

**The Study of Promising After-School Programs:  
Examination of Longer Term Outcomes After Two Years of  
Program Experiences**

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## **Chapter 1**

### **Introduction**

Because educational achievement remains a primary pathway out of poverty for youth from economically disadvantaged circumstances (Behrman, 1997; Dryfoos, 1998; Hechinger, 1992), increasing attention is being directed to both in-school and out-of-school activities that support educational achievement and set young people on a positive trajectory toward adulthood (Larson, 2000; Lerner, 1998). Recently, scholars have placed special emphasis on how young people spend their time in the after-school hours (Eccles & Gootman, 2002; Mahoney, Lord, & Carryl, 2005). They have been concerned with how youth involved in structured, adult-supervised activities (e.g., after-school programs, school extracurricular activities, and community-based activities such as lessons or sports teams) compare to peers who are supervised at home by parents or other adults, or who spend time in unsupervised settings after school. This research provides insights into the benefits and drawbacks of different after-school arrangements, although it often has failed to capture the full experience of children and adolescents, many of whom encounter a variety of after-school settings over the course of an academic year (Capizzano, Tout, & Adams, 2000; Lareau, 2000; Vandell & Shumow, 1999).

One insight gained from other studies of after-school settings, based on a deficit model that underlies a considerable amount of the prevention and intervention literature, is that youth who are not involved in adult-supervised settings after school are at greater risk for problem behavior than youth who spend their after-school hours in the care of adults (e.g., Mahoney & Stattin, 2000; Vandell, Pierce, & Dadisman, 2005). From this perspective, the objective of after-school programs and other structured activities is to “keep children out of trouble,” to avoid negative academic, emotional, and behavioral outcomes. A second insight is derived from a positive youth developmental perspective, whose focus is on enhancing young people’s potential

for healthy adaptation and prosocial behavior. Researchers have reported that programs and activities with particular features are most likely to foster healthy adaptation among children and youth. For example, Eccles and Gootman (2002) identified eight key features of successful youth programs: physical and psychological safety; appropriate structure; supportive social relationships; opportunities for belonging; positive social norms; support for efficacy and mattering; opportunities for skill building; and integration of family, school, and community efforts.

The current study was undertaken, under the sponsorship of the Charles Stewart Mott Foundation, to assess the developmental benefits associated with youth participation in after-school programs that met certain research-based quality criteria. As this report explains, we broadened our research focus as the study progressed, to include a more comprehensive analysis of the range of settings in which sampled children and youth spent the after-school hours. Nevertheless, subjects' participation in high-quality after-school programs and their development of protective factors associated with that participation remained central foci of the research.

### **Study Design**

The Study of Promising After-School Programs was conducted in three phases. The first phase, reported in Vandell et al. (2004), involved a comprehensive, nationwide search for school-based or school-affiliated programs that manifested the characteristics of high-quality after-school environments. Based on recommendations from experts in the field and a careful search of public records (published information and websites), we identified 116 programs that merited closer attention. Seventy-five program directors consented to a telephone interview from which we identified programs that served a predominantly economically disadvantaged population, operated at least 3 days a week throughout most of the academic year, served a large enough clientele to allow for statistical analyses, and showed promise that they would remain

viable for the 3 years of our study.

From the programs that met these criteria and based on considerations of geographic diversity and accessibility of the program locations to our research staff, we selected 57 programs for school visits in Fall 2002 and Spring 2003 that allowed us to evaluate, firsthand, the features of each program and its appropriateness on other study criteria. Based on the school visits, we invited 20 programs serving elementary school youth and 18 programs serving middle school youth to participate in the next two phases of the study. 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 that were in the pool of 57 programs we observed in the 2002-03 school year or were part of the same umbrella organization as other selected programs, resulting in a final program sample of 19 elementary and 16 middle school programs located in 14 cities in 8 states (Los Angeles, CA; Oakland, CA; San Diego, CA; San Ysidro, CA; Seaside, CA; Aurora, CO; Denver, CO; Bridgeport, CT; Baldwin, MI; Missoula, MT; New York, NY; Salem, OR; Pawtucket, RI; Central Falls, RI).

