activity that extends beyond the after school hours (Big Brother/Big Sister).

More typical after-school programs have also been studied. The research related to these programs is of two types: area-level studies that compare measures of problem behavior for areas served by after-school programs compared with areas not served by such programs, and individual-level studies that compare outcomes for youths who have and have not participated in after-school programs. Studies in the first set show some positive area-level associations between having an after-school program and crime rates or substance use rates. The most rigorous of the studies (Schinke et al., 1992) reported that 13% fewer police reports of criminal activity were filed in beats that covered housing developments with Boys & Girls Clubs compared with beats that covered housing developments without Boys & Girls Clubs. Another study (Jones and Offord, 1989) reported a 75% decline in juvenile arrests during the course of a 32-month after-school program and summer recreation program in a single housing project served by the program, and a 67% increase in a comparison housing project that provided only minimal services by a Boys & Girls Club. It is not clear why the comparison housing project should have experienced

such increases in crime, as Boys & Girls Clubs are often recommended as excellent community resources for after-school programming. Additionally, findings from this study showed no differences between the groups in terms of teacher and parent ratings of child misbehavior. None of the community-level evaluations of after-school programs included controls for community or demographic factors that may have effected crime rates in the different areas of study. The presence of the after-school programs is only one of many alternative explanations for the observed pattern of results. These studies suggest that after-school programs may reduce crime in the areas in which they are located, but the quality of the research is too low to support major policy decisions.

Among the individual-level studies, two (Smith and Kennedy, 1991, and Hahn et al., 1994) stand out as particularly rigorous because they employed experimental designs in which participants were randomly assigned to either participate in the program or remain on a waiting list or control group. Both of these evaluations showed positive effects on measures of problem behavior. Smith and Kennedy (1991) found that the "Friendly PEERSuasion" program significantly reduced the incidence of drinking among participants and the onset of drinking of participants who had not previously drunk alcohol. Treatment group participants were more likely to leave gatherings where people were drinking alcohol, and they showed a significantly lower incidence of favorable attitudes toward drinking. The findings on this program, which utilized various methods of teaching and practicing skills, support those of Lipsey (1992), which indicated that structured and focused treatments (e.g., behavioral, skill oriented) and multimodal programs are more effective in treating and preventing delinquency.

The Quantum Opportunities Program (Hahn et al., 1991) also provides strong evidence that after-school activities can reduce problem behavior. Note, however, that this program was far more intensive than was the typical after-school program (750 hours of educational, community service, and development activities per year) and offered monetary incentives for participation. The intense nature of this program may diminish its relevance as a model for more typical after-school programming. Other individual-level studies either find positive effects of programs in studies that are too weak to effectively rule out selection as an alternative explanations (Welsh et al., 1999) or find no significant effects on measures of problematic behaviors (Baker and Witt, 1996).

The results of these studies are consistent with the interpretation that intensive after-school activities involving a wide range of activities as well as incentives (as in the Quantum Opportunities Program), or after-school

activities of more typical intensity that involve a heavy dose of social competency skill development (as in the Friendly PEERsuasion program), are effective for reducing problem behavior.

As noted earlier, after-school programs serve real needs for parents. Even without evidence of crime prevention effectiveness, public expenditures on after-school programs may be well spent. Our review of the evidence relating to the effects of such programs on delinquency and other problem behaviors, however, suggests that strong support does not yet exist. We concur with several others who have reviewed this literature that little systematic analysis of the effectiveness of youth development programs on problem behavior has been conducted and that "building the public policy and social investment case for expanding youth development programs for young adolescents will require support for more and better outcome evaluations" (Quinn, 1999:112). We also concur with Vandell and Shomow (1999) who suggest that the benefits of after-school programs will depend on program features such as opportunities for the child to make choices and positive climate, which are probably linked to child-staff ratios and staff qualifications. The extent to which the programming incorporates features of more effective delinquency prevention programs, such as cognitive-behavioral skills training, is also likely to be a key moderating factor in the effectiveness of such programs. Overall, the existing research on after-school programs is too sparse and methodologically weak to provide definitive evidence of effects (Fashola, 1998; Quinn, 1999; Sherman, 1997). Nearly all studies suffer from selection bias (Fashola, 1998; Sherman, 1997), and most studies are too short (generally one year in length) to determine the long-term outcomes of the programs (Sherman, 1997). The strongest study (Quantum Opportunities) shows positive effects, but the program is not typical of after-school programs in general.

