

**The Study of Promising After-School Programs:  
Examination of Intermediate Outcomes in Year 2**

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## Executive Summary

Although education remains a critical pathway out of poverty for many young people in the United States, activities within the school classroom alone cannot provide youth with the educational, social, and personal resources they need to overcome economically disadvantaged backgrounds (Eccles et al., 1993). Children and youth also need varied opportunities, experiences, and supports after school. Programs that provide constructive, supervised activities can help to meet this need. In the Study of Promising After-School Programs, we examine longitudinally the effects of participation in high-quality school-based or school-linked after-school programs on a broad array of social, academic, and behavioral outcomes among economically disadvantaged elementary and middle school youth.

The study focuses on 19 elementary and 16 middle school programs located in 13 cities in 9 states across the United States. All programs were carefully screened to assure that they met strict criteria for high-quality after-school environments. From the public schools associated with these programs we drew a sample of 1,820 third and fourth grade students, and 1,119 students in sixth and seventh grades. Baseline questionnaires were administered to students, teachers, parents, and (for program participants) program staff members in Fall 2003. Students, teachers, and program staff members also completed a first-year follow-up questionnaire in Spring 2004.

A key proposition of the study is that the degree to which after-school programs affect children and adolescents should be related to the frequency with which they attend the programs. Therefore, we measured program dosage by collecting program attendance records. We also obtained information from the study participants about their involvement in other types of structured activities, as well as the amount of time they were without adult supervision in the after-school hours.

Initial analyses indicated that the study participants' after-school hours encompass several different types of experiences—attending the selected promising programs in varying amounts; participating in coached sports, school-based extracurricular activities, lessons, and other clubs or programs; and spending time unsupervised at home or hanging out with peers. We used cluster analyses to identify subgroups of students who differed in the ways that they spent their time after school:

- *Program only* group: high rates of participation in the selected after-school programs and low participation in other activities
- *Program + activities* group: high levels of involvement in both the selected after-school programs and other enrichment activities
- *Low supervision* group: high amounts of time in unsupervised settings (especially hanging out with peers), low levels of participation in the promising programs, and moderate to high amounts of time in other activities
- *Supervised at home* group: large amounts of time after school at home under adult supervision

To assess cluster differences on intermediate outcomes, we conducted a set of hierarchical linear modeling analyses, separately for the elementary and middle school samples. Key findings for the **elementary school sample** include:

- Reports from classroom teachers indicated more adaptive changes in academic performance, work habits, task persistence, and prosocial behaviors for the *program only* group, compared to the *low supervision* group.
- Child reports indicated more adaptive changes in misconduct and work habits for the *program only* and *program + activities* groups, compared to the *low supervision* group.
- Reports from program staff indicated more adaptive changes in work habits, task persistence, social skills, and prosocial behaviors for the *program only* and *program + activities* groups, compared to the *low supervision* group.

Key findings for the **middle school sample** include:

- The *program only* and *program + activities* groups reported less problematic changes in misconduct and drug use compared to the *low supervision* group.
- The *program + activities* group had more adaptive changes in work habits than the *low supervision* group, according to their teachers.
- The *supervised at home* group had more adaptive changes in academic performance than the *low supervision* group, according to teachers.

Our findings indicate that among elementary and middle school students who spend time in structured after-school activities, some attended a single program. Others, however, constructed an after-school schedule that involved *sets of experiences*. The tendency to create sets of after-school experiences has implications for those who design and manage programs for youth. It means, first of all, that one must allow for irregular attendance—youth who attend a couple days a week, or who attend regularly for several weeks and then disappear for several weeks—when designing specific programs or activities. More importantly, it encourages more collaboration among programs available to youth in a given school or community. Rather than being “all things to all students,” each after-school program may need to be more attentive to how its strengths are coordinated with other after-school environments in which young people in their area may be involved. Youth who move among a variety of activities, all of which feature structure and adult supervision, may be as well protected against problem behavior as those who devote almost all of their after-school hours to one supervised environment. Youth who spend substantial time in unsupervised settings appear to be more vulnerable to negative outcomes.

## **Introduction**

Substantial numbers of youth in the United States grow up in poverty. Studies suggest that education remains a critical pathway out of poverty for these young people, but activities within the school classroom alone cannot provide youth with the educational, social, and personal resources they need to overcome economically disadvantaged backgrounds (Eccles et al., 1993). Children and youth also may benefit from varied opportunities, experiences, and supports after school. Such opportunities may be especially meaningful for economically and socially disadvantaged youth who may have few options for constructive activities after the regular school day ends (Kleiner, Nolin, & Chapman, 2004) and for whom unsupervised time may be particularly risky (Pettit, Laird, Bates, & Dodge, 1997). Many low-income families cannot afford the educational enrichment and extracurricular activities that are used routinely by middle-class families to supplement the school day.

In the Study of Promising After-School Programs, we examined the effects of participation in after-school programs and other activities on various outcomes among economically disadvantaged youth in both the elementary and middle school years. We focused on **promising** after-school programs that offered high-quality environments for youth and manifested sustainability, in order to assess the potential for programs to exert positive effects on youth and to identify common elements that might account for their ability to foster positive youth development. We expected that youth who participated in these programs would achieve greater developmental and learning gains compared to disadvantaged youth who did not participate in similar opportunities.