Phase 2, reported in Vandell, Reisner, et al. (2005), began by gathering baseline data in Fall 2003 on a sample of 1,796 elementary school and 1,118 middle school youth. About 57% of the elementary participants and 48% of the middle school participants were enrolled in the selected after-school programs during the 2003-04 school year; the rest were classmates in the same schools (and grade levels) as the program students, but not enrolled in the selected programs. We gathered information, via questionnaires, from all of the students in the sample as well as their parents and teachers. Student and teacher questionnaire data were obtained again at the end of the academic year (Spring 2004) to provide an assessment of intermediate outcomes related to students' after-school experiences.

The third phase of the study, the subject of the current report, occurred in Spring 2005. During this period we again collected questionnaire data from teachers, students, and parents in order to assess longer term outcomes of after-school experiences.

### **Theory of Change (Revised)**

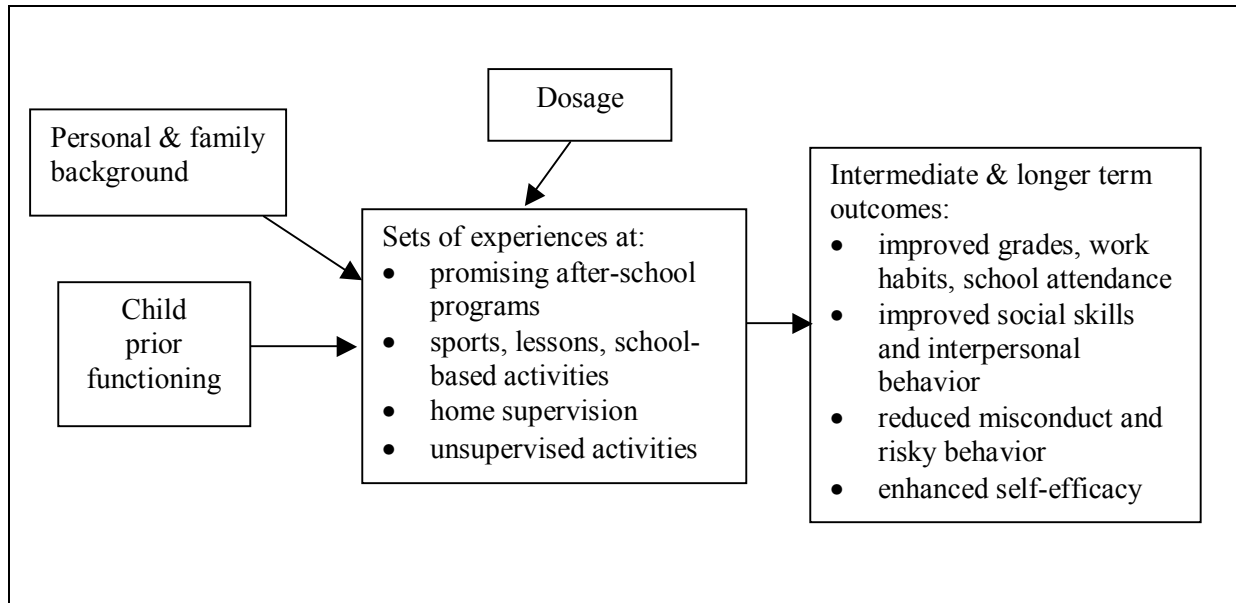
Building on the positive youth developmental perspective, we concentrated initially on identifying *promising* after-school programs—those with a strong reputation for success and clear evidence of the key features identified by Eccles and Gootman (2002). Our objective was to evaluate the extent to which such programs were related to positive academic, interpersonal, emotional, and behavioral outcomes for children and early adolescents from economically disadvantaged families. We soon discovered, however, that many young people participated in a variety of after-school environments, rather than rely solely on the programs that we selected for study. To understand the effects of the promising programs, we needed to expand the scope of our inquiry to include the range of activities in which children and youth were involved after school.