Until research on the effectiveness of after-school programs catches up with public policy and practice, only theoretical arguments about the pros and cons of such programs as delinquency prevention mechanisms are possible. The following paragraphs summarize and examine two assumptions underlying after-school programs as a delinquency prevention strategy. We review prior research relevant to the following arguments: First, the peak in juvenile crime observed during the after-school hours may not be as sharp as is suggested in official records. Second, the physical presence of any adult may be less effective than is the virtual supervision afforded by effective parents who monitor their children's activities even when they are physically absent. These arguments are intended to raise questions for future research. Existing evidence is not sufficient to answer these questions, and new data relevant only to the first are presented later in this paper.

### THE APPARENT PEAK IN JUVENILE CRIME

The number of crimes occurring during the school day are underestimated in official records because school crimes are less likely to be reported to the authorities. According to the National Crime Victimization Survey (NCVS, Whitaker and Bastian, 1991), only 9% of violent crimes against teenagers occurring in school were reported to the police compared with 37% occurring on the streets. Therefore, the apparent peak during the after-school hours (or, conversely, the lull during the in-school hours) in officially reported crime may represent a shift in jurisdiction over youth misconduct from the school to the police. Victimization surveys and youths' reports of their behaviors are therefore a useful adjunct for learning about the timing of delinquent behavior.

These other data often suggest that a disproportionate amount of crime occurs during the school day, in school, or on the way to and from school. The NCVS is a survey of nationally representative households conducted twice each year by the U.S. Department of Justice's Bureau of Justice Statistics. Household members aged 12 and older are asked to report on their victimization experiences every six months for three years. NCVS surveys from 1996 showed that crimes against teens frequently occurred at school, especially for the younger adolescents (12-14 year olds)—the teen group most likely to be affected by after-school programs. In all, 64%<sup>1</sup> of crimes against young teens occurred at school or on the way to and from school. Relatively little of the crime that occurs in schools is of a serious, violent nature. Only 11% of all crimes against 12-14 year olds include rape, sexual assault, robbery, or aggravated assault, and these serious, violent crimes are less likely to occur during school or on the way to and from school than are less serious violent crimes (e.g., simple assault) or property crimes. Just over one-third (36%) of serious, violent crimes against young teens occur during school or on the way to and from school. The U.S. Department of Health and Human Services' Centers for Disease Control and Prevention also conducts school-based surveys of students in grades 9 through 12 as part of its Youth Risk Behavior Surveillance System (YRBSS). In 1997, 18.3% of students reported that they had carried a weapon in the last 30 days, and 8.5% reported doing so on school property; 36.6% reported being in a physical fight in the last year, and 14.8% reported fighting on school property (Centers for Disease Control, 1997).

These comparisons of in- and out-of-school delinquency can be better understood by taking into account the relative amounts of time spent in school and in other places by students. Children aged 12 through 17 spend about 18% of their waking hours in school. But both the national

1. Figures from the 1996 National Crime Victimization Survey calculated from raw numbers provided in Tables 1.1b and 1.3b of Kaufman et al. (1998).

data on victimization and self-reports of delinquency show that more than 18% of the crimes experienced by young teens occurs in school. The NCVS showed that among crimes experienced by 12–14 year olds, 64% of all crimes and 36% of serious, violent crimes occurred at school or on the way to and from school. The YRBSS showed that approximately 40% of the students carrying weapons or fighting do so on school property. Unfortunately, the time and place boundaries used in the NCVS and YRBSS are not precise enough to tell us exactly when the crimes occurred. The NCVS time period combines in school time with before and after school time. The YRBSS does not specifically refer to time. Crimes committed “on school property” include such crimes regardless of when they occur. These sources suggest that a disproportionate amount of crime occurs in school as opposed to out of school, but they leave open the possibility that the bulk of the “in-school” crime actually occurs just after school. As such, the data sources are not helpful for guiding policies regarding after school programs.

