
The impact of after-school programs on the routine activities of middle-school students: Results from a randomized, controlled trial*

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Research Summary

Unsupervised after-school time for adolescents is a concern for parents and policymakers alike. Evidence linking unsupervised adolescent socializing to problem behavior outcomes heightens this concern among criminologists. Routine activities theory suggests that, when youth peer groups congregate away from adult authority, both opportunity for and motivation to engage in deviant acts increase. After-school programs are a possible solution to unsupervised teen socializing during after-noon hours and are much in demand. However, empirical research has yet to test the relationship between the availability of after-school programs and youth routine activities. This study presents evidence from a multisite, randomized, controlled trial of an after-school program for middle-school students in an urban school district.

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Policy Implications

Youth in the treatment group engaged in less unsupervised socializing after school than youth in the control group but not as much less as would be expected if the after-school program was providing consistent supervision to youth who would otherwise be unsupervised. Additional analyses examined why the influence of the after-school program was not more pronounced. We found that, although program attendance was related to decreases in unsupervised socializing, the program did not attract many delinquency-prone youths who were unsupervised, which suggests that the students most in need of the program did not benefit. Furthermore, data obtained from a mid-year activity survey revealed that youth in the study were highly engaged in a variety of after-school activities. The addition of the after-school program into the mixture of available activities had little effect on the frequency with which students participated in organized activities after school.

Keywords: after-school programs, routine activities, unsupervised socializing, randomized experiment, delinquency

Folk wisdom teaches that idle hands are the devil's workshop. Much credence is paid to this adage, as is particularly evident in the common concern that free time after school places youth at risk for delinquency or victimization. Many communities have looked to after-school programs (ASPs) to ameliorate this risk by providing adult supervision and conventional leisure activities (Zeif and Lauver, 2006). Criminological evidence also suggests that youth who routinely engage in unstructured and unsupervised socializing are more likely to engage in deviant behavior that includes crime and substance use (Osgood, Wilson, O'Malley, Bachman, and Johnston, 1996). Provision of structured, adult-supervised activities after school could alter the routine activities of youth, reorganizing after-school time to reduce the opportunity for deviance otherwise present in unsupervised, unstructured time. This article will review what is known about how youths' routine activities relate to deviant conduct and will test whether the provision of a free after-school program in an urban community alters the routine activities of youth participants.

The Promise of ASPs for Reducing Problem Behavior: Previous Research

Popular opinion holds that youth turn to delinquent or deviant acts when they lack access to constructive activities. Therefore, providing ASPs should reduce deviance by occupying youths' after-school time. A great deal of public confidence is placed in ASPs to achieve a vast amount of social good. A 2002 nationwide poll found that 65% of registered voters believed ASPs are an "absolute necessity" for their communities (After School Alliance, 2002).

Evidence of the popularity of ASPs also can be found in the large amount of federal dollars spent to support them (Congress allocated \$1 billion annually for ASPs in each of the last 5 years) and in public endorsements by prominent officials. Los Angeles Police Chief William Bratton said of ASPs, "An after-school program is an extremely powerful anti-crime weapon. California and the federal government must commit the resources to keep teens off the streets during the crucial after-school hours. It's a matter of public safety" (Fight Crime: Invest in Kids, 2004). Former Secretary of Education Rod Paige said, "While we know that there are some good after-school programs, we also know that there are not enough of them. Every kid that needs one does not have one. We need more and we need better" (U.S. Department of Education, 2003).

Criminologists employ a specific language to discuss unsupervised after-school time and delinquency. A pioneer of routine activities theory, Marcus Felson, wrote, "By assembling lots of youths, and then dumping them simultaneously, the school sets the stage for quite a number of problems" (Felson, 2002: 86). Felson's statement referred to the hours between 3 p.m. and 6 p.m., after school has ended and before working parents return home, which leaves a gap in responsibility for supervision of youth. These hours of the day began to receive attention in an analysis of the timing of youth arrests. The study sought to determine the potential role of late-night curfews in controlling juvenile delinquency. It revealed that most arrests for youth violence occur between 2 p.m. and 6 p.m. (Snyder, Sickmund, and Poe-Yamagata, 1997). A lack of supervision and structure is assumed to characterize the after-school hours and result in heightened youth crime.

Empirical evidence indicating that unsupervised teen socializing leads to delinquency and drug use is mounting. Osgood and colleagues found a consistent relationship between the amount of time adolescents and young adults spend in unstructured socializing in the absence of authority figures and growth in delinquency and substance use (Haynie and Osgood, 2005; Osgood et al., 1996). These authors compared the magnitude of the effect of unsupervised socializing with long-established predictors of delinquency

and found that unsupervised socializing predicts delinquency as strongly as attachment to school and attachment to parents. Unsupervised socializing has also been linked to growth in externalizing behavior problems (Pettit, Bates, Dodge, and Meece, 1999) as well as substance use and risk taking (Richardson, Radziszewska, Dent, and Flay, 1993).

The link between unsupervised socializing and increased antisocial behavior may be that opportunities for deviance are higher in this type of situation. As Osgood et al. (1996) postulated, unsupervised socializing presents both rewards for deviant acts and the freedom to commit them. The lack of adult authority figures reduces informal social control. The presence of peers creates a subtle but powerful incentive for antisocial or rebellious behavior as peers become an audience for whom deviant acts are a performance. Peers may reward deviance with attention, approval, and status. Peers may also facilitate deviance by acting as co-conspirators, although as Haynie and Osgood (2005) illustrated, youths need not be members of delinquent peer groups for the relationship between unsupervised socializing and increased deviance to hold. These authors found that time spent in unsupervised socializing is related to increased deviance even for youth with nondelinquent peers.