### **Theory that Guides the Study**

The Study of Promising After-School Programs is grounded in a theory that describes the predicted relationships among after-school context and experiences, program dosage, family

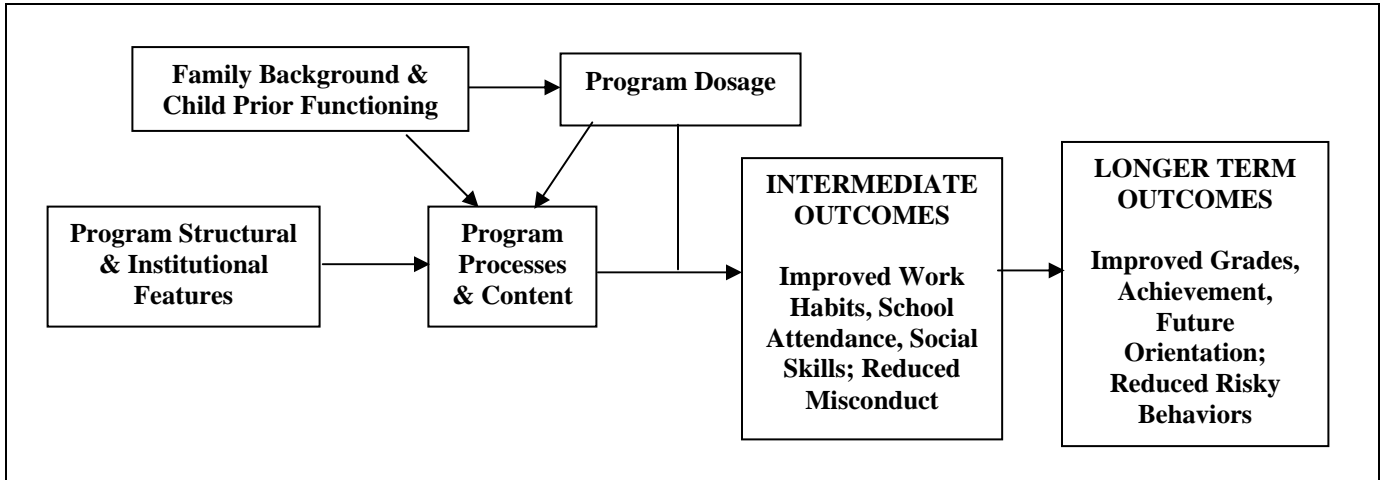
factors, and student outcomes (see Figure 1). The theory is based on the following propositions:

- To achieve positive life outcomes, children and youth require opportunities and supports in multiple developmental domains, including academic, social, psychological, and behavioral areas.
- High-quality after-school programs can stimulate positive experiences and outcomes for children and youth in these core developmental areas by incorporating program processes such as positive relationships with staff and with peers, diverse activities, and opportunities to exercise choice and autonomy, and by employing varied program content foci (e.g., arts, academics, sports).
- Certain structural and institutional features support the implementation of high-quality programs. These features include staff qualifications and support, program size and group configuration, financial and physical resources, external affiliations, and efforts to sustain the program.
- Children and youth who participate in high-quality programs more often, thus receiving a higher “dosage” of programming, will derive greater benefits than children and youth who participate less often.
- Because pre-existing family and child differences may affect the participation of children and youth in voluntary after-school programs, the examination of program effects must take these differences into account.
- Effects of high-quality programs are expected to “build” over time, with “intermediate” outcomes providing skills that contribute to “longer term” outcomes.

### **Examination of Intermediate Outcomes**

This report presents information from the second year of the Study of Promising After-School Programs, when we collected data from students, parents, teachers, and program staff,

Figure 1  
*Model of the Theory that Guides the Study of Promising After-School Programs*



and examined the effects of participation in the selected after-school programs on intermediate student outcomes (see Figure 1). The study recognizes that multiple factors influence (a) whether children and youth participate in after-school programs, and (b) whether those who participate benefit from the experience. We measured and controlled for child and family characteristics suggested by prior research as potential sources of influence, including parent employment and education, family structure and income, and the child's gender, ethnicity, and prior adjustment on the outcomes of interest.

### Sample Description

During Spring 2003, we identified 20 high-quality after-school programs serving elementary school students and 18 serving middle school students. Four elementary programs and five middle school programs subsequently were withdrawn from the study due to loss of funding, changes in administrative personnel, or school district concerns. During early Fall 2003, we screened and selected replacement programs, resulting in a final program sample of 19 elementary and 16 middle school programs located in 13 cities in 9 states across the United States. The programs are either based at schools or linked to schools through collaboration

between program staff and school personnel.

During early Fall 2003, we recruited elementary and middle school students to participate in the study. We approached 4,002 students in third and fourth grades across the 19 partner elementary schools. Signed parental consent was obtained for 1,820 elementary school students. Of the 2,926 students in sixth and seventh grades whom we approached in the 16 partner middle schools, we obtained parental consent (and student assent) from 1,119 students.