#### ACTUAL VERSUS VIRTUAL SUPERVISION

Are after-school care programs likely to provide the most effective adult supervision? Research by Richardson et al. (1993) examined the separate effects of adult supervision, adult monitoring of the child's whereabouts, and setting of after-school care. Analyzing survey responses from a large, multi-ethnic sample of ninth-grade students, they found no differences in the problem behaviors (substance use and risk taking) of students who were directly supervised and those who were not, but whose parents monitored their whereabouts. Only unsupervised youths who were either not monitored at all or inconsistently monitored by their parents had significantly higher levels of problem behavior than did students who were supervised at home. Richardson et al. found that the setting of the after-school activity matters for problem behavior, with supervised settings in general being more protective, but that students in supervised school, job, or community center activities were more likely to report certain problem behaviors than were students supervised at home and were no different in terms of any problem behavior from students who were at home unsupervised. By far, the most risky after-school settings involved out-of-home settings with no supervision, such as being at friends homes with no supervision or “hanging out.” The implication is that after-school care programs can be expected to reduce problem behavior only if the alternative is unsupervised activity away from the home. However, the inclusion of jobs in the category with other supervised after-school activities renders these findings ambiguous.

The Richardson et al. findings are consistent with those of an earlier study (Steinberg, 1986), which concluded that unsupervised adolescents

whose parents knew their whereabouts are less susceptible to peer influence, even if their afternoons are spent in contexts in which adult supervision is lax. It is also consistent with a much larger body of literature on the effectiveness of parental attachments for restraining problem behaviors. In 1969, Hirschi (pp. 89–90) wrote:

The child is less likely to commit delinquent acts not because his parents actually restrict his activities, but because he shares his activities with them; not because his parents actually know where he is, but because he perceives them as aware of his location.

Hirschi showed that children who share their thoughts and feeling with their parents, care about the opinions of their parents and those who identify with their parents are far less likely to engage in delinquent activities. Social control works indirectly by creating in the child's mind a virtual parent. This implies that lack of direct supervision may have fewer negative consequences for youths whose families have created such “virtual” parents.

#### THE PRESENT RESEARCH

The present research examines some of the assumptions underlying after-school programs. It addresses the potential for after-school programs to reduce delinquency using data from two samples of students in which youths were asked about the nature of their delinquent behaviors and precisely when they engaged in these behaviors. Specifically, this research answers two questions:

- When delinquency is measured through self-reports, is it more likely to occur during the after-school hours than at other times?
- Are youths who are unsupervised after school more likely than youths who are supervised to engage in delinquent activities during the after-school hours?

#### METHODS

##### DATA

Data come from two recent student surveys. The National Study of Delinquency Prevention in Schools (NSDPS; Gottfredson, Gottfredson et al., 2000) is a national probability sample of the nation's public and private schools during the 1997–1998 school year. Additional data come from an ongoing evaluation of Maryland's After-school Community Grant Program (MASCGRP). Potential participants in state-funded after-school programs were pretested *prior to their participation* in the programs during the 1997–1998 and 1998–1999 school years. The MASCGRP data are used solely to describe the characteristics of an after-school program population



and to assess the timing of their delinquent activities. No attempt is made to assess the effectiveness of the after-school programs in which the youths are enrolled.

The NSDPS sampled 1,287 schools, stratified by level (elementary, junior/middle, and high) and location (urban, suburban, and rural), with an equal number of schools in each cell (143) to produce an expected 100 schools per cell if a 70% response rate was obtained. Student surveys were collected from a stratified sample of students from each of the participating secondary schools (median  $N = 69$  to produce an expected 50 respondents). Many schools refused to participate in the student survey portion of the study: Only 44% and 33% of the schools participated in the middle- and high-school student surveys. In the participating schools, the unweighted average response rate for student surveys was 75%. In all, 17,162 surveys were obtained from students in 328 schools. Students' responses are weighted using the sampling fractions used to select schools and students within schools and to correct for nonresponse bias. The weighted data are representative of the nation's secondary school students in the Spring of 1998. Confidence intervals for estimates are obtained using a resampling method (the jackknife method) to take the nested sample design into account.