It stands to reason that altering the routine activities of adolescents could alter opportunities for deviance. In principle, ASPs create an avenue through which schools and communities collaborate to structure activities and supervise youth after school, which thereby reduces the amount of time youth are unsupervised and associated opportunities for delinquency. Yet, although the amount of research on the effect of ASPs on youth development is considerable, evidence about the effectiveness of ASPs for preventing and reducing youth antisocial behavior is not conclusive.¹ Briefly, ASPs have shown promise in improving a range of youth outcomes, from academic performance to substance use and delinquency; the most highly structured programs that employ evidence-based practices have been the most successful (Durlak and Weissberg, 2007; Gottfredson, Cross, and Soulé, 2007; Gottfredson, Gerstenblith, Soulé, Womer, and Lu, 2004; Hudley, 2001; LoSciuto, Hilbert, Fox, Porcellini, and Lanphear, 1999). Loosely structured programs often show no effects, and in some cases, participants display worse outcomes than similar students who did not participate (Dynarski, James-Burdumy, Moore, Rosenberg, Deke, and Mansfield, 2003; Mahoney, 2000; Weisman et al., 2002). It is possible that youths in unstructured programs can avoid adult supervision. The negative effects of these programs may have resulted from unsupervised peer

1. See Gottfredson et al. (2007) for a thorough review of this literature.

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groups in the program “hanging out” as they would in another context and being encouraged to display negative behaviors. Thus far, the question of whether ASPs actually reduce the amount of time youth spend with their friends away from adult authority has not been addressed empirically.

On the surface, it may seem obvious that increasing the availability of ASPs would result in a decreased amount of unstructured socializing during the after-school hours. An examination of existing literature on ASPs shows that this assumption is tenuous. Participation in such programs is voluntary and ASPs, especially those that serve middle- and high-school students, have traditionally struggled to maintain consistent attendance (Grossman, Campbell, and Raley, 2007; Weiss, Little, and Bouffard, 2005). A recent evaluation of the 21st Century Community Learning Centers Program found that middle-school youth attended once per week on average despite the fact that most programs were open 4 of 5 days a week (Dynarski et al., 2003). Youth who are motivated to spend their after-school time socializing with friends in unstructured hanging out can easily avoid adult monitoring by not attending programs. ASPs can only be expected to influence time expenditure of youth who elect to attend, and the effect is not guaranteed even among regular attendees.

Another barrier to the ability of ASPs to reduce unsupervised socializing is evidence showing that youth who opt out of participation are more at risk than those who participate. Weisman and Gottfredson (2001) found that youth who drop out of ASPs are more at risk in terms of drug use and truancy than those who do not drop out. The authors concluded that ASPs may be serving low-risk students who are not particularly in need of ASP services. Additionally, Dynarski et al. (2003) found that 64% of students who were eligible to participate in the 21st Century Program but chose not to stated that they did not participate because they preferred hanging out after school. Those students whom ASPs fail to engage may have the most to gain from participation.

As Osgood, Anderson, and Shaffer (2005) pointed out, ASPs will only reduce delinquency if they provide structured, supervised activities to youth who would otherwise be unsupervised and engaged in risky behavior. Routine activities theory does not suggest that ASPs will be effective for reducing delinquency if they replace other structured activities or low-risk unstructured activities such as watching TV at home alone. Accordingly, ASPs that seek to reduce delinquency should recruit students who are likely to spend time involved in risky, peer-oriented socializing after school.

Of course, ASPs vary considerably with respect to their targeting strategies. At one extreme are programs such as the Quantum Opportunities Program, which targets only youth in poverty and provides a wide array of specialized services over the course of multiple years intending to improve

academic and behavioral outcomes (Hahn, Leavitt, and Aaron, 1994). At the other extreme are programs, such as the 21st Century Community Learning Center Program, which are open to all students. Students are free to attend the ASP as often or as seldom as they want. Services offered by the 21st Century Program include homework assistance, recreation, and cultural arts activities that are appropriate for a general population. Although evaluations of school-based prevention programs that target more at-risk populations have been shown to produce larger effects on measures of delinquent, disruptive, and aggressive behaviors than those that target general populations (Wilson, Gottfredson, and Najaka, 2001; Wilson and Lipsey, 2007), no studies have examined the extent to which the targeting strategies employed in ASPs condition their effectiveness.

Another feature of ASPs that presumably influences their effectiveness is the size of the program. Large ASPs have been shown to be less effective in reducing problem behavior outcomes (e.g., delinquency and drug use) than those that serve fewer youth (Gottfredson et al., 2007; Weisman et al., 2002). The challenges related to supervising many adolescents effectively likely produce this effect. Simply creating large groups of youth—as schools do—increases criminal behavior, particularly violence. Jacob and Lefgren (2003) found that violent crime among juveniles increases 28% on the days school is in session as opposed to weekends or days off (e.g., staff in-service days). Two additional studies examining the timing of delinquency found that crimes against persons are more likely to occur during school than outside of school (Briddell and Osgood, 2006; Gottfredson and Soulé, 2005). These findings were confirmed in the National Crime Victimization Survey, which indicated that youth 12–14 years are 1.7 times more likely to be victims of property crime and twice as likely to be victims of violent crime at school or on the way to or from school as away from school (Dinkes, Cataldi, Lin-Kelly, and Snyder, 2007).