Our student sample and the host schools can be described as low income and from a variety of ethnic backgrounds, but predominantly ethnic minorities (see Table 1; asterisks in the  $\chi^2$  column of Table 1 indicate significant differences<sup>1</sup> between the sample and the host schools). Compared to the host schools, both the elementary and middle school samples contain smaller

Table 1  
*Demographic Characteristics of the Study Sample and Participating Schools*

	Elementary			Middle		
	Sample <i>N</i> = 1,820	Schools	$\chi^2$	Sample <i>N</i> = 1,119	Schools	$\chi^2$
Male	47%	51%	**	47%	51%	**
Free/reduced-price lunch	90%	94%	***	76%	82%	***
Asian/other	3%	4%		7%	8%	
Black	8%	8%		13%	10%	***
Latino	77%	77%		49%	62%	***
White	12%	11%		31%	21%	***

\*  $p \leq .05$  \*\*  $p \leq .01$  \*\*\*  $p \leq .001$

<sup>1</sup> Statistical significance is defined by  $p$  values.  $p$  is the probability that a difference in scores occurred by chance. A  $p$  of .05 means that there is a 5% chance that a difference is random or due to measurement error; .01 reflects a 1% chance, and .001 reflects a 0.1% chance.

proportions of boys and students receiving free or reduced-price lunch. The middle school sample contains a higher proportion of White and Black students than the host schools, and a smaller proportion of Latino students. The elementary sample and schools are similar in terms of ethnic minority populations, with both comprised of close to 90% ethnic minority children.

### **Program and Nonprogram Groups**

A critical issue in the study of after-school programs is the conceptualization and measurement of program participation. We initially planned to define “program” and “nonprogram” students by program attendance at the time of recruitment. Attendance data revealed, however, substantial mobility in and out of the selected programs, especially between fall and spring of the academic year. As seen in Table 2, 7% of the elementary students attended the programs during Fall 2003 but not in Spring 2004; 6% who attended in Spring 2004 did not attend during Fall 2003. Similar discrepancies appeared in the middle school sample. In some cases, across the academic year as a whole, a student initially placed in the nonprogram group actually attended a targeted after-school program more frequently than some members of the program group. Due to this mobility, we altered the criteria for group assignment. Participants who attended the targeted program 5 days or more during at least one semester (fall or spring) were placed in the program group; all others were placed in the nonprogram group.

Table 2  
*Fall 2003 and Spring 2004 Program Participation*

		Spring 2004			
		Attended		Did not attend	
		Elementary	Middle	Elementary	Middle
Fall 2003	Attended	43%	34%	7%	6%
	Did not attend	6%	8%	44%	52%



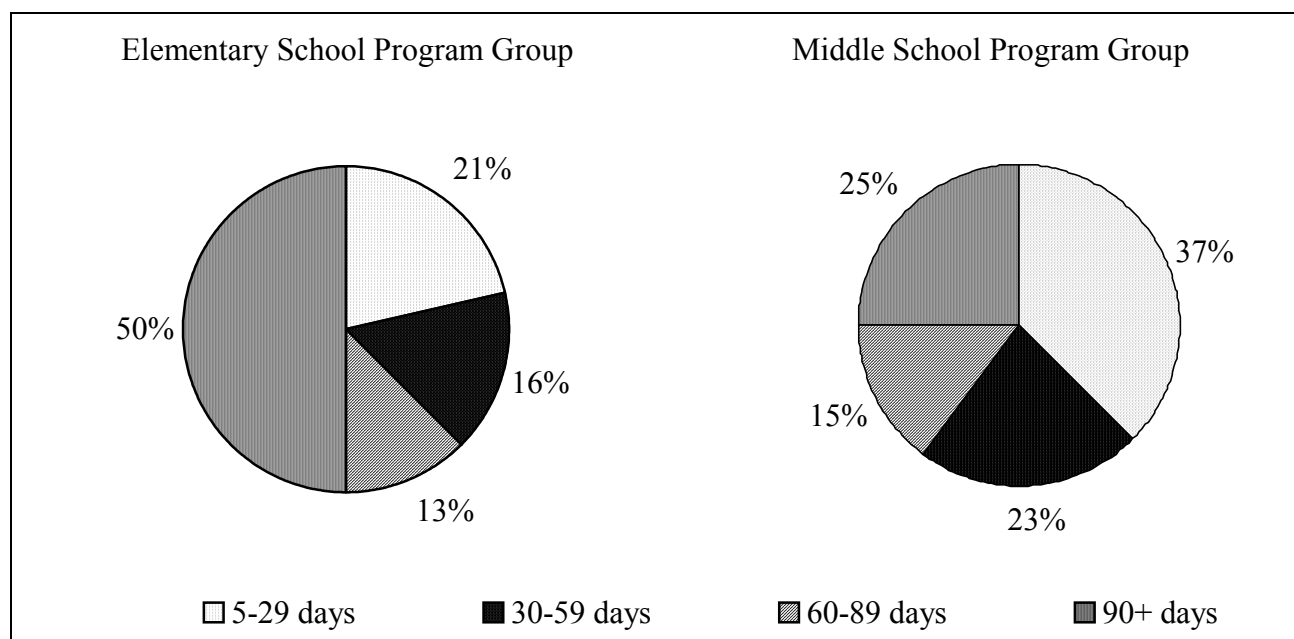
## Program Attendance

A key element of the study is that the degree to which after-school programs affect children and adolescents should be related to the frequency with which they attend the programs. Therefore, we also measured program dosage by collecting attendance records from the programs. We stipulated four dosage levels: low (5-29 days of attendance across the school year), moderate (30-59 days), substantial (60-89 days), and high (90 or more days). As shown in Figure 2, half of the students in the elementary school program group experienced high program attendance, compared to 25% of the middle school program group. Low attendance was more common in the middle school program group (37%) than in the elementary school program group (21%).

## Other After-School Experiences

In addition to collecting program attendance data, we obtained information about involvement in other types of experiences after school. Students reported how often they

Figure 2  
*Program Attendance during the 2003-04 School Year*



participated in various structured activities, as well as how often they were without adult supervision in the after-school hours—at home alone or with siblings, or “hanging out” with peers. For each variable, we calculated annual scores by averaging the fall and spring reports.