The MASCOP data pertain to all students who participated in after-school programs funded by the Safe and Drug-Free Schools and Communities Program administered through the Governor's Office of the State of Maryland during the 1997-1998 and 1998-1999 school years. Twenty-four programs participated in the evaluation of this initiative during the 1997-1998 school year and eight programs participated during the 1998-1999 school year. Programs were selected through a competitive process. Applicants who were judged as being most capable of providing structured after-school services (including tutoring, homework assistance, and social skills development) to a "latchkey" population were selected by a state-level review panel. Programs were run by a variety of different organizations, including schools, traditional youth-serving organizations, and grass-roots community groups. The generalizability of these programs to programs in the nation is not known.

In all, 963 students were registered in the programs over the two school years, and pre-test questionnaires were completed by 71% (684) of these students. Forty-six of the students were surveyed during both school years, and only the most recent questionnaires were used for this study. Some of these youths failed to provide data on the timing of delinquency, but 61% of the 684 did so. The final sample includes 417 students. As noted above, the surveys were completed prior to participation in the after-school program and are therefore not an appropriate source of information about the effectiveness of after-school programs. The sample is

not necessarily representative of any well-defined population. It is a convenient sample of students who participated in the after-school programs funded primarily by Safe and Drug Free Schools and Communities Act monies administered by the Maryland Governor's office. Tabled confidence intervals are based on an assumption that this is a simple random sample of a hypothetical population.

Table 1. Demographic Characteristics of Two Samples

Demographic Characteristic	Grade Level			Total
	Elementary	Middle/Jr. High	Sr. High	
National Study of Delinquency Prevention in Schools (NSDPS)				
Percentage				
White	----	69	64	66
Black	----	14	14	14
Asian	----	3	5	4
Indian	----	2	2	2
Other	----	12	15	14
Percentage Hispanic <sup>a</sup>	----	15	16	16
Percentage Male	----	51	52	51
Average Age	----	13	16	15
<i>n</i>	----	8,969	6,520	15,489
Maryland After School Community Grant Program (MASCOP)				
Percentage Nonwhite	65	78	—	73
Percentage Male	47	59	----	55
Average Age	10	12	—	11
<i>n</i>	146	267	----	417

NOTE: MASCOP includes only elementary- and middle-school students. NSDPS includes only secondary-school students.

<sup>a</sup> Persons of Hispanic origin may be of any race.

Table 1 shows the demographic characteristics of students in both samples. The table shows that the Maryland after-school program serves a population that is much more likely to be nonwhite and is younger than students in the nation. This is because the program serves elementary and middle schools (e.g., schools housing grades 6 through 8 as opposed to 7 through 9), primarily in urban areas. The Maryland sample is also composed of a somewhat higher percentage of males than is the national sample. One of the sites serves only males.

## MEASURES

Delinquent behavior was measured in a parallel fashion in both samples. In each of the following scales, items are averaged to form a composite.



## DELINQUENCY AND DRUG USE

The delinquency scale contains items asking if the subjects engaged in any of 12 different crimes during the past 12 months. Items include damaging or destroying property, stealing, joyriding, breaking into a building or a car, carrying a hidden weapon, being in a gang fight, hitting or threatening to hit teachers or students, and using strong-arm methods to get money or things from a person. The alpha reliabilities for this scale are .83 in the national sample and .78 in the Maryland sample.

The four-item drug-use scale contains items asking if the subjects used tobacco, alcohol, marijuana, or smokeless tobacco during the past 12 months. The alpha reliabilities for this scale are .74 in the national sample and .66 in the Maryland sample.

The scales appear to be valid measures of delinquency and drug use. In the national sample, the two scales correlate .46 with each other and have correlations ranging from -.30 to -.59 with commitment to education, belief in rules, and positive peer influence, all theoretical predictors of lower levels of delinquency and substance.

The delinquency and drug-use scales are both "last year variety" scales measuring the number of different behaviors claimed divided by the total number of behaviors included in the scale. It is not possible using this type of scale to measure the actual number of offenses committed. However, variety scales have been shown to be reliable measures of delinquency, and they have been shown to be highly correlated with frequency measures of delinquency (Hindelang et. al., 1981; Huizinga and Elliott, 1986).