Evidence that crimes by juveniles are more common at school supports predictions of routine activities theory that crime will occur when motivated offenders, suitable targets, and the absence of guardianship intersect in time and space (Cohen and Felson, 1979). Crime targets are concentrated in the school environment where persons and their belongings gather together. Although guardianship in schools is likely to be relatively high, it is not omnipresent. The increased opportunities for crime presented by aggregating youth seem to override the crime-suppressing effect of guardianship in schools. Thus, by essentially extending the school day, ASPs may extend criminal opportunities for participants, particularly in large programs in which adult supervision is likely to be less effective.

Taken together, the evidence presented above suggests that the link between unsupervised adolescent socializing, ASPs, and problematic outcomes is not nearly as straightforward as one might hope. ASPs may not increase supervision because at-risk youth in need of supervision may choose not to attend. When programs are unstructured or do not provide consistent adult monitoring, youth in attendance may be free to engage in unsupervised socializing at the program. But, fundamentally, if ASPs are to succeed in replacing unsupervised socializing with supervised, structured activities, they must gain regular attendance from youth who would otherwise spend the after-school hours with friends away from adults. This study will put aside questions about the ability of ASPs to accomplish the vast amount of social good ascribed to them and ask a much simpler question: Does providing ASP services in a community change the routine activities of youth after school?

The current study grants a rare opportunity to investigate patterns of youth time expenditure under experimental conditions in which youth were randomly assigned access to a free after-school program. Students in the treatment group were invited to attend a 3-day-per-week, 3-hour-per-day program at their schools during the 2006–2007 school year. Control students were invited to attend a fun activity at the program once per month. Data analysis compares the number of days of unsupervised socializing reported by youth in the experimental group with the number of such days reported by youth in the control group. We predict that treatment students will have significantly fewer days of unsupervised socializing than controls. Because statistical significance does not necessarily translate into policy relevance, we also examine the magnitude of the difference between treatment and control youth, comparing it with the difference that might be expected on the basis of regular attendance in a 3-day-per-week ASP that replaced unsupervised socializing.

Method

Sample

The sample for this study was drawn from five middle schools in an urban school district that participated in an evaluation of an enhanced after-school program designed to incorporate research-based procedures into routine ASP practices. The ASP was held on school grounds and consisted of leisure activities (i.e., sports, games, computer projects, and arts activities) along with social skills and drug prevention instruction and

homework assistance.² Registration was open to all students who attended the participating schools. The schools were underperforming academically relative to the rest of the county and state, served high percentages of minority youth (47–99% minority population), and consisted of large numbers of students who received subsidized meals (64–67% receiving free or reduced lunch). Hence, the student population at all five schools could be considered at elevated risk for problem behavior.

Within each school, registered students ($N = 447$) had a 50% chance of being randomly assigned to the treatment group. Randomization was accomplished separately by school by the principal investigator. Treatment and control students did not differ in terms of demographics (i.e., age, family income, gender, race, single-parent household, receipt of subsidized meals, and maternal education) or pretreatment academic indicators (i.e., school absences, suspensions, grades, and standardized test scores) and differed significantly on only 1 of 20 pretreatment measures: The treatment youth scored higher in decision-making skills at pretest than did controls. One difference out of 20 tests conducted is exactly what would be expected by chance using a critical value of $p < .05$.

Students included in the current outcome analysis are the 416 (93%) registered students who adequately completed a posttest survey at the end of the school year. The sample contains 211 treatment and 205 control students. About half of the current sample are males (52%), 71% are African Americans, 17% are Caucasian, 8% are multiracial, and the remaining 4% are of another race. The average age of participants was 12.2, and 58% received subsidized meals at school. Attrition analysis showed that registered youth who were excluded from the study (13 treatment and 18 control) did not generally differ from those who were included demographically or on a range of pretreatment measures. Exceptions were age, attitudes favorable to drug use, and days spent with adults after school. The excluded cases scored in the more at-risk direction on these measures. Treatment by attrition interactions (reported in Gottfredson, Cross, Wilson, Connell, and Rorie, 2009) were examined to test for differential attrition by treatment status, which could bias the results of our study. Of 37 interactions, 2 were statistically significant at the $p < .05$ level, both on measures of academic achievement. These analyses suggested that higher achievers were more likely to attrit from the treatment than from the control group.

2. For a full description of the enhanced program, please see Cross, Gottfredson, Wilson, Rorie, and Connell (in press).

Measures

Outcome measures used in this report were collected from youth self-report surveys. Participants completed a pretest survey shortly after registration and the posttest near the close of the school year. These surveys consisted of 167 items that measured a variety of outcomes targeted by the ASP. The one-item measure of central interest to this study assessed the number of days per week students spent socializing with friends in unsupervised settings after school. (“In a typical week during the school year how many days [Monday–Friday] did you spend hanging out with your friends with no adults present after school?” Answer choices ranged from 0 to 5.) Henceforward, we refer to this outcome as unsupervised socializing. This measure contained a nontrivial amount of missing data (i.e., 22 cases missing at pretest and 56 cases missing at posttest). Handling of missing data is detailed in the procedures section.

This article’s focus is the impact of participation in the ASP on unsupervised socializing. As such, a complete discussion of the full array of outcomes measured by the youth survey is beyond its scope. However, the survey measured two problem behavior outcomes that will be used to examine the magnitude of the effect of treatment and unsupervised socializing on problem behavior outcomes. *Delinquency* is a count of how many of seven illegal behaviors in which the respondent had participated within the past year (e.g., stolen or tried to steal things worth less than \$50; involved in gang fights; or used force or strong-arm methods to get money or things from a person). The alpha reliability for this scale is 0.81. *Last month drug use* is a dummy variable indicating whether the respondent used any of three substances (alcohol, cigarettes, or marijuana) in the past month. These measures had less than 1% missing data.

