

# THE TIMING OF PROPERTY CRIME, VIOLENT CRIME, AND SUBSTANCE USE AMONG JUVENILES

DENISE C. GOTTFREDSON  
DAVID A. SOULÉ

*This study examines the timing of juvenile delinquent behavior by crime type. A study of 513 youths participating in after-school programs indicates that crimes against persons are elevated during the after-school hours but not as much as during school. Property crime and drug use are not particularly elevated during the after-school hours. Earlier studies either examined a single crime type or aggregated different types of crime together and therefore were misleading because the timing of crime varies considerably by crime type. This study finding suggests that one undesirable side effect of grouping youths together for schooling and after-school programming is an increase in crimes against persons. Implications for theory, policy, and practice are discussed.*

**Keywords:** *delinquency; timing of delinquency*

More than 50 years ago, Kvaraceus (1945) reported that more juvenile crime occurred on weekdays than on weekends and that juvenile crime peaked following the close of school in the mid-afternoon. A half-century later, Snyder, Sickmund, and Poe-Yamagata (1996) examined the proportion of violent crimes reported to law enforcement agencies at various times of day. These analyses examined data from the FBI's National Incident Based Reporting System (NIBRS) from South Carolina in 1991 and 1992. They found that a higher percentage of violent crimes (22 percent versus 17 percent) occurred during the hours between 2 p.m. and 6 p.m. on weekdays than

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during the hours between 10 p.m. and 6 a.m. on weekdays and between midnight and 6 a.m. on weekends.

The authors replicated this initial study with a larger sample of NIBRS data from 12 states for the years 1991 through 1996 (Sickmund et al. 1997; Snyder and Sickmund 1999). This analysis confirmed that juvenile serious violent crime peaked between 2 p.m. and 6 p.m. on school days, the hours just after school is dismissed, whereas adult serious violent crime peaked at 11 p.m. (Sickmund, Snyder, and Poe-Yamagata 1997; Snyder and Sickmund 1999).

A more recent study based on *self-report* data from a nationally representative sample and a sample of youths participating in Maryland after-school programs presented a slightly different picture of the timing of adolescent delinquency. Gottfredson, Gottfredson, and Weisman (2001) noted that the observed peak in juvenile crime during the after school hours was more modest than that observed in the NIBRS data. By calculating rates of delinquency in each period that controlled for the number of ours in each period (and hence the opportunity to engage in crime), the study also revealed that high rates of delinquency (per opportunity hour) also occur in the relatively short period before school. Finally, this report also explored the common perception that after-school crime occurs because of a lack of direct adult supervision during this time. The study revealed that unsupervised children are more delinquent *at all times* rather than only during the unsupervised time period, suggesting that other factors besides the absence of direct parental supervision and association with delinquent peers that is likely to occur during these periods of low supervision probably account for some of the elevated delinquency found during the after-school hours for these youths. Some implications for after-school programming were offered.

Although this previous research has contributed to our understanding of the timing of aggregate delinquency patterns, a closer examination of the NIBRS data suggests that although serious violent crime as a whole peaks for juveniles at 3 p.m., not all of the specific crimes included in this index peak at that same time. For example, the NIBRS data from 12 states indicated that the largest percentage of robberies committed by juveniles took place around 9 p.m., whereas the largest percentage of aggravated assaults peaked at 3 p.m. (Snyder and Sickmund 1999). Although existing research has contributed to a better understanding of the timing of juvenile delinquency by criminal justice researchers and practitioners, it has been limited by its focus on aggregate crimes types (e.g., violent crimes) and may miss potentially important differences between specific crimes, including property and substance use offenses.

The lack of attention directed toward the timing of offenses other than violent crimes is consistent with research on juvenile crime in general, which has

tended to focus on violent crime. This may be an oversight, however, because property crime is the most frequent type of criminal victimization and because the rate of property crimes against juveniles is approximately 40 percent higher than the rate for adults (Finkelhor and Ormrod 2000). Research on the nature of crimes other than violent crimes is needed.

A recent study that examined the timing of juvenile offenses separately by crime type demonstrates the utility of this approach. Jacob and Lefgren (2003) analyzed 1995 to 1999 NIBRS data from 29 jurisdictions and found differences between the types of crimes occurring when school was and was not in session. They found that the level of property crime committed by juveniles decreased by roughly 14 percent on days when school was in session, whereas the level of violent criminal offense among juveniles increased by approximately 28 percent on school days. The authors concluded that when juveniles are not provided with a supervised environment (e.g., when out of school), they are likely to engage in antisocial behavior that manifests itself in increased property crime. However, when juveniles are in school, the authors argue that the geographic concentration of youth increases the number of potentially volatile interactions, which in turn explains the observed increase of in-school violent crime (Jacob and Lefgren 2003:5).