## TIMING OF DELINQUENCY AND DRUG USE

The timing of delinquency<sup>2</sup> was measured slightly differently in each of the two samples. In the National sample, subjects were asked, "If you were in a fight, stole something, damaged property, or used drugs, what time of day did you do these things?" They were asked to respond "yes" or "no" to each of the following:

- In the morning before school starts on weekdays (Monday-Friday)
- During school hours on weekdays (Monday-Friday)
- After school and before dinner on weekdays (Monday-Friday)
- After dinner and before 11 p.m. on weekdays (Monday-Friday)
- After 11 p.m. on weekdays (Monday-Friday)
- On weekends (Saturday or Sunday)

In the Maryland survey, the question was phrased as follows: "In the

2. These questions were asked only regarding delinquency and drug use in general. Unfortunately, it is not possible to examine the timing of different types of offenses.

past year when did you do the things listed in numbers [refers to item numbers for 13 delinquent activities] above?" Respondents answered "yes" or "no" to each of the following:

- On weekdays, before school
- On weekdays, during school
- On weekdays, between when school lets out and 6 p.m.
- On weekdays, between 6 p.m. and midnight
- On weekdays, between midnight and 6 a.m.
- On weekends

## AFTER-SCHOOL SUPERVISION

Students were asked to report how many hours they took care of themselves after school. In all, 53% of elementary-school students and 72% of middle-school students reported that they took care of themselves for more than an hour on the days that they took care of themselves. And 22% of elementary- and 37% of middle-school students reported that they were left unsupervised for more than three hours on the days that they took care of themselves. A majority (about two-thirds) of students attending Maryland after-school programs (which specifically targeted "latchkey" children) reported being left in self-care for an hour or more per day on the days that they took care of themselves. One-third of students attending these programs apparently did so for reasons other than the need for after-school supervision.

## RESULTS

Table 2. Delinquency and Drug-Use Variables Measured in Two Samples—Middle-/Junior-High-School Students

Sample	M	CI	S.D.	N
Delinquency				
NSDPS	.13	.123-.137	.19	9,209
MASCP	.08	.058-.092	.14	257
Drug use				
NSDPS	.20	.189-.214	.28	9,209
MASCP	.06	.039-.079	.16	263

NOTE: NSDPS = National Study of Delinquency Prevention in Schools; MASCP = Maryland After School Community Grant Program; CI = 95% confidence interval for the mean.

Table 2 shows the level of delinquent behavior reported by middle- and junior-high-school students in the two samples. Students who enroll in

Table 3. Proportion of Students Reporting Any Delinquent Acts, by Time Period, National Study of Delinquency Prevention in Schools

Time Period	Grade level		Total (N = 15,739)
	Middle/Jr. High (n = 9,086)	Sr. High (n = 6,653)	
Weekdays			
Before school starts	.13 (.123-.142)	.14 (.126-.165)	.14 (.128-.154)
During school hours	.18 (.165-.187)	.19 (.174-.208)	.19 (.174-.197)
After school, before dinner	.21 (.196-.222)	.23 (.207-.248)	.22 (.207-.235)
After dinner, before 11 p.m.	.15 (.138-.160)	.20 (.184-.224)	.18 (.171-.198)
After 11 p.m.	.13 (.118-.137)	.17 (.151-.187)	.16 (.143-.167)
Weekends	.27 (.259-.287)	.34 (.316-.370)	.32 (.301-.337)

NOTE: 95% confidence intervals appear below each estimate.

after-school programs in Maryland are far less delinquent than are students of the same age in the nation. The mean delinquency scale score for the Maryland sample is only about 60% as large as that for the national sample, and the Maryland drug-use score is only about one-third that for the national sample. In neither case does the Maryland score fall within the 95% confidence interval for the national average. One possible explanation for the difference in the delinquency levels is the age of the students. As Table 1 shows, The Maryland sample of middle-school students is a year younger than the national sample, which includes students in schools having grade configurations other than 6 to 8. However, when only students below grade 9 are included in the calculation for the national sample, the mean delinquency levels are only slightly lower. Hence, even when age is better controlled, the Maryland after-school sample remains far less delinquent than does the national average. Because these data reflect the initial delinquency status of the Maryland sample prior to their participation in the after-school program, the difference suggests that Maryland's after-school programs attract a relatively nondelinquent youth population.