As shown in Table 3, program youth participated in other types of structured, supervised activities to a greater extent than nonprogram youth in both the elementary and middle school samples. The rates of participation in supervised enrichment activities in the program group are higher than those reported in national surveys of low-income youth (Kleiner et al., 2004; Tout, Scarpa, & Zaslow, 2002). These differences suggest that the students in this study may have reported **program** activities as additional enrichment activities not associated with the promising programs.

Table 3  
*Participation in After-School Activities Outside of the Selected Programs*

	Elementary			Middle		
	Program <i>N</i> = 1017	Nonprogram <i>N</i> = 803	<i>F</i>	Program <i>N</i> = 540	Nonprogram <i>N</i> = 579	<i>F</i>
Coached sports	1.74	1.69		1.95	1.71	***
School-based activities	1.64	1.28	***	1.89	1.46	***
Lessons	2.19	1.78	***	2.15	1.76	***
Other programs/clubs	1.83	1.61	***	1.58	1.44	*
Home alone	1.40	1.44		1.80	1.83	
Home with siblings	1.30	1.33		1.47	1.48	
With peers unsupervised	1.46	1.46		1.81	1.85	

*Note.* Scores are mean annual participation rates (1 = not at all/once or twice, 2 = about once a week, 3 = 2-3 days a week, 4 = 4 or more days a week) and are adjusted for student gender and ethnicity, family structure and income, and maternal education and employment.

\*  $p \leq .05$  \*\*  $p \leq .01$  \*\*\*  $p \leq .001$

### **Measures of Student Functioning**

We collected baseline data on student functioning from students, parents, teachers, and after-school program staff during Fall 2003. First-year follow-up data were collected from students, teachers, and program staff during late Spring 2004. We provide a general overview of the measures below; see [www.wcer.wisc.edu/childcare/des3.html](http://www.wcer.wisc.edu/childcare/des3.html) for additional information.

**Students** completed baseline and first-year follow-up measures of several intermediate and longer term outcomes addressed in this report, including work habits, self-efficacy, misconduct, and substance use (see Table 4). The surveys were administered to small groups of students during the school day or at the after-school program. Some students moved and transferred out of the participating schools between the time of recruitment and survey administration. Nonetheless, survey completion rates were high. Ninety-four percent of the 1,820 elementary students in the recruited sample completed the baseline survey and 89% completed the first-year follow-up survey. Of the 1,119 recruited middle school students, 92% completed the baseline survey and 87% completed the follow-up survey.

**Teachers and after-school program staff** completed baseline and first-year follow-up measures of a number of students' intermediate outcomes, including work habits, task persistence, social skills, and aggressive and prosocial behavior with peers (see Tables 5 and 6). Teachers also provided information about students' academic performance, a longer term outcome in our guiding theory. At the elementary level, we asked classroom teachers to complete surveys about the study participants in their class. For middle school participants, language arts teachers were asked to complete surveys. The after-school program staff member who was most familiar with each study participant in the program group completed a survey about that student. Teacher and program staff survey completion rates were over 75% at both baseline and the first-year follow up.

Table 4  
*Student Measures of Child and Youth Functioning*

Outcome	# items	Response scale	Sample items	Elementary mean scores		Middle school mean scores	
				Fall 2003	Spring 2004	Fall 2003	Spring 2004
Work habits	6	1 = not at all true 4 = really true	I follow the rules in my classroom I finish my work on time	3.42	3.30	3.21	3.13
Self-efficacy	7	1 = not at all true 4 = really true	I give up on things before finishing them I am not sure how good I am at things	--	--	3.16	3.17
Misconduct	11	0 = never 4 = 4+ times a week	Gotten into a fight at school Taken something from a store w/o paying for it	0.47	0.52	0.53	0.62
Substance use	4	0 = never 4 = 4+ times a week	Drank alcohol Used marijuana	--	--	0.08	0.09

*Note.* Elementary  $N = 1,713$  in Fall 2003, 1,611 in Spring 2004; middle school  $N = 1,024$  in Fall 2003, 973 in Spring 2004.

Table 5  
*Teacher Measures of Child and Youth Functioning*

Outcome	# items	Response scale	Sample items	Elementary mean scores		Middle school mean scores	
				Fall 2003	Spring 2004	Fall 2003	Spring 2004
Work habits	10	1 = very poor 5 = very good	Follows classroom procedures Completes work promptly	3.30	3.43	3.46	3.50
Task persistence	8	1 = not at all true 4 = really true	Gives up on things before finishing them Unsure about his/her ability to do things	2.89	2.93	2.96	2.99
Social skills	7	1 = very poor 5 = very good	Accurately interprets what peers are trying to do Is aware of the effects of his/her behavior on others	3.33	3.46	3.47	3.49
Aggressive w/peers	9	0 = not true 2 = often true	Is an aggressive child Annoys or irritates classmates	0.31	0.35	0.27	0.32
Prosocial w/peers	8	0 = not true 2 = often true	Compromises in conflicts with classmates Offers help or comfort when classmates are upset	1.50	1.52	1.48	1.47
Academic performance	6/3	1 = below grade level 5 = excellent	Reading Oral language	2.96	2.94	2.87	2.99

*Note.* Elementary  $N = 1,473$  in Fall 2003, 1,522 in Spring 2004; middle school  $N = 980$  in Fall 2003, 947 in Spring 2004.