This discovery prompted a change in the conceptual framework underlying the study. Our revised theory of change is presented in Figure 1. In this conceptual scheme we anticipate that *sets of experiences* can be derived from a range of after-school settings. The sets should reveal different combinations of involvement in the promising after-school programs that we had identified at the outset of our study, other school-based programs, school or community sports teams, private lessons, home supervision (care by parents or other adults in the child's or someone else's home), and/or situations not overseen by an adult (time alone or with non-adult siblings or peers). We expect that these different sets of experiences vary in their relation to academic, social, behavioral, and emotional outcomes for youth.

Several factors should influence the sets of experiences that emerge for youth, and



Figure 1  
*Revised Theory of Change for the Study of Promising After-School Programs*



therefore must be taken into consideration in data analyses. The first is “dosage”: The more time a young person spends in a given setting or set of activities, the less time is available to devote to other settings. Also, it seems likely that more time spent in a given set of activities increases the impact of those activities. Second, participation in any type of activity is likely to be related to personal and family background characteristics, such as child/youth gender and ethnicity, parent employment status and educational level, family income, and family structure. Finally, the child’s prior functioning may influence the types of experiences the child is predisposed to participate in. Prior functioning also may influence the impact that various sets of experiences have on child outcomes, possibly by limiting the degree and direction of change that is possible. For example, a program cannot do much to improve the social skills of a child who is already highly capable of interacting effectively with others.

### **Previous Analyses and Findings**

In Phase 2 (see Vandell, Reisner, et al., 2005), we examined intermediate outcomes

assessed at the end of the 2003-04 academic year. Using cluster analysis, we first sought to identify the distinct sets of experiences that characterized young people's activities after school, based on how often they attended the promising after-school programs; participated in sports teams, lessons, or school-based activities other than the after-school programs; spent time at home alone or caring for siblings; or hung out with peers (without adult supervision). Although data for elementary and middle school participants were analyzed separately, the same four groups emerged from each set of analyses.

One group had high rates of participation in the selected after-school programs, but low levels of participation in other after-school arrangements (*program only*). Another group featured high participation in the selected after-school programs as well as in other adult-supervised activities at school or in the community (*program + activities*). A third group spent a considerable amount of time unsupervised by adults (at home alone or with siblings, or hanging out with friends), supplemented with modest involvement in adult-sponsored activities other than the selected after-school programs (*self-care + activities*). Finally, there was a group of youth who had low scores on all criterion variables. We labeled this group *supervised at home*. Because this fourth group included larger proportions of two-parent households and smaller proportions of employed mothers, it seems likely that children in this group spent their time after school at home under the care of parents or other adults, but we did not explicitly ask the students whether they were at home with adults.

The four groups varied on background characteristics. Among elementary students, females were overrepresented in the *program + activities* group and underrepresented in the *self-care + activities* group. Among middle school participants, females were overrepresented in both the *program + activities* group and the *supervised at home* group, but underrepresented in the *program only* group. And as noted above, participants who were in the *supervised at home* group

were more likely to live in two-parent households in which the mother did not work full time. These findings confirmed the importance of controlling for background variables.

Our primary interest, however, was in tracking how sets of experiences related to intermediate outcomes. We designated the *self-care + activities* cluster as the comparison group in these analyses because previous studies indicated that youth with a profile similar to this group tend to fare worse than their peers in other after-school arrangements on a variety of outcome measures (e.g., Osgood, Anderson, & Shaffer, 2005; Pettit, Laird, Bates, & Dodge, 1997). Again, we conducted separate analyses for elementary and middle school students, using information provided by teachers and the students themselves (we did not collect intermediate follow-up data from parents).

Controlling for baseline performance, elementary school participants in the *program only* group outperformed the *self-care + activities* cluster on every measure of academic (work habits, task persistence, grades) and social (social skills, prosocial with peers, aggressive with peers) competence assessed by teachers. The *supervised at home* group outpaced the *self-care + activities* cluster on all teacher-reported academic measures as well as social skills. There were no significant differences in teacher ratings of the *self-care + activities* and *program + activities* clusters. However, the *program + activities* group, as well as the *program only* and *supervised at home* groups, self-reported better work habits and less misconduct than the *self-care + activities* group. Consistent with previous studies of the effects of educational interventions (e.g., Borman, Hewes, Overman, & Brown, 2003; Finn, Gerber, Achilles, & Boyd-Zaharias, 2001), most of the differences between the comparison groups and the *self-care + activities* group displayed small- to moderate-sized effects.