The timing of delinquency and its interaction with crime type is also of theoretical importance. Osgood et al. (1996) summarize the routine activity perspective and its implications for understanding variation in crime across time and place. According to this perspective, variation in crime is more a function of differing opportunities for crime across situations than of differing individual propensities for criminal involvement. Individuals who spend more time in situations that reward crime will have higher rates of crime. Osgood and colleagues summarize evidence showing that situational characteristics, including the degree of structure (because lack of structure leaves time for deviant behavior), presence of an authority figure (because of the increased social control when such figures are present), and the presence of peers (because of the presumed rewards for deviance they provide) influence individual offending. Because these situational characteristics can be expected to vary considerably by time of day, our analysis provides a test of the importance of situational characteristics in determining deviant behavior among a younger population than has been examined in most prior tests of situational factors. The study also provides a test of Osgood et al.'s statement that "the inducement to deviance of any specific situation in some respects depends on the deviant act in question" (Osgood et al. 1996: 639). To the extent that the importance of timing varies by crime type, we will provide evidence that situational inducements to crime are crime specific.

The current study explores the timing of delinquent behavior by disaggregating self-reports into different types of crime (property, violent,

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and substance use) and comparing the prevalence of these crime types during different times of the day to what would be expected if crime were distributed in proportion to the number of hours contained in each period.

#### *METHOD*

##### *Data*

Data come from an evaluation of Maryland's After-school Community Grant Program (MASCGP) (Weisman et al. in press). Potential participants in state-funded after-school programs were pretested *prior to their participation* in the programs during the 2000-2001 school year. The data are used solely to assess the timing of delinquent activities that occurred prior to participation in the programs. No attempt is made in this article to assess the effectiveness of the after-school programs in which the youths are enrolled.<sup>1</sup>

The MASCGP data pertain to all students who participated in after-school programs funded by the Governor's Office of the State of Maryland during the 2000-2001 school year. A total of 21 programs participated in the evaluation of this initiative during the 2000-2001 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 "latch-key" population were selected by a state-level review panel. Programs were operated 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.

All participants registered in each after-school program at the beginning of the 2000-2001 school year were included in the evaluation (see Weisman et al. in press). This study uses only the pretest measures from the larger study. A total of 625 youths registered for the programs, and pretest questionnaires were completed by 82 percent (or 513) of these students. Some youths were not pretested because they were absent on the days of the initial and make-up pretest.

The sample used in this study is a convenient sample of students who participated in the after-school programs funded by the Maryland Governor's office. A comparison of the characteristics of a cohort of participants from programs funded from the same initiative two and three years prior to the programs included in this study with a national sample of youths (Gottfredson, Gottfredson, and Weisman 2001) showed the youths enrolled in after-school programs in Maryland were less delinquent than students of the same age in the nation. Because the funding process did not change substantially over

time, we can expect that the youths included in the sample of after-school participants included in this study are also less delinquent than would be expected based on national norms. The sample is not necessarily representative of any well-defined population and therefore attempts to generalize to a larger population are not appropriate.

Just over half (290, 57 percent) of the youths in the study were in elementary school (grades four and five), and the remaining students (219, 43 percent) were in middle school (grades six through eight). Of the students, 47 percent were male, with an average age of 10.5. The after-school programs served a population that is largely (82 percent) non-White. This overrepresentation of non-White youths can be traced to the funding process, which favored programs serving in urban areas.

### *Measures*

The timing of and type of delinquency was measured by a series of questions that asked if the subjects engaged in any of 14 types of crime during the past 12 months. For each item, youths answered “yes” or “no.” If they answered affirmatively, they were asked to indicate at what time they usually engaged in that behavior. The choices were as follows:

- 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.; or
- on weekends.