Table 6  
*Program Staff Measures of Child and Youth Functioning*

Outcome	# items	Response scale	Sample items	Elementary mean scores		Middle school mean scores	
				Fall 2003	Spring 2004	Fall 2003	Spring 2004
Work habits	6	1 = very poor 5 = very good	Follows classroom procedures Completes work promptly	3.71	3.57	3.75	3.59
Task persistence	8	1 = not at all true 4 = really true	Gives up on things before finishing them Unsure about his/her ability to do things	3.03	2.96	3.09	3.01
Social skills	7	1 = very poor 5 = very good	Accurately interprets what peers are trying to do Is aware of the effects of his/her behavior on others	3.59	3.46	3.64	3.52
Aggressive w/peers	9	0 = not true 2 = often true	Is an aggressive child Annoys or irritates classmates	0.31	0.34	0.24	0.28
Prosocial w/peers	8	0 = not true 2 = often true	Compromises in conflicts with classmates Offers help or comfort when classmates are upset	1.38	1.36	1.40	1.40

*Note.* Elementary  $N = 798$  in Fall 2003, 815 in Spring 2004; middle school  $N = 446$  in Fall 2003, 426 in Spring 2004.

### Formation of After-School “Clusters”

The students’ reports of how they spent their time during the after-school hours revealed that they had several different types of experiences—attending the selected promising programs in varying amounts; participating in coached sports, school-based extracurricular activities, lessons, and other clubs or programs; and spending time unsupervised at home or hanging out with peers. Researchers typically have studied these experiences as independent events—that is, they have examined effects of each type of experience separately. However, our data indicate that after-school programs and other types of after-school contexts are experienced in combination. Therefore, we decided to examine whether *sets of experiences* (not any single setting in isolation) are associated with student outcomes. In order to test this, we used cluster analyses to identify subgroups of students who differed in the ways that they spent their time after school.

We included eight variables in our cluster analyses: program status (whether students belonged to the program or nonprogram group); program attendance (amount of participation in one of the selected promising after-school programs); and the amount of time students reported spending in six other after-school contexts—school-based extracurricular activities, coached sports, lessons, home alone, home with siblings (but no adults present), and hanging out with peers (unsupervised by adults). The cluster analyses were done separately for each age group (elementary and middle school). Four clusters, each containing students with similar after-school experiences, were revealed for both age groups:

- *Program + activities* (278 elementary, 195 middle school students): high involvement in both the target after-school programs and other enrichment activities
- *Program only* (582 elementary, 312 middle school students): high rates of participation in the target after-school programs but low scores on most of the other

clustering variables

- *Low supervision* (284 elementary, 162 middle school students): low levels of participation in the target programs, moderate to high amounts of time in other structured activities, and high amounts of time in unsupervised settings (especially hanging out with peers)
- *Supervised at home* (601 elementary, 409 middle school students): low scores on all clustering variables, suggesting large amounts of after-school time at home under adult supervision

Table 7 shows average scores on each of the clustering variables for each cluster in the elementary and middle school samples, respectively. Significant differences between cluster scores are indicated by different alphabetical superscripts in the table. For example, in the elementary sample, each of the four cluster means for program attendance is significantly different from the other cluster means, as indicated by the four different superscripts. For home alone, the average score for the *low supervision* cluster is significantly higher than the scores for the other three clusters, which are not different from each other (as indicated by their shared ‘b’ superscript).

### **Demographic Differences among Clusters**

We considered how the clusters varied on six demographic variables that have been shown in other research to influence participation in activities: student gender and ethnicity, family structure and income, and maternal employment and education. In the **elementary** sample (see Table 8; asterisks in the  $\chi^2$  column indicate significant differences between the clusters) the *program + activities* group had a higher proportion of girls than the other clusters, whereas males predominated in the *low supervision* cluster. The *program only* group had somewhat higher family incomes than the other clusters, although over half of all groups had an annual



Table 7  
Average Scores on Clustering Variables

	Program + activities	Program only	Low supervision	Supervised at home	<i>F</i>
<b><i>Elementary school (N)</i></b>	(278)	(582)	(284)	(601)	
Program attendance	3.27 <sup>a</sup>	2.79 <sup>b</sup>	1.39 <sup>c</sup>	.005 <sup>d</sup>	***
Coached sports	2.07 <sup>b</sup>	1.51 <sup>c</sup>	2.35 <sup>a</sup>	1.54 <sup>c</sup>	***
School-based activities	2.89 <sup>a</sup>	1.11 <sup>c</sup>	1.63 <sup>b</sup>	1.20 <sup>c</sup>	***
Lessons	2.92 <sup>a</sup>	1.86 <sup>c</sup>	2.49 <sup>b</sup>	1.62 <sup>d</sup>	***
Home alone	1.19 <sup>b</sup>	1.25 <sup>b</sup>	2.49 <sup>a</sup>	1.21 <sup>b</sup>	***
Home with siblings	1.18 <sup>b</sup>	1.12 <sup>b</sup>	2.31 <sup>a</sup>	1.16 <sup>b</sup>	***
Hang out with peers	1.39 <sup>b</sup>	1.25 <sup>c</sup>	2.61 <sup>a</sup>	1.24 <sup>c</sup>	***
<b><i>Middle school (N)</i></b>	(195)	(312)	(162)	(409)	
Program attendance	1.71 <sup>b</sup>	2.38 <sup>a</sup>	0.77 <sup>c</sup>	.002 <sup>d</sup>	***
Coached sports	2.54 <sup>a</sup>	1.68 <sup>c</sup>	2.11 <sup>b</sup>	1.49 <sup>d</sup>	***
School-based activities	2.92 <sup>a</sup>	1.35 <sup>c</sup>	1.69 <sup>b</sup>	1.31 <sup>c</sup>	***
Lessons	3.09 <sup>a</sup>	1.71 <sup>c</sup>	2.10 <sup>b</sup>	1.49 <sup>d</sup>	***
Home alone	1.75 <sup>b</sup>	1.45 <sup>c</sup>	3.12 <sup>a</sup>	1.56 <sup>c</sup>	***
Home with siblings	1.29 <sup>b</sup>	1.21 <sup>b,c</sup>	2.99 <sup>a</sup>	1.17 <sup>c</sup>	***
Hang out with peers	1.71 <sup>b</sup>	1.64 <sup>b</sup>	2.86 <sup>a</sup>	1.67 <sup>b</sup>	***