Among middle school students, the *self-care + activities* cluster had higher rates of misconduct and substance use (controlling for baseline differences) than all other clusters. There

were no significant group differences, however, in self-ratings of work habits or self-efficacy. Teacher ratings differentiated the groups in two instances: Compared to the *self-care + activities* group, members of the *program + activities* cluster had better work habits, and students in the *supervised at home* group received better grades.

Thus, the analyses at the end of one academic year suggested that the short-term effects of after-school involvement differed for the two age groups. In the current report, we extend our assessment of linkages between after-school experiences and the academic, social, and behavioral outcomes of children and adolescents across a longer time period of a second academic year. We expected that the intermediate effects of after-school experiences, particularly at the promising programs, on developmental outcomes would be maintained and that additional positive effects would be identified after 2 years of program experience because it may take more than a few months (the time between our assessments of baseline and intermediate outcomes) for the effects of after-school environments to become apparent.

## Chapter 2

### Sample Description

#### After-School Programs

Nineteen elementary and 16 middle school programs, located in 14 cities in 8 states, were selected for the study in Fall 2003 (see Vandell et al., 2004 for details about identification and selection of these programs). All of the programs were either based at or affiliated with schools. At the beginning of the 2004-05 school year, one urban middle school and its associated program closed. The students at this school were transferred to another school where a program was operated by the same umbrella organization as the closed program. One rural middle school program also closed, due to a loss of funding. Therefore, the 2004-05 program sample included 19 elementary and 15 middle school programs.

We observed each program for two afternoons in Fall 2003 and Spring 2005 using the *Promising Practices Rating System* (PPRS; see [www.wcer.wisc.edu/childcare/des3.html](http://www.wcer.wisc.edu/childcare/des3.html)) to evaluate key program processes on a 4-point scale (1 = *highly uncharacteristic*, 4 = *highly characteristic*). These processes include supportive relationships with staff, supportive relations with peers, student engagement in activities, appropriate program structure, opportunities for cognitive growth, mastery orientation, chaos, and over-control (lack of opportunities for autonomy).

Table 2.1 shows the mean scores on the observed process features in the programs at both time points. There were no statistically significant differences between the Fall 2003 and Spring 2005 ratings, indicating that the programs maintained their quality across the two school years. Table 2.2 shows the percentages of programs that received each of the four rating points for the program processes at the two time points.

Table 2.1  
*Observer Ratings of Key Process Features in the Programs*

	Elementary programs			Middle school programs		
	<i>M (SD)</i>			<i>M (SD)</i>		
	Fall 2003 <i>N</i> = 19	Spring 2005 <i>N</i> = 19	<i>t</i> <sub>(18)</sub>	Fall 2003 <i>N</i> = 16	Spring 2005 <i>N</i> = 15	<i>t</i> <sub>(13)</sub>
Supportive relations with staff	3.63 (0.50)	3.79 (0.42)	1.37	3.69 (0.48)	3.67 (0.49)	0.56
Supportive relations with peers	3.68 (0.58)	3.68 (0.48)	0.00	3.63 (0.62)	3.47 (0.83)	0.69
Student engagement	3.68 (0.48)	3.74 (0.45)	0.44	3.69 (0.48)	3.53 (0.52)	0.81
Appropriate structure	3.74 (0.45)	3.63 (0.60)	0.81	3.63 (0.62)	3.67 (0.62)	0.56
Opportunities for cognitive growth	2.89 (0.81)	2.79 (0.71)	0.49	2.69 (0.79)	2.67 (0.72)	0.69
Mastery orientation	2.84 (0.90)	2.63 (0.90)	1.07	2.75 (0.86)	2.87 (0.83)	0.23
Chaos	1.26 (0.56)	1.21 (0.54)	0.33	1.25 (0.45)	1.47 (0.74)	1.00
Over-control	1.26 (0.56)	1.26 (0.45)	0.00	1.19 (0.40)	1.13 (0.35)	1.00

*Note.* Program processes were rated on a 4-point scale (1 = *highly uncharacteristic*, 4 = *highly characteristic*). Differences between means were examined with paired sample *t*-tests.