We also make use of ASP attendance information recorded by program staff. Students could attend a maximum of 96 days. The average student in the treatment group attended 36.7 days (standard deviation [S.D.] = 29.4). Control youth were invited to the program for fun events on eight occasions (once per month), but the events did not draw many students. The average control student attended the program only 1.5 times.

We used three demographic control variables in our analyses, which were collected from parent reports on the program registration form. Age is a continuous variable calculated from the student’s birth date. Gender is a dummy variable equal to one when the student is male and zero if the student is female. Race is also a dummy variable equal to one when the student is African American and zero when s/he is of another race.

Finally, we use data collected from an activity survey that students completed in January 2007. This survey addressed activity participation Monday through Friday between the hours of 3:00 p.m. and 6:00 p.m. Youth were instructed to note which of 47 common after-school activities they participated in during a typical week (i.e., number of different activities) and how many days per week they did so (i.e., frequency of participation). Some students indicated that they participated in several different activities every day of the school week, whereas others indicated less than weekly participation in only one activity. The frequency of participation was calculated as the sum of the number of days of participation per week across the 47 possible activities. Activities were listed within five categories: community/school based, academics, performance and fine arts, faith based and service, and sports. The response rate for this survey was 87% ($N = 389$; 193 control and 196 treatment). In analyses of activity survey data, we used all available cases, although 22 students who completed the activity survey did not complete the posttest and were therefore excluded from outcome analysis. See Table 1 for means and standard deviations of all study variables.

Table 1. Description of study variables by treatment condition

	Range	<i>Treatment</i>		<i>Control</i>	
		Mean	S.D.	Mean	S.D.
Unsupervised socializing T1	0–5	2.19	2.17	2.48	2.06
Unsupervised socializing T2	0–5	1.87	2.00	2.42	1.92
Delinquency T1	0–7	.58	1.08	.54	1.08
Delinquency T2	0–7	.97	1.60	.85	1.44
Last month drug use T1	0–1	.09	.28	.10	.30
Last month drug use T2	0–1	.19	.39	.18	.38
Days of attendance	0–94	36.72	29.35	1.53	2.13
Number of after-school activities	0–22	4.41	3.15	4.38	3.33
Frequency of activity participation	.25–50	10.26	7.50	8.70	8.24

Procedures

As stated, our outcome measure contained a nontrivial amount of missing data. Missing data were replaced through imputation. Examination of the correlates of missingness indicated that these cases were not missing completely at random. That is, gender, commitment to education, disruptive classroom behavior, belief in conventional rules, delinquency, days per week unsupervised after school, hours per day of unsupervised socializing after school, standardized reading and math scores, grade point

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average, as well as teacher ratings of social and academic competency are significantly correlated with missingness. A listwise or pairwise deletion of cases for which data are missing would provide biased results because the missingness mechanism is not random (Little and Rubin, 2002).

To avoid bias that could occur by excluding these cases, missing data in the unsupervised socializing variable was imputed. Following Allison (2002), we employed maximum likelihood methods for imputing missing data using multiple imputation (MI) procedures available in STATA version 9.0 (StataCorp, College Station, TX). If data are missing at random (MAR), MI produces unbiased parameter estimates and standard errors (S.E.). The MAR assumption implies that missingness is uncorrelated with the variables in the study once known covariates related to the missingness have been included in the missing data model. Our model includes all variables known to be related to missingness (listed above) as well as those related to the dependent variable, which is unsupervised socializing. Five imputations were generated, and their results were combined in multiple regressions using the “mim” command in STATA. Descriptive statistics were run to ensure that the distribution of the imputed values do not deviate from the original distribution. Analyses were run both with and without using the imputed values for the missing cases.

The first step in the analysis was to test the effect of participation in the ASP treatment on unsupervised socializing at Time 2 (T2) using an ordinal logistic regression model. This model is the most appropriate for our data, as the dependent variable is a censored count with modes at each end of the distribution. To meet the proportional odds assumption of ordinal logistic regression, we trichotomized the measure of unsupervised socializing into never (0 days), sometimes (1–4 days), or always (5 days). The model controlled for demographic characteristics (i.e., gender, race, and age) and school site.³ All models in which unsupervised socializing is the dependent variable are ordinal logistic models.

Next, analyses examined whether the observed treatment effect on unsupervised socializing was sufficient to produce a reduction in problem behavior. Here we followed Baron and Kenny's (1986) steps for establishing mediation effects. We estimated the direct effect of unstructured socializing on problem behavior by regressing T2 problem behaviors on

3. Little variance in the T1 measures is between schools. The intraclass correlations range from .009 to .018. The largest proportion of variance between schools (1.8%) was found for last month drug use. This observation suggests that, despite stratification by school for randomization, clustering by school did not add appreciably to the amount of variance observed and therefore is unlikely to have inflated significance tests statistics that assume a simple random sample. Nevertheless, we adjusted for clustering by school as a precaution. We included dummy variables for school site and used the “cluster” command in STATA in all regression analyses.

T2 unstructured socializing, controlling for the corresponding Time 1 (T1) measure of the outcome problem behavior, demographic controls, and school site. Then we estimated the effect of treatment assignment on problem behavior by regressing T2 measures of each problem behavior on treatment, demographic controls, and school site variables. The final step, adding T2 unsupervised socializing to the model to explore the extent to which the effect of treatment is mediated by unsupervised socializing, was unnecessary (see below). The count dependent variable (delinquency) was analyzed using negative binomial regression, and the binary variable, which was last month drug use, was analyzed using logistic regression.