Tables 3 and 4 show the proportion of students reporting engaging in delinquent activities, by time period. In both samples, by far, the largest proportion of students reports engaging in these activities on the weekends. In the national sample, the next highest period for delinquency is during the after-school hours, followed by school time and after dinner.

Table 4. Proportion of Students Reporting Delinquent Acts, by Time Period, Maryland After School Community Grant Program

Time Period	Elementary (N = 117-121)	Middle (N = 228-230)	Total (N = 344-351)
Weekdays			
Before school	.11 (.053-.167)	.09 (.053-.127)	.10 (.068-.132)
During school	.11 (.055-.165)	.13 (.087-.173)	.13 (.095-.165)
End of school through 6 p.m.	.04 (.005-.075)	.12 (.078-.162)	.10 (.068-.132)
6 p.m. through 12 a.m.	.08 (.031-.129)	.10 (.061-.139)	.10 (.068-.132)
12 a.m. through 6 a.m.	.02 (-.005-.045)	.05 (.022-.078)	.04 (.019-.061)
Weekends	.12 (.061-.179)	.20 (.148-.252)	.17 (.130-.210)

NOTE: 95% confidence intervals appear below each estimate.

The pattern of the timing of delinquency shifts somewhat as adolescents get older: The proportions are larger for high-school students in each time period, but this is particularly true for the after dinner, after 11 p.m., and weekend periods.

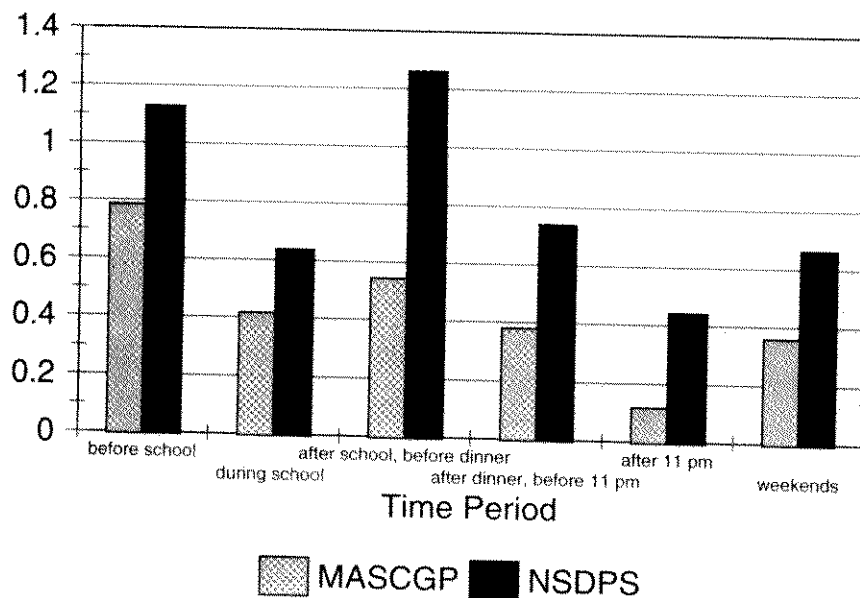
In the Maryland sample, the proportion reporting after-school delinquency is much larger for middle-school than for elementary-school students, perhaps because middle-school students are less likely to be supervised than are elementary-school students during the after-school hours.

To compare time periods, these raw proportions should be standardized to adjust for the different number of hours in each period.<sup>3</sup> Figure 1 reports the results of such a standardization. The figure shows that the before- and after-school hours are the times during which the highest proportion of youths report engaging in delinquency. In the national sample, delinquency is slightly higher during the after-school period than the before-school period. In the Maryland sample, it is higher before school. Less delinquency occurs during the night-time hours than would be expected given the number of hours in this period. The other periods are about equal in terms of the proportion of youths admitting to delinquent acts, once opportunity time has been taken into account.