Table 2.2  
*Percentage Distribution of Observer Ratings in the Promising Programs*

	Elementary programs				Middle school programs											
	Fall 2003 ratings		Spring 2005 ratings		Fall 2003 ratings		Spring 2005 ratings									
	1	2	3	4	1	2	3	4								
Supportive relations with staff	0	0	37	63	0	0	31	69	0	0	33	67				
Supportive relations with peers	0	5	21	74	0	0	32	68	0	6	25	69	7	0	33	60
Student engagement	0	0	32	68	0	0	26	74	0	0	31	69	0	0	47	53
Appropriate structure	0	0	26	74	0	5	26	69	0	6	25	69	0	7	20	73
Opportunities for cognitive growth	0	37	37	26	0	37	47	16	0	50	31	19	7	26	60	7
Mastery orientation	5	32	37	26	10	32	42	16	12	12	63	13	0	40	33	27
Chaos	79	16	5	0	84	11	5	0	75	25	0	0	67	20	13	0
Over-control	79	16	5	0	74	26	0	0	81	19	0	0	87	13	0	0

*Note.* Numbers shown are percentages of programs that received each rating point (1 = *highly uncharacteristic*, 4 = *highly characteristic*).

## **Student Participants**

A total of 1,796 elementary students (third and fourth grades in Fall 2003) and 1,118 middle school students (sixth and seventh grades in Fall 2003) were recruited for the study (see Vandell, Reisner, et al., 2005 for details about student recruitment). In Spring 2005, 1,434 of the elementary participants (80% of the recruited sample) and 855 of the middle school participants (76% of the recruited sample) remained at the participating schools and were available for data collection.

As shown in Table 2.3, the sample was demographically similar at the two time points. The **elementary** sample was predominantly Hispanic and nearly 90% of the students received free or reduced-price lunch at school. Two thirds resided in two-parent households, and less than half the mothers worked full time. On average, mothers' highest educational attainment was a high school diploma or GED, and annual family incomes were less than \$20,000.

The **middle school** sample also was characterized by ethnic diversity (about half Hispanic, more than 10% Black, and one third White) and low incomes: About two thirds of the middle school students received free or reduced-price lunch, and average annual family incomes were in the \$20,000-\$24,999 range. Mothers in the middle school sample were, on average, slightly more educated than the mothers in the elementary sample, with average attainment between high school diploma/GED and some college. As in the elementary sample, two thirds of the middle school students lived with two parents and about half their mothers were employed full time.

We conducted analyses to determine whether the students who had moved away or were no longer available for data collection in Spring 2005 differed demographically from the students who remained in the study. As shown in Table 2.4, both the elementary and middle school students who dropped from the study had been less likely to attend the after-school programs



Table 2.3  
*Sample Characteristics at Recruitment and Year 2 Follow-Up*

	Elementary students		Middle school students	
	Fall 2003 <i>N</i> = 1,796	Spring 2005 <i>N</i> = 1,434	Fall 2003 <i>N</i> = 1,118	Spring 2005 <i>N</i> = 855
Male	47%	46%	47%	47%
Ethnicity				
Asian/other	3%	3%	7%	7%
Black	8%	8%	13%	12%
Hispanic	77%	78%	49%	48%
White	12%	11%	31%	33%
Free/reduced-price lunch	89%	89%	63%	64%
Two-parent household	63%	64%	65%	66%
Full-time maternal employment	44%	44%	48%	49%
Maternal education <sup>a</sup>	3.06 ( <i>SD</i> = 1.52)	3.04 ( <i>SD</i> = 1.52)	3.32 ( <i>SD</i> = 1.55)	3.32 ( <i>SD</i> = 1.56)
Family income <sup>b</sup>	5.18 ( <i>SD</i> = 2.83)	5.21 ( <i>SD</i> = 2.83)	6.01 ( <i>SD</i> = 3.07)	6.08 ( <i>SD</i> = 3.08)

<sup>a</sup> Maternal education is an ordinal variable: 1 = 8<sup>th</sup> grade or less, 2 = some high school, 3 = high school diploma or GED, 4 = some college, 5 = 2-year college degree, 6 = 4-year college degree or more.