The analyses described above used a dummy variable representing the experimental condition to which youth were randomly assigned as a measure of ASP participation. Supplementary analyses also examined whether actual days attended was related to T2 unsupervised socializing. These regressions included controls for demographic characteristics and school site as well as for T1 unsupervised socializing.

Results

The results of the ordinal logistic regression of T2 unsupervised socializing on treatment status indicate that participation reduces days spent in unsupervised socializing by approximately one half day ($b = -.52$, S.E. = .16, $p < .01$).⁴ Although the effect of ASP participation is statistically significant, the reduction in unsupervised socializing time attributable to membership in the treatment group is just one sixth of the 3-day reduction that would be expected if treatment youth attended the program regularly and if the ASP replaced unsupervised with supervised time.

Is a reduction of approximately one half day in unsupervised socializing sufficient to produce a reduction in problem behaviors? Although not the focus of this report, these analyses help to place the results of our hypothesis test in context. First, we confirm the expected association between unsupervised socializing and problem behavior in regressions that predict T2 problem behavior outcomes from the T1 measure of each problem behavior, gender, age, race (black v. nonblack), and the T2 measure of

4. Because of the unusual distribution of the dependent variable and concerns about missing data imputation, we confirmed the results using negative binomial regression and binomial regression analysis models. We ran the analyses both using the imputation procedure for missing data described in the Methods section and excluding cases with missing data. Results showing that ASP participation had a significant negative effect on unsupervised socializing were consistent across models.

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unsupervised socializing. Then, we report the effects of ASP participation on problem behaviors from a second set of models that regressed these same problem behavior outcomes and demographic controls on treatment status (Table 2).

Unsupervised socializing is significantly related to concurrent drug use ($p = .020$) and delinquency ($p = .05$), net of prior drug use or delinquency, school site, and demographic controls. The relationship between delinquency and unsupervised socializing approaches the traditional level of statistical significance ($p = .055$). Each additional day of unsupervised socializing is related to a 10% increase in the number of delinquent acts the student committed, and an increase of 18% in the odds that a student used substances within the past month. These results accord with expectations and previous research. However, participation in the ASP does not reduce problem behavior. Models that test the effect of treatment on the two problem behaviors show that its effects are not significant. Consistent with our previous analysis, Table 2 shows that although T2 unsupervised socializing does reduce each of the problem behaviors as expected, this effect is not caused by participation in the ASP. We therefore conclude that, although assignment to the treatment group results in a statistically significant reduction in unsupervised socializing, this effect is not large enough to translate into decreases in problem behavior.

Table 2. Regression coefficients relating T2 problem behavior to T2 unsupervised socializing and treatment status

<i>Problem Behavior (T2)</i>	<i>Unsupervised Socializing T2</i>			<i>Treatment</i>		
	<i>b</i>	<i>(S.E.)</i>	<i>% Change/OR</i>	<i>b</i>	<i>(S.E.)</i>	<i>% Change/OR</i>
Delinquency	0.19*	.05	9.86 ^a	0.09	.08	9.53 ^a
Last month drug use	0.17*	.07	1.18 ^b	0.09	.28	1.08 ^b

Notes. Negative binomial regression coefficient is presented for delinquency. A logit coefficient is presented for last month drug use. Regressions control T1 measure of each behavior, gender, age, race, and school. OR = odds ratio.

^a Percent change based on each additional day of unsupervised socializing.

^b Odds ratio value.

* $p < .05$.

Exploration of Weak Treatment Effect

Given that the programs ran 3 days a week but the effect of treatment group membership was only a half-day reduction in unsupervised socializing per week, and given that ASP participation did not reduce problem behaviors as expected, we explored several possible reasons for the weaker-than-anticipated ASP effect. Recall that we expected that ASPs would reduce delinquency to the extent that they provide structured,

supervised activities to youth who would otherwise be unsupervised and engaging in risky behavior. Perhaps the program is reducing unsupervised socializing but not among the youth who would be likely to engage in delinquency and drug use. We explored whether “high-risk” students were attending the program and whether attendance was in fact reducing unsupervised socializing for these youth at least as much as it was for lower risk youth. We defined “high risk” as having either initiated substance use or delinquency at T1 *and* spending at least some time unsupervised with friends after school at T1. Twenty-four percent ($n = 108$) of the sample fell into this category. That is, only one quarter of the students who volunteered for the program can be considered likely to have their problem behavior influenced by ASP participation. High-risk and low-risk youth did not display differential patterns of program attendance. Students in both groups attended the program infrequently, about once a week (the program was open for 32 weeks). On average, low-risk youth in the treatment group attended the program 37 days, whereas high-risk youth attended 32 days (not significant, $t = .92$).

Attendance rates are highly variable in the treatment group, where one third of students attended the program on fewer than 15 days and approximately another third attended 50 days or more. We explored whether higher attending students reported greater decreases in unsupervised socializing as the program filled unoccupied time in their daily routines. We regressed T2 unsupervised socializing on days attended, controlling for T1 unsupervised socializing and demographic characteristics to determine whether treatment students who attend the program more frequently have larger decreases in unsupervised socializing. The effect of attendance on unsupervised socializing is marginally significant ($b = -.006$, S.E. = .004, $p = .07$), which indicates that students who attended the program more reduced their unsupervised socializing more than students who attended less.