*Note.* Means with different superscripts are significantly different at  $p < .05$ ; \*\*\*  $p < .001$ .

Table 8  
*Percentage Distribution of Elementary School Clusters on Background Variables*

	$\chi^2$	Program + activities N = 278	Program only N = 582	Low supervision N = 284	Supervised at home N = 601
Child gender	***				
Male		34	46	67	46
Female		66	54	33	54
Child ethnicity	***				
Asian/other		1	4	1	4
Black		7	10	12	5
Latino		84	67	74	84
White		8	19	13	7
Family structure	***				
Two parents		56	60	62	71
Other		44	40	38	29
Maternal employment	***				
Full time		44	50	48	36
Other		56	50	52	64
Maternal education	**				
Did not graduate high school		41	28	44	36
High school diploma/GED		20	31	24	27
Some college		29	32	23	29
4-year college degree		10	9	9	8
Family income	*				
Less than \$11,000		29	27	38	31
\$11,000-19,999		32	24	22	23
\$20,000-29,999		23	21	19	22
\$30,000 or more		16	28	21	24

\*  $p \leq .05$  \*\*  $p \leq .01$  \*\*\*  $p \leq .001$

family income of less than \$20,000. The *low supervision* group had the greatest proportion of mothers who did not graduate from high school. The *supervised at home* group contained relatively more youth from two-parent households and youth whose mothers did not work full time. Consistent with the study sample, all of the clusters had high proportions of Latino students, but the proportion was especially high in the *program + activities* and *supervised at home* groups.

In the **middle school** sample (see Table 9), the *program + activities* cluster had a comparatively high proportion of girls and, along with the *low supervision* group, a greater percentage of mothers who worked full time. These clusters also had somewhat higher incomes, although at least one-third of each cluster had incomes of less than \$20,000 a year. The *program only* cluster was predominantly male and Latino, with a lower proportion of White members than the other clusters. The *supervised at home* group had the highest proportion of two-parent households, the lowest percentage of mothers working full time, and somewhat lower levels of maternal education.

### **Assessment of Intermediate Outcomes**

We examined cluster membership as a predictor of the intermediate outcomes that were measured in Spring 2004. In order to do this, we conducted a set of hierarchical linear modeling (HLM) analyses, separately for elementary and middle school students. These analyses allowed us to compare each of three clusters (*program + activities*, *program only*, and *supervised at home*) to the fourth cluster (*low supervision*) in order to determine if there were significant differences in the outcomes that were related to the students' cluster membership. We selected the *low supervision* group as the comparison cluster because it personifies the situation of strongest concern to parents, educators, and policymakers—that of students left unsupervised during the after-school hours—and it allowed us to examine whether the selected after-school

Table 9  
*Percentage Distribution of Middle School Clusters on Background Variables*

	$\chi^2$	Program + activities N = 195	Program only N = 312	Low supervision N = 162	Supervised at home N = 409
Child gender	***				
Male		39	58	48	42
Female		61	42	52	58
Child ethnicity	***				
Asian/other		7	6	6	8
Black		14	13	17	11
Latino		44	58	37	46
White		35	23	40	35
Family structure	**				
Two parents		65	61	61	72
Other		35	39	39	28
Maternal employment	*				
Full time		56	48	57	44
Other		44	52	43	56
Maternal education	*				
Did not graduate high school		28	28	24	37
High school diploma/GED		22	24	30	25
Some college		32	32	37	28
4-year college degree		18	16	9	10
Family income	*				
Less than \$11,000		17	24	17	23
\$11,000-19,999		25	25	18	22
\$20,000-29,999		15	18	19	22
\$30,000 or more		43	33	46	33

\*  $p \leq .05$  \*\*  $p \leq .01$  \*\*\*  $p \leq .001$

programs and other enrichment activities offered protective benefits to children and youth who are at risk for social and academic problems.

In addition to the after-school programs, the schools that the students attended were expected to have some influence on student outcomes. Therefore, we used two-level HLM analyses in which students (Level 1) were nested within schools (Level 2) for each outcome variable. The HLM analyses included a number of demographic variables known to influence child and youth functioning: student gender and ethnicity, family structure and income, and maternal employment and education. Finally, for the analysis of each outcome, we also controlled for the baseline score (in Fall 2003) on that outcome. This allowed us to examine the degree of intermediate change from baseline to Spring 2004.