Youths were coded as having used drugs if they admitted to having smoked cigarettes, used smokeless tobacco, drunk beer, wine, or “hard” liquor, or smoked marijuana in the past year. They were coded as having engaged in property crime if they admitted to purposely damaging or destroying property belonging to a school, purposely damaging or destroying other property that did not belong to the youth, stealing or attempting to steal something worth less than \$50, stealing or attempting to steal something worth more than \$50, taking a car for a ride without the owner’s permission, or breaking in or trying to break into a building or car to steal something or just to look around. They were coded as having been involved in crimes against persons if they admitted to carrying a weapon other than a pocketknife, being involved in a gang fight, hitting or threatening to hit other students, or using force to get money or things from a person.

*Analysis Strategy*

The analysis strategy was straightforward: the observed number of individuals reporting each type of crime in each time period was compared to the number that would be expected under the assumption of (a) random distribution of offending over the six time periods and (b) distribution of offending over the time periods that is proportionate to the number of hours contained in each time period. A simple ( $1 \times 6$ ) chi-square test was calculated for each crime type.<sup>2</sup> For these analyses, the number of hours per week included in each category was as follows:

Weekdays, before school: 2.5 hours per day for 5 days = 12.5 hours, which is 7.44 percent of the hours in each week.

Weekdays, during school: 6 hours per day for 5 days = 30 hours, or 17.86 percent of the hours in each week.

Weekdays, between when school lets out and 6 p.m.: 3.5 hours per day for 5 days = 17.5 hours, or 10.42 percent of the hours in each week.

Weekdays, between 6 p.m. and midnight: 6 hours per day for 5 days = 30 hours, which is 17.86 percent of the hours in each week.

Weekdays, between midnight and 6 a.m.: 6 hours per day for 5 days = 30 hours, which is 17.86 percent of the hours in each week.

Weekends: 48 hours, or 28.45 percent of the hours in each week.

This analysis strategy effectively controls for individual propensity to engage in delinquent behaviors because the same individuals are measured and compared across different times of the day. To the extent that crime prevalence varies by time (after correcting for the number of hours in each time period), the analyses will support the importance of situational, time-varying factors in the explanation of delinquent behavior.

*RESULTS*

The number and percentage of youths who reported each type of crime, regardless of the time period are as follows: 40 youths (7.8 percent) reported any drug use, 38 (7.4 percent) reported any property crime, and 111 (21.6 percent) reported any crimes against persons. The rates are higher than might be expected for crimes against persons primarily because of the inclusion of the "hit or threatened to hit other students" item, on which 15.8 percent of students admit fighting during the school day. Table 1 shows the percentage of youths, among those who reported engaging in each type of crime at *any* time, who reported that they "usually" committed each crime type in each of the six of crime by time periods. The table makes clear that drug use and

**TABLE 1: Percentage of Offending Youths Who Committed Crimes in Each of the Six Time Periods, by Crime Type—Based on Self-Reports of After-School Program Participants, 2000-2001**

Type of Crime	Time Period						$\chi^2$ (df = 5)	
	Before School	During School	After School Until 6 p.m.	6 p.m.-Midnight	Midnight-6 a.m.	Anytime During Weekend	Equal Probability	Proportional Probability
Drug use	8.0 (+0.6)	4.0 (-13.8)	12.0 (+1.6)	18.0 (+0.2)	4.0 (-13.8)	54.0 (+25.6)	54.4	22.3
Property	20.3 (+12.9)	21.7 (+3.9)	14.5 (+4.1)	10.1 (-7.7)	2.9 (-14.9)	30.4 (+1.8)	19.3	28.0
Against persons	13.0 (+5.5)	46.1 (+28.2)	19.2 (+8.8)	4.7 (-13.2)	2.6 (-15.3)	14.5 (-14.0)	142.9	165.4

NOTE: All chi-square statistics are statistically significant,  $p < .01$ . Differences between the observed and expected percentages if they were distributed proportionally to the number of hours in each period appear in parentheses. Youths who reported one or more of each crime type are counted in each time period in which they reported committing each crime type (see note 2). The total number of cases is 50, 69, and 193 for drug, property, and personal crimes respectively.

property crimes are more prevalent on the weekends than at other times, but that crimes against persons are most likely to occur during school and after school.