We also investigated the extent to which “high-risk” status and variability in T1 unsupervised socializing moderates the ASP effect on T2 unsupervised socializing. Specifically, we tested for a statistical interaction of treatment status and these two variables on T2 unsupervised socializing in models comprised of treatment, the moderator of interest, an interaction term, dummies for school site, and demographic controls. Neither interaction term is statistically significant, which suggests that ASPs are no more or less effective in reducing unsupervised socializing for youth whose problem behavior is most likely to be influenced by ASP participation.

The results of these supplemental analyses suggest that (1) the ASP did not attract a high proportion of youth whose problem behavior was likely to be reduced by ASP participation, (2) attendance was uniformly low for both higher and lower risk youths, and (3) increasing attendance would

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likely result in a larger reduction in unsupervised socializing for both high- and low-risk youth. One final set of analyses was conducted in an attempt to understand why ASP attendance was low and why the effect of ASP participation on unsupervised socializing was lower than expected.

After-School Activities of Control Group Members and Low Attenders

We used the activity survey (described in the Measures section) to inform us about the after-school activities of the control group and the low ASP attenders relative to the more regular ASP attenders. We found that participants in our study were highly involved in a variety of after-school activities. In fact, only 11 (7 treatment, 4 control) of the 389 students who took the activity survey reported that they did not engage in any organized activities after school. On average, students reported involvement in 4.4 different activities and 9.5 instances of activity participation per week.⁵ Treatment and control students participated in the same number of different activities (4.4 for both groups), but treatment students participated in activities more frequently during the week than control students (10.3 v. 8.7 instances). This difference approaches statistical significance ($t = 1.87, p = .06$). The assumption that the ASP fills time that otherwise is spent in unsupervised socializing seems to be incorrect. We divided students into high- and low-attendance groups by splitting the cases at the median attendance level (34.5 days) and we compared control youth with students with different levels of attendance (Table 3). Although high-attending students reported the greatest number of activities and the most frequent participation, involvement in after-school activities was extensive across all groups.

Table 3. Number of after-school activities and frequency of activity of participation reported by attendance groups and overall

	<i>Number of Activities</i>			<i>Frequency of Participation</i>		
	<i>N</i>	<i>Mean</i>	<i>(S.D.)</i>	<i>N</i>	<i>Mean</i>	<i>(S.D.)</i>
Control	193	4.38	(3.33)	179	8.70	(8.24)
Treatment	196	4.41	(3.15)	176	10.26 ^b	(7.50)
Low attendance	98	3.81	(2.75)	84	9.46	(7.13)
High attendance	98	5.02	(3.40)	92	10.98 ^a	(7.79)
All students	389	4.40	(3.23)	355	9.47	(7.91)

^a Difference between this group and control group is statistically significant, $p < .05$.

^b Difference between this group and control group is statistically significant, $p < .10$.

5. Analyses were repeated excluding the 22 cases without outcome data. Results did not differ meaningfully.

Taken together, this evidence indicates that students in our study sample were not particularly in need of additional after-school activities. Random assignment to the treatment group did not seem to increase the variety of different activities in which youth engaged, but it did increase the frequency of involvement in after-school activities. However, this minor increase in frequency of involvement for students who were already highly engaged did not have a powerful influence on routine activities. Control youth and treatment students who attended the ASP at a low level had ample access to alternative activities during the after-school hours that provided supervision. The availability of these other activities may also explain why high attendance is so difficult to achieve in ASPs.

Conclusion and Discussion

This study sought to test whether access to a school-based ASP 3 days per week has the effect of reducing the amount of time middle-school students spend in unsupervised socializing. Results indicate that assignment to the treatment condition is associated with a one half-day decrease in unsupervised socializing, which is just one sixth of the possible program impact. This study, as others have, also shows that unsupervised socializing is linked to delinquency and drug use. However, the small decrease in unsupervised socializing attributable to assignment to the treatment group did not translate into reductions in problem behaviors.

We conducted additional analyses to unravel the reasons behind the weaker than expected treatment effect and found that the typical youth did not attend the program regularly. Those who did attend more days, however, experienced a greater reduction in unsupervised socializing. We also found that the ASP did not attract a high proportion of at-risk youth. Finally, we found that youth in our study were engaged in many organized activities, and that the addition of the ASP into the mixture of activities available to the treatment group did not affect the quantity of activities they engaged in and made only a slight impact on the frequency with which they attended organized activities in a given week.

The goal of reducing the amount of time youth spend with peers away from adult monitoring is an important one, but this study leads to the conclusion that providing ASPs may not be an efficient method with which to accomplish it. The results of this study are particularly persuasive given the rigorous experimental conditions under which it was conducted. ASPs are intended to provide activities for youth who would otherwise be unoccupied. The data from this study show that students who volunteered for our ASP were involved in abundant after-school activities other than the ASP. The question becomes, then, whether the level of access to a

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wide variety of after-school activities found in our sample is typical for middle-school youth in the United States. Table 4 compares the percentage of 8th graders in our sample who participate in various after-school activities with 8th graders in two national samples. The current sample reported less participation than youth surveyed in the Monitoring the Future Study and an amount similar to that reported by the National Household Education Surveys Program. It is therefore unlikely that the students in our study had access to an unusually large amount of alternative after-school activities.

Table 4. Percent of students reporting after-school activity participation in the current sample and in national samples of 8th graders

<i>Type of Activity</i>	<i>Current Sample</i>	<i>MTF</i>	<i>NHES</i>
Community/school based	25.9	70.0	16.5
Academic	28.2	51.2	21.0
Performance/fine arts	41.2	49.6	42.0
Faith based/service	33.7	—	41.5
Sports	75.3	86.2	74.0

Notes. MTF = Monitoring the Future; NHES = National Household Education Surveys Program.