These analyses support the belief that delinquency is elevated during the

3. We assumed the following hours per week in each period: before school 12.5 during school 30; after school 17.5; after dinner 25; night 35; weekend, 48

Figure 1. Timing of Delinquency Standardized by Hours in Period



NOTE: Raw percentage is divided by number of hours in a week that fall within each time period. This figure is multiplied by 100.

after-school hours, but suggest that the before-school hours are also problematic. Also, the increase in delinquency during the after-school hours based on self-reports is slight compared with the increase shown in official records.

Prior research (summarized above) has demonstrated that youths who are unsupervised after school are more likely than are youths who are supervised to engage in delinquent activities. This difference is also evident in the Maryland data: Students who report being unsupervised during the after-school hours for more than one hour per day report significantly higher levels of delinquency and drug use than do their peers who are not left in self-care. They also report significantly lower levels of parental supervision and more drug-using peers than do their supervised peers. But Table 5 shows that although unsupervised children are more delinquent than are children who are not left in self-care, this elevation is found in all time periods rather than only during the after-school hours. In fact, unsupervised children have the most elevated levels of delinquency (relative to the other children) on weekends and during school hours. This

Table 5. Percentage Reporting Delinquency, by Time Period and Supervision

Time Period	Unsupervised			Supervised			Effect size <sup>b</sup>
	M	S.D.	n	M	S.D.	n	
Weekdays							
Before school	.14	.35	199	.01	.10	97	.44
During school	.18	.39	203	.03	.17	98	.48
End of school through 6 p.m.	.15	.36	199	.03	.17	98	.39
6 p.m. through 12 a.m.	.14	.34	200	.04	.20	97	.32
12 a.m. through 6 a.m.	.07 <sup>a</sup>	.25	198	.01	.10	97	.28
Weekends	.24	.43	200	.04	.20	97	.54

SOURCE: Maryland After School Community Grant Program

NOTE: All differences between supervised and unsupervised students are significantly different from zero ( $p < .01$ ), except where noted.

<sup>a</sup>  $p < .05$ .

<sup>b</sup> Effect size is the difference between the means for the unsupervised and supervised youth, divided by the pooled standard deviation.

finding fails to support the popular notion that the increase in crime during the after-school hours is a result of sending young people out on the streets after school with no responsible supervision or constructive activities. It is more consistent with the idea that children whose parents leave them to care for themselves after school are more predisposed to engage in delinquent activities at all times. Several explanations are possible (including poor parenting in general), but it does not appear that the problem is simply one of low levels of supervision during the after-school hours.

## DISCUSSION

This paper examined the assumption that delinquency is more likely to occur in the after-school hours and that lack of direct adult supervision is likely to account for elevated rates of delinquency during these hours. This study found that adjusting for the number of hours in each of the time periods examined, the after-school hours are a time of elevated delinquency according to youth self-reports. But high rates of delinquency (per opportunity hour) also occur in the relatively short period before school. Contrary to the image of a dramatic jump in juvenile crime during the after-school hours that is apparent in police records, the elevation during this time based on youth reports is modest.

A common perception has been that after-school crime occurs because of a lack of direct adult supervision. This study found, however, that unsupervised children are more delinquent at all times. Although low levels of direct parental supervision and association with delinquent peers

probably do account for some of the greater delinquency of unsupervised children, there is something more at work. It is possible that youths who are more predisposed to engage in delinquent activities reject adult care in the after-school hours. In other words, rather than low supervision causing delinquency, delinquent youths may avoid or reject supervision. To the extent this is true, after-school programs will have a difficult time attracting delinquency-prone youths. It is also possible that children who care for themselves in the after-school hours have had less effective socialization experience throughout their childhood than did their supervised counterparts, resulting in a greater disposition to engage in delinquent activities. If any of these possibilities is true, the simple provision of an opportunity for adult supervision in the after-school hours will not be likely to reduce delinquency very much. Some delinquency-prone youth will be unwilling to attend after-school programs. Others may attend, but unless these youths' predispositions to delinquency are reduced through participation in the program, they will simply engage in delinquent activities while in the after-school program, just as they do while they are in school.

#### CAVEATS

Several limitations of this study should be addressed in future studies. First, the self-reported timing of delinquency data used in this study did not allow for a disaggregation by type of crime and did not assess frequency of crime. It may be the case that the offenses that occur during the school day are of a relatively minor nature, and those that occur during the after-school hours are more serious. It may also be the case that a larger number of a given type of offense are committed during the after-school hours than during other times. Either of these patterns may explain the peak in arrests observed during the after-school hours. Future research should address this shortcoming by asking about the timing of specific types of delinquent activity.