The first  $\chi^2$  test reported on the table tests for the independence of each type of crime across time periods, under the assumption of equal probability across time periods. This test shows that each type of crime varies significantly by time period. To adjust for the different number of hours in each period, the  $\chi^2$  test was repeated to assume an expected percentage of crime proportional to the number of hours in each period, as explained above. The right-most column on Table 1 shows that with this adjustment, crime continues to be significantly related to time. The figures in parentheses on the table show the difference between the actual and expected percentages for each time period under the assumption that the percentages will be distributed proportionally to the number of hours in each period. These figures show that drug use is elevated on the weekends and depressed during school and when youths are generally asleep. Property crime is elevated during the hours before school and lower when youths are asleep and in the evening hours. Crimes against persons show the most variability across time, and are extremely high during the school hours. They are also elevated after school and before school and depressed at all other times. An examination of each of the five items included in the crimes against person category (not shown) shows that the pattern reported here for the entire category holds as well for each item.

### *DISCUSSION*

The study of youths enrolled in after school programs in Maryland shows that crimes against persons are elevated during the after-school hours, but not as much as during school. Property crime and drug use are not particularly elevated during the after-school hours. By disaggregating the findings by crime type, we showed that our earlier findings (Gottfredson, Gottfredson, and Weisman 2001) that aggregated all types of crime and found elevated crime during the before- and after-school hours were somewhat misleading because the timing of crime varies considerably by crime type. By disaggregating, we are able to show that the main association of crime with time is that crimes against persons are more likely to occur during the school hours.

The results of this research, if replicated, have implications for criminological theory. Clearly, situational factors that vary by time of the day are important for explaining variation in delinquent behavior. The influence of these situational factors also varies by crime type, as suggested by Osgood



et al. (1996). The analyses suggest that the situational inducements to crimes against persons are greatest during periods of the day when youths are congregated in space and are therefore most exposed to peers, whereas the situational inducements to substance use are greatest during the weekends, when time may be less structured for many youths. One avenue for further theory development would be to measure the specific elements of the situation that are expected to influence delinquent behavior (e.g., presence of peers—and, more specifically, the rewards they provide—authority figures, and degree of structure) to determine how these theoretical situational determinants vary across time.

This research also has implications for the measurement and prevention of crime. It suggests that previous studies that have found dramatic peaks in violent juvenile crime during the after-school hours may have overestimated the after-school crime peak. Most likely, this stems from a reliance solely on official report of crime. In their analysis of the NCVS data, Whitaker and Bastian (1991) found that only 9 percent of violent crimes against juveniles occurring in school were reported to the police compared with 37 percent of those occurring on the streets. Similarly, in their review of all juvenile (ages 12 through 17) victimizations from the 1995-1996 NCVS data, Finkelhor and Ormrod (1999) noted that school victimizations of juveniles, in general, were less likely to be reported to police than nonschool victimizations (15 percent and 37 percent, respectively). This implies that the promise of after-school programs as a mechanism to reduce youth crime may be overstated. In fact, violent youth crime is more prevalent during the time youths are in school. Focusing resources on providing school-based programming known to reduce crime would most likely reduce more crime than relatively untested after-school programs.

The results of this research mirror those of Jacob and Lefgren (2003) in suggesting that one undesirable side effect of grouping youths together for schooling or for after-school programming is an increase in crimes against persons. This effect is greatest during the school day, when youths can potentially encounter other youths with whom they have “beefs” or during which time any number of irritations might arise that lead to fights or other interpersonal crimes. Clearly, we are not about to do away with schools as we know them. But it may be prudent to recognize that congregating youths in schools and after-school programs may potentially increase violent behavior. Therefore, it may be wise to employ strategies in these settings that have been shown to reduce interpersonal crimes.

Recent reviews and meta-analyses of school-based prevention (Gottfredson 2001; Gottfredson and Wilson 2003; Gottfredson, Wilson, and Najaka 2002; Wilson, Gottfredson, and Najaka 2001) have identified effective strategies and specific programs that have been shown to reduce crime

and antisocial behavior. Strategies supported by multiple studies include programs or practices that (1) enhance school management in general (for example, by engaging the school in systematic planning and implementation of school improvement activities) and specifically improve the clarity of school rules and the consistency of their enforcement, (2) clarify and communicate norms about behaviors, (3) teach youths a range of social competency skills (e.g., developing self-control, stress management, responsible decision making, social problem solving, and communication skills), and (4) employ cognitive behavioral or behavior techniques to teach these same social competency skills, especially to youths at elevated risk for problem behavior. Some evidence also suggests that mentoring programs and efforts to reorganize schools into smaller units might reduce crime and antisocial behavior. Making use of these well-tested approaches to reducing youth crime during the times when such crime is most prevalent is likely to reduce juvenile crime.