ASPs do increase opportunities for adult-supervised activities after school, but in this case, the condition necessary for translating this effect into a reduction in problem behavior (Osgood et al., 2005) was not met: The ASPs did not gain regular attendance from youth who would otherwise spend the after-school hours with friends away from adults. Only 24% of the youth who volunteered for the program had either initiated substance use or delinquency at T1 *and* reported spending at least some time unsupervised after school at T1. Less than half of the sample (45%) reported 3 or more days of unsupervised socializing at T1. ASPs are costly and seem to attract students who are already prone to participate in prosocial community and school groups.

Our study suggests that, although numerous benefits may accrue to youths who participate in ASPs, they will not be effective for reducing problem behaviors unless they explicitly target services to youth who would otherwise spend the after-school hours with friends away from adults. But how can this be accomplished? Our study includes schools that were identified by their school system as serving at-risk populations. The program was open to all students in the school, but school personnel were asked to refer particularly at-risk youths. This process seems to have yielded a population of youth who shared the characteristic of interest in

joining a comprehensive, recreation-based ASP. We have no information about how these students compare with others who chose not to register in terms of deviant behavior or unstructured socializing. However, we contend that students like those who chose not to register for the ASP studied here are not likely to participate in *any* ASP provided for the purpose of increasing constructive time use unless extraordinary steps are taken to engage them.

Although previous research has shown that at-risk students are more likely to drop out of typical ASPs, we have little knowledge about youth who decline to enroll. Limited evidence from the evaluation of the 21st Century Program shows that students who did not enroll in the ASP preferred to hang out with their friends after school. If the ASP had been more appealing to those students, then they may have chosen to participate. Comprehensive ASPs are designed to have broad appeal, offering activities such as board games and sports. These activities, which are typical of child-care environments, may not be more attractive than unstructured socializing to students at risk for antisocial development. Outreach efforts to students who demonstrate risky behaviors in middle schools could more thoroughly elucidate the needs and desires of at-risk youth. Focus groups that target these students could inform what type of programming would be needed to attract these students into ASPs. More fundamentally, preliminary assessments of the likelihood that youth will attend a program regularly should be conducted before instituting new services. Although *adults* in the community served by this program expressed desire for additional after-school activities for youth, our research indicates that the implemented program was not necessary to fill unoccupied time of the students.

Some communities are testing new models of after-school enrichment. An example of such an innovative program is the After School Matters initiative, which is currently ongoing in disadvantaged neighborhoods in Chicago. This model connects high-school students with professionals in the community for paid, after-school apprenticeships across a range of disciplines from fine arts to technology (Halpern, 2006). The rate of pay for the apprenticeships is contingent upon student attendance. Monetary incentives to attend the program in addition to focused job-skills instruction set this program apart from typical ASPs. The program has not yet undergone thorough evaluation; however, a preliminary examination of interview data collected from instructors and apprentices suggests that the program is making a noticeable and positive impact on a subset of participants (Halpern, 2006). Future research will determine the effectiveness of

the After School Matters model. In the meantime, more schools and communities may want to develop new ways to engage students who are not typically willing to enroll in traditional ASPs in constructive after-school activities.

References

- After School Alliance. 2002. *After-school alert: Poll report*. Retrieved July 15, 2008 from afterschoolalliance.org/school_poll_final_2002.pdf.
- Allison, Paul D. 2002. *Missing data*. Thousand Oaks, CA: Sage.
- Baron, Reuben M. and David A. Kenny. 1986. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51: 1173–1182.
- Briddell, Laine O. and D. Wayne Osgood. 2006. *The timing of delinquency*. Paper presented at the annual meeting of the American Society of Criminology, Los Angeles Convention Center, Los Angeles, CA.
- Cohen, Lawrence E. and Marcus Felson. 1979. Social change and crime rate trends: A routine activity approach. *American Sociological Review*, 44: 588–608.
- Cross, Amanda B., Denise C. Gottfredson, Denise M. Wilson, Melissa R. Rorie, and Nadine M. Connell. 2009. Implementation quality and positive experiences in after-school programs. *American Journal of Community Psychology*. In press.
- Dinkes, Rachel, Emily Forrest Cataldi, Wendy Lin-Kelly, and Thomas Snyder. 2007. *Indicators of school crime and safety*. U.S. Departments of Education and Justice. Washington, DC: U.S. Government Printing Office.
- Durlak, Joseph A. and Roger P. Weissberg. 2007. *The impact of after-school programs that promote personal and social skills*. Chicago, IL: Collaborative for Academic, Social, and Emotional Learning.
- Dynarski, Mark, Susanne James-Burdumy, Mary Moore, Linda Rosenberg, John Deke, and Wendy Mansfield. 2003. *When schools stay open late: The national evaluation of the 21st Century Community Learning Centers Program: New findings*. U.S. Department of Education, National Center for Education Evaluation and Regional Assistance. Washington, DC: U.S. Government Printing Office.
- Felson, Marcus. 2002. *Crime and everyday life*, 3rd Edition. Thousand Oaks, CA: Sage.
- Fight Crime: Invest in Kids. 2004. *Law enforcement report finds: California's after-school programs leave out high school students during prime crime hours*. Fight Crime: Invest in Kids Press Release. Retrieved May 1, 2008 from fightcrime.org/releases.php?id=84.
- Gottfredson, Denise C., Amanda B. Cross, and David A. Soulé. 2007. Distinguishing characteristics of effective and ineffective after-school programs to prevent delinquency and victimization. *Criminology & Public Policy*, 6: 601–631.
- Gottfredson, Denise C., Amanda B. Cross, Denise M. Wilson, Nadine M. Connell, and Melissa R. Rorie. 2008. *A randomized trial of the effects of an enhanced after-school program*. Technical report. Available from authors.