Similarly, future studies may disaggregate after school delinquency by the risk level of the offender. It may be the case that the delinquency of high-rate offenders is only weakly related to the time of day, but that for lower rate offenders, the after-school hours are a peak time for delinquency. This pattern would suggest that after-school programs would work to reduce crime even if they fail to attract high-rate delinquents.

The two data sets used in this study are each flawed, for different reasons. A large proportion of the eligible secondary schools in the NSDPS declined to participate in the student survey activity. Although weights were applied to correct for nonresponse, the degree of remaining bias remains unknown. The response rates in the Maryland surveys were high, but the Maryland sample is not representative of any known population.

That similar conclusions about the timing of delinquency were drawn using these two different samples suggests that whatever biases are present are not great.

#### IMPLICATIONS FOR POLICY

Questions regarding the effectiveness of after-school programs and the demand for government funding in this arena are central to child care policy debates. Interestingly, both advocates (Carnegie Corporation, 1992; Fashola, 1998) and critics (Olsen, 2000) of increased government funding for after-school programs rely on the same (scant) body of literature to support their positions. Both sides agree that the existing research on after-school programs is plagued by methodological problems, limiting its utility for policy guidance. Proponents tend to ignore the inconsistencies in the research and focus on the few positive findings the research has yielded to make bold statements, such as "When we send millions of young people out on the streets after school with no responsible supervision or constructive activities, we reap a massive dose of juvenile crime. If instead, we were to provide students with quality after-school programs, safe havens from negative influence, and constructive recreational, academic enrichment and community service activities, we would dramatically reduce crime." (Fox and Newman, 1998: pg. 2). For proponents, the glass containing evidence regarding after-school programming is half-full. But critics rely on the weaknesses of the research to point out that conclusive positive effects of after-school programming have not been demonstrated and that therefore the government should "leave after school arrangements to parents." (Olsen, 2000: pg. 1). For them, the glass containing evidence regarding after-school programming is half-empty. Our position is that more methodologically sound research on the topic can bring focus to this debate.

This study suggests that after-school programs have promise as delinquency prevention tools. However, if the results reported here are confirmed in studies that control for the types of crime committed at different times, they suggest that after-school programs are not likely to reduce delinquency during the after-school hours simply by providing "safe havens." They suggest that if such programs can attract youths who are at risk for engaging in delinquency, they have the potential to help these youths avoid engaging in delinquent activities by teaching them important social skills for resisting peer pressure, by establishing bonds with prosocial others, and by increasing commitments to conventional pursuits. After-school programs are perhaps better suited to meet this challenge than are school programs, because academic teaching and learning must remain the priority during the school day. After-school programs can provide the kind of structured programming that has proven effective in other

contexts for reducing problem behavior. But programs will have to be carefully designed and marketed to attract delinquency-prone students and to keep them in the programs. They also should make use of knowledge about what works to reduce delinquency in this population. Several recent articles have summarized features of effective after-school programming (Pederson et al., 1998; Quinn, 1999; Vandell and Shumow, 1999). Programs vary along many dimensions, and not all programs provide constructive, positive environments that may be expected to promote healthy development.

Effective models for prevention that may be adapted to an after-school setting are summarized in a report to the U.S. Congress on what works in crime prevention (Gottfredson, 1997) and in an update to that report (Gottfredson et al., 2001). These models include programs that teach and provide intensive coaching and reinforcement over an extended period in a range of social competencies (e.g., developing self-control, stress-management, responsible decision-making, social problem-solving, and communication skills). Programs that carefully track behavior and provide positive reinforcement for behavioral improvement and programs that provide structured one-on-one tutoring are also effective. Mentoring programs, which rely on the development of attachments to prosocial adults, may also hold promise. These models have been shown to reduce delinquency among high-risk youths at least in some realizations. After-school programs incorporating these effective practices hold promise for delinquency prevention. Only rigorous evaluations of such programs will tell if this promise is realized.

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