Results of the analyses for the elementary sample are shown in Table 10, and in Table 11 for the middle school sample. Where the coefficient is positive and significant (as indicated by asterisks), the students in the reference group had higher scores relative to how the students in the comparison group (*low supervision*) scored. Where the coefficient is negative and significant, the scores for the students in the reference group were lower across the school year relative to the scores observed in the comparison group.

### **Findings for Elementary Students**

As shown in Table 10, significant changes from baseline to follow up were found for the elementary sample.

- Students in the *program only* cluster showed a number of positive changes over the school year relative to the *low supervision* cluster. These changes were seen in child reports of work habits and misconduct; teacher and program staff reports of work habits, task persistence, social skills, and prosocial behavior with peers; and teacher reports of academic performance and aggressive behavior with peers.

Table 10  
*Contrasts of Program Experiences and Supervision at Home with Low Supervision:  
 Elementary School Sample*

	Program + activities	Program only	Supervised at home
Student report			
Work habits	.197 <sup>***</sup>	.091 <sup>*</sup>	.105 <sup>*</sup>
Misconduct	-.213 <sup>***</sup>	-.284 <sup>***</sup>	-.240 <sup>***</sup>
Teacher report			
Work habits	.062	.142 <sup>*</sup>	.126 <sup>*</sup>
Task persistence	.079	.122 <sup>**</sup>	.101 <sup>*</sup>
Social skills	.072	.135 <sup>*</sup>	.166 <sup>*</sup>
Aggressive w/peers	-.021	-.061 <sup>*</sup>	-.049
Prosocial w/peers	.044	.065 <sup>*</sup>	.042
Academic performance	.074	.162 <sup>**</sup>	.131 <sup>*</sup>
Program staff report			
Work habits	.442 <sup>*</sup>	.417 <sup>*</sup>	NA
Task persistence	.307 <sup>*</sup>	.292 <sup>*</sup>	NA
Social skills	.488 <sup>**</sup>	.447 <sup>**</sup>	NA
Aggressive w/peers	.004	-.008	NA
Prosocial w/peers	.228 <sup>***</sup>	.189 <sup>**</sup>	NA

*Note.* Clusters are compared against the *low supervision* cluster. \*  $p \leq .05$  \*\*  $p \leq .01$  \*\*\*  $p \leq .001$

- Students in the *program + activities* cluster had adaptive changes across the school year compared to the *low supervision* cluster in self-reported work habits and misconduct, and program staff reports of work habits, task persistence, social skills, and prosocial behavior with peers.
- Students in the *supervised at home* cluster, compared to the students in the *low supervision* cluster, had adaptive changes in self-reported work habits and misconduct, and teacher reports of work habits, task persistence, social skills, and academic performance.

In general, the differences between the reference groups and the comparison group constituted small- to moderate-sized effects, which is consistent with other educational studies of academic and social outcomes among elementary school students (e.g., Finn, Gerber, Achilles, & Boyd-Zaharias, 2001).

### **Findings for Middle School Students**

Among middle school students, members of the *low supervision* cluster reported more problematic changes across the school year in self-reported misconduct and drug use (see Table 11). In addition, teachers reported adaptive changes in work habits among the *program + activities* students compared to the *low supervision* group, and in academic performance among the *supervised at home* students compared to the *low supervision* students. Effect sizes were in the moderate range.

## **Conclusions**

### **Key Findings and Their Implications**

There is growing consensus among scholars and practitioners about features of after-school environments that foster healthy social, emotional, and intellectual development for children and youth. In designing programs to address these features, it is common to assume that

Table 11  
*Contrasts of Program Experiences and Supervision at Home with Low Supervision:  
 Middle School Sample*

	Program + activities	Program only	Supervised at home
Student report			
Work habits	.066	-.040	.017
Self-efficacy	.018	-.087	-.049
Misconduct	-.148**	-.152**	-.162**
Substance use	-.109***	-.092**	-.111***
Teacher report			
Work habits	.172*	.095	.108
Task persistence	.017	-.029	.005
Social skills	.041	.027	.105
Aggressive w/peers	-.001	.003	-.023
Prosocial w/peers	.002	.032	.031
Academic performance	.106	.044	.146*
Program staff report			
Work habits	.179	.068	NA
Task persistence	.128	.046	NA
Social skills	.138	.035	NA
Aggressive w/peers	-.037	-.004	NA
Prosocial w/peers	.031	-.001	NA

*Note.* Clusters are compared against the *low supervision* cluster. \*  $p \leq .05$  \*\*  $p \leq .01$  \*\*\*  $p \leq .001$



youth will choose a particular program or setting in which to spend their after-school hours. Our findings indicate, however, that among elementary and middle school students who spend time in structured after-school activities, some primarily attend a single program while others construct an after-school schedule that involves *sets of experiences*. They may spend part of the week in a comprehensive after-school program such as the promising programs on which our study focuses, but they also are likely to take advantage of other opportunities at their school or in their community: special interest clubs, sports teams, music or dance lessons, religious activities, and so on. For some youth, the particular combination of activities and the relative amount of time devoted to each shifts over the course of a school year.

The tendency to create sets of after-school experiences has implications for those who design and manage programs for youth. It means, first of all, that one must allow for irregular attendance—youth who attend a couple days a week, or who attend regularly for several weeks and then disappear for several weeks—in designing specific programs or activities. More importantly, it encourages more collaboration among activities available to youth in a given school or community. Rather than being “all things to all students,” each after-school program or activity may need to be more attentive to how its strengths are coordinated with other after-school environments in which young people in their area may be involved.