- Gottfredson, Denise C., Stephanie A. Gerstenblith, David A. Soulé, Shannon C. Womer, and Shaoli S. Lu. 2004. Do ASPs reduce delinquency? *Prevention Science*, 5: 253–266.
- Gottfredson, Denise C. and David A. Soulé. 2005. The timing of property crime, violent crime, and substance use among juveniles. *Journal of Research in Crime and Delinquency*, 42: 110–120.
- Grossman, Jean B., Margo Campbell, and Rebecca Raley. 2007. *Quality after-school time: What instructors can do to enhance learning*. Philadelphia, PA: Public/Private Ventures.
- Hahn, Andrew, Tom Leavitt, and Paul Aaron. 1994. *Evaluation of the Quantum Opportunities Program (QOP). Did the program work? A report on the post secondary outcomes and cost-effectiveness of the QOP (1989–1993)*. Waltham, MA: Brandeis University.
- Halpern, Robert. 2006. After-school matters in Chicago: Apprenticeship as a model for youth programming. *Youth & Society*, 38: 203–235.
- Haynie, Dana L. and D. Wayne Osgood. 2005. Reconsidering peers and delinquency: How do peers matter? *Social Forces*, 84: 1109–1130.
- Hudley, Cynthia. 2001. *Perceived academic and behavioral competence in middle childhood: Influences of a community-based youth development program*. Paper presented at the Annual Conference of the American Educational Research Association, Seattle, WA.
- Jacob, Brian A. and Lars Lefgren. 2003. Are idle hands the devil's workshop? Incapacitation, concentration, and juvenile crime. *American Economic Review*, 93: 1560–1577.
- Little, Roderick J. A. and Donald B. Rubin. 2002. *Statistical analysis with missing data*. Hoboken, NJ: Wiley.
- LoSciuto, Leonard, Susan M. Hilbert, M. Margaretta Fox, Lorraine Porcellini, and Alden Lanphear. 1999. A two-year evaluation of the Woodrock Development Project. *Journal of Early Adolescence*, 19: 488–507.
- Mahoney, Joseph L. 2000. School extracurricular activity participation as a moderator in the development of antisocial patterns. *Child Development*, 71: 502–516.
- Osgood, D. Wayne, Amy L. Anderson, and Jennifer N. Shaffer. 2005. Unstructured leisure in the after-school hours. In (Joseph L. Mahoney, Reed W. Larson, and Jacquelynne S. Eccles, eds.), *Organized activities as contexts of development: Extracurricular activities, after-school, and community programs*. Mahwah, NJ: Lawrence Erlbaum.
- Osgood, D. Wayne, Janet K. Wilson, Patrick M. O'Malley, Jerald G. Bachman, and Lloyd D. Johnston. 1996. Routine activities and individual deviant behavior. *American Sociological Review*, 61: 635–655.
- Pettit, Gregory S., John E. Bates, Kenneth A. Dodge, and Darrell W. Meece. 1999. The impact of after-school peer contact on early adolescent externalizing problems is moderated by parental monitoring, perceived neighborhood safety, and prior adjustment. *Child Development*, 70: 768–778.
- Richardson, Jean L., Barbra Radziszewska, Clyde W. Dent, and Brian R. Flay. 1993. Relationship between after-school care of adolescents and substance use, risk taking, depressed mood, and academic achievement. *Pediatrics*, 92: 32–39.

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- Snyder, Howard N., Melissa Sickmund, and Eileen Poe-Yamagata. 1997. *Juvenile offenders and victims: 1997 update on violence*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.
- U.S. Department of Education. 2003. *Secretary Paige's remarks at after-school summit*. U.S. Department of Education Press Release. Retrieved May 1, 2008 from ed.gov/news/speeches/2003/06/06062003.html.
- Weisman, Stephanie A. and Denise C. Gottfredson. 2001. Attrition from ASPs: Characteristics of students who drop out. *Prevention Science*, 2: 201–205.
- Weisman, Stephanie A., Shannon C. Womer, Melissa A. Kellstrom, Sean L. Bryner, Amy Kahler, Lee Ann Slocum, and Denise C. Gottfredson. 2002. *Maryland After-School Community Grant Program: Report on the 2001–2002 school-year evaluation of the phase 3 after-school programs*. Technical report. Available from authors.
- Weiss, Heather B., Priscilla Little, and Suzanne M. Bouffard. 2005. More than just being there: Balancing the participation equation. *New Directions for Youth Development*, 2005: 15–31.
- Wilson, David B., Denise C. Gottfredson, and Stacy S. Najaka. 2001. School-based prevention of problem behaviors: A meta-analysis. *Journal of Quantitative Criminology*, 17: 247–272.
- Wilson, Sandra and Mark J. Lipsey. 2007. The effects of school-based intervention programs on aggressive behavior: A meta-analysis. *American Journal of Preventive Medicine*, 33: S130–S143.
- Zief, Susan G. and Sherri Lauver. 2006. *The impacts of after-school programs on student outcomes: A systematic review for the Campbell Collaboration*. Retrieved April 20, 2008 from campbellcollaboration.org/docpdf/zief_afterschool_review.pdf.

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