#### NOTES

1. See Weisman et al. (in press) for the results of the evaluation of these programs.
2. One complication arose due to the fact that individuals sometimes reported having engaged in crime in more than one time period. The percentage of cases that reported delinquent activities in multiple time periods varied by crime type: 6 percent of those who reported any drug use, 17 percent of those who reported any property offending, and 11 percent of those who reported crimes against persons reported having engaged in these crimes during more than one of the six periods examined. Overall, 18 percent of those who reported any crime reported it at multiple time points. This overlap in the cells violates the independence assumption required by the chi-square test. We coped with this by conducting the analysis with and without the "overlapping" cases. In all cases, the results from the more conservative method of eliminating those who responded in multiple time periods were similar to results from the analyses using all cases. Only the latter results are presented. Also, analyses were conducted separately for elementary and middle school youths as well as overall. No meaningful differences were found by grade level, so only the combined results are presented.

#### REFERENCES

- Finkelhor, D. and R. Ormrod. 1999. *Reporting Crimes Against Juveniles. Juvenile Justice Bulletin*. Washington, DC: Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.
- 3/43/4. 2000. *Juvenile Victims of Property Crimes. Juvenile Justice Bulletin*. Washington, DC: Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.
- Gottfredson, D. C. 2001. *Schools and Delinquency*. New York: Cambridge University Press.
- Gottfredson, D. C., G. D. Gottfredson, and S. A. Weisman. 2001. "The Timing of Delinquent Behavior and Its Implications for After-School Programs." *Criminology & Public Policy* 1 (1): 61-80.

- Gottfredson, D. C. and D. B. Wilson. 2003. "Characteristics of Effective School-Based Substance Abuse Prevention." *Prevention Science* 4:27-38.
- Gottfredson, D. C., D. B. Wilson, and S. S. Najaka. 2002. "School-based Crime Prevention." Pp. 56-164 in *Evidence-Based Crime Prevention*, edited by L. W. Sherman, D. P. Farrington, B. C. Welsh, and D. L. MacKenzie. London: Routledge.
- Jacob, B. A. and L. Lefgren. 2003. *Are Idle Hands the Devil's Workshop? Incapacitation, Concentration, and Juvenile Crime*. Unpublished manuscript, Harvard University and Brigham Young University.
- Kvaraceus, W. 1945. *Juvenile Delinquency and the School*. New York: World Book Company.
- Osgood, D. W., J. K. Wilson, P. M. O'Malley, J. G. Bachman, and L. D. Johnson. 1996. "Routine Activities and Deviant Behavior." *American Sociological Review* 61:635-55.
- Sickmund, M., H. Snyder, and E. Poe-Yamagata. 1997. *Juvenile Offenders and Victims: 1997 Update on Violence—Statistics Summary*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.
- Snyder, H. and M. Sickmund. 1999. *Juvenile Offenders and Victims: 1999 National Report*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.
- Snyder, H., M. Sickmund, and E. Poe-Yamagata. 1996. *Juvenile Offenders and Victims: 1996 Update on Violence*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.
- Weisman, S. A., D. A. Soulé, D. C. Gottfredson, S. Lu, M. A. Kellstrom, S. C. Womer, and S. L. Bryner. In press. "After-School Programs, Antisocial Behavior, and Positive Youth Development: An Exploration of the Relationship between Program Implementation and Changes in Youth Behavior." In *Organized Activities As Contexts of Development: Extracurricular Activities, After-School and Community Programs*, edited by J. L. Mahoney, R. W. Larson, and J. S. Eccles. Mahwah, NJ: Lawrence Erlbaum.
- Whitaker, C. J. and L. D. Bastian. 1991. *Teenage Victims: A National Crime Survey Report*, No. NCJ-128129. Washington, DC: Bureau of Justice Statistics.
- Wilson, D. B., D. C. Gottfredson, and S. S. Najaka. 2001. "School-Based Prevention of Problem Behaviors: A Meta-Analysis." *Journal of Quantitative Criminology* 17 (3): 247-72.

*Denise C. Gottfredson is a professor at the University of Maryland Department of Criminal Justice and Criminology. Her research interests include delinquency and delinquency prevention, and particularly the effects of school environments on youth behavior.*

*David A. Soulé is a faculty research consultant in the Department of Criminology and Criminal Justice at the University of Maryland, College Park. His research interests include juvenile delinquency, delinquency prevention, program evaluation, and sentencing.*