Our discovery that some young people tend to have sets of experiences in the after-school hours, rather than exclusive enrollment in a specific program (or lack of participation), also prompted us to change our approach to data analyses. Rather than relying on comparisons of “program” and “nonprogram” students, we used cluster analysis to identify groups of students with common patterns of after-school activities. Four clusters emerged from these analyses, and they were remarkably similar among elementary and middle school youth.

Two of the clusters reported low or virtually no involvement in our target programs.

Attendance was especially rare in one cluster, which accounted for over a third of elementary and nearly 40% of middle school respondents. This group also was unlikely to be involved in any other structured after-school experiences, or to spend time unsupervised by adults. Rather, they spent most of their time after school at home, presumably under the care of parents or other adults. This group had a distinctive demographic profile: They were more likely to come from two-parent households, with mothers who did not work full time. Mothers had modestly lower educational levels in this group as well. In other words, the *supervised at home* cluster seemed to be dominated by youth whose parents were more available to look after them in the hours after school. The distinctive demographic characteristics of this group made it inappropriate as a comparison point for clusters that had high involvement in our targeted programs.

Another cluster of respondents, about 15% of the elementary and middle school samples, also had low participation rates in structured activities. Unlike the *supervised at home* cluster, however, these youth spent much of their time after school in unsupervised settings (at home without adults, or hanging out with peers). The dangers of this arrangement, which have been emphasized by other investigators (Smolansky & Gootman, 2003), were reaffirmed in our study. It would be inaccurate, however, to portray the *low supervision* cluster as *never* supervised. In fact, this group had higher rates of participation in coached sports, school-based activities, and lessons than the other clusters. Their distinguishing feature was spending much of their time in unsupervised environments. Again, this points to the importance of *sets of experiences*. Youth who move among a variety of activities, all of which feature structure and adult supervision, may be as well protected against problem behavior as those who devote almost all of their after-school hours to one supervised environment. Youth who spend substantial time in unsupervised settings appear to be more vulnerable to negative outcomes. There may be a “critical proportion” of time that young people from disadvantaged backgrounds need to spend in well-structured and

supervised environments to reap the general benefits of these settings.

The two remaining clusters had high rates of participation in our targeted after-school programs, but were differentiated in terms of their level of involvement in other structured activities. A natural question is whether it is better for youth to devote most of their time to one, comprehensive after-school program (enriched by modest involvement in other supervised activities) or to divide their time more evenly among promising after-school programs and other community activities with more specific foci.

Among **elementary** students, both program groups (*program + activities* and *program only*) were advantaged in comparison to the *low supervision* cluster, in child as well as staff reports of outcomes. Teachers, however, perceived more difference between the two program groups. In fact, elementary school students who focused their after-school hours on our target programs (the *program only* group) displayed more favorable intermediate outcomes than the *low supervision* cluster on all measures rated by teachers.

Among **middle school** students, both the *program + activities* and *program only* groups reported more favorable (and roughly comparable) changes in patterns of misconduct and substance use relative to the *low supervision* cluster. There was only one instance in which one of the program groups was distinctive from the *low supervision* group on program staff or teacher ratings: Teachers reported more favorable changes in work habits for the *program + activities* youth.

Collectively, these findings suggest that consistent attendance at a promising after-school program has broad effects for elementary school students. These benefits are observable in student behavior in program as well as classroom contexts. The absence of evidence of these same broad benefits among middle school youth is puzzling. Do our findings suggest that most advantages of attendance in promising after-school programs accrue during the early years of

schooling, or might they be attributable to the different organization of programs among youth of different age groups—for example, the more sporadic attendance patterns of older youth? We hope to pursue this question in the next phase of our work. Likewise, we hope to pursue the issue of why focused involvement is more beneficial than diversified involvement among elementary students. Is it possible that, during the initial years of schooling, students benefit from the consistency and security of a single program structure and a single set of caring adults?

### **Next Steps**

The next phase of the Study of Promising After-School Programs began in Fall 2004, when program directors reported on program features and staff characteristics. We will collect long-term outcome data from students, parents, teachers, and after-school program staff in Spring 2005. A comprehensive report of study findings is anticipated by the end of 2005.

## References

- Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Maclver, D. (1993). Development during adolescence: The impact of stage-environment fit on adolescents' experiences in schools and families. *American Psychologist, 48*, 90-101.
- Finn, J. D., Gerber, S. B., Achilles, C. M., & Boyd-Zaharias, J. (2001). The enduring effects of small classes. *Teachers College Record, 103*(2), 145-183.
- Kleiner, B., Nolin, M. J., & Chapman, C. (2004). *Before- and after-school care, programs, and activities of children in kindergarten through eighth grade: 2001* (NCES 2004-008). Washington, DC: U.S. Department of Education, National Center for Education Statistics.
- Pettit, G. S., Laird, R. D., Bates, J. E., & Dodge, K. A. (1997). Patterns of after-school care in middle childhood: Risk factors and developmental outcomes. *Merrill-Palmer Quarterly, 43*, 515-538.
- Smolansky, E., & Gootman, J. A. (Eds.) (2003). *Working families and growing kids: Caring for children and adolescents*. Washington, DC: National Academies Press.
- Tout, K., Scarpa, J., & Zaslow, M. J. (2002, March). *Children of current and former welfare recipients: Similarly at risk*. Washington, DC: Child Trends.