<sup>b</sup> Family income is an ordinal variable: 1 = \$0-4,999, 2 = \$5,000-7,999, 3 = \$8,000-10,999, 4 = \$11,000-14,999, 5 = \$15,000-19,999, 6 = \$20,000-24,999, 7 = \$25,000-29,999, 8 = \$30,000-39,999, 9 = \$40,000-49,999, 10 = \$50,000-59,999, 11 = \$60,000 or more.

Table 2.4  
*Comparison of Retained and Lost Subjects on Demographic Variables*

	Elementary students			Middle school students		
	Retained <i>n</i> = 1,434	Lost <i>n</i> = 361	Statistical significance	Retained <i>n</i> = 855	Lost <i>n</i> = 262	Statistical Significance
Male	46%	50%	$\chi^2_{(1, N = 1790)} = 1.54$	47%	47%	$\chi^2_{(1, N = 1115)} = 0.01$
Ethnicity			$\chi^2_{(3, N = 1785)} = 10.47^*$			$\chi^2_{(3, N = 1114)} = 5.36$
Asian/other	3%	4%		7%	5%	
Black	8%	10%		12%	17%	
Hispanic	78%	70%		48%	50%	
White	11%	16%		33%	28%	
Free/reduced-price lunch	89%	88%	$\chi^2_{(1, N = 1500)} = 0.06$	64%	56%	$\chi^2_{(1, N = 912)} = 2.77$
Two-parent household	64%	61%	$\chi^2_{(1, N = 1576)} = 1.03$	66%	64%	$\chi^2_{(1, N = 995)} = 0.33$
Full-time maternal work	44%	44%	$\chi^2_{(1, N = 1515)} = 0.01$	49%	44%	$\chi^2_{(1, N = 963)} = 1.63$
Maternal education	3.04 (1.52)	3.16 (1.49)	$t_{(1543)} = 1.13$	3.32 (1.56)	3.30 (1.53)	$t_{(972)} = 0.17$
Family income	5.21 (2.83)	5.01 (2.81)	$t_{(1511)} = 1.02$	6.08 (3.08)	5.71 (3.02)	$t_{(943)} = 1.48$
Program participant	59%	46%	$\chi^2_{(1, N = 1795)} = 20.70^{***}$	53%	34%	$\chi^2_{(1, N = 1117)} = 28.32^{***}$
Year 1 cluster			$\chi^2_{(3, N = 1741)} = 11.85^{**}$			$\chi^2_{(3, N = 1078)} = 13.35^{**}$
Program + activities	17%	11%		19%	16%	
Program only	34%	32%		31%	21%	
Self-care + activities	16%	15%		15%	16%	
Supervised at home	33%	42%		35%	47%	

*Note.* We had no demographic information about one student in each sample.

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

during the 2003-04 school year, and more likely to be placed into the *supervised at home* cluster in the outcome analyses of intermediate outcomes (see Vandell, Reisner, et al., 2005). The elementary students who left the study after 2003-04 also were more likely to be White and less likely to be Hispanic than the elementary students who continued in the study through Spring 2005.

## Chapter 3

### Measures of After-School Experiences

#### Program Attendance

Individual daily attendance records were obtained from the promising programs. From these reports, we determined the number of days that the study participants attended the promising programs in the 2003-04 and 2004-05 academic years. Attendance at the elementary programs ranged from 0-182 days in 2003-04, 0-188 days in 2004-05, and 0-366 days in the two school years combined (see Table 3.1). At the middle school programs, the ranges were 0-169 days, 0-178 days, and 0-345 days, respectively. About 57% ( $n = 1,030$ ) of the elementary students and 53% ( $n = 597$ ) of the middle school students attended a program at least 1 day during 2003-04, with average attendance rates of 91 days and 51 days, respectively, whereas 755 elementary students (43%) and 521 middle school students (47%) never attended a promising program. During 2004-05, 814 elementary students (57% of the remaining sample) and 357 middle school students (42% of the remaining sample) attended a program at least 1 day, with average attendance rates of 86 days and 62 days, respectively; 620 of the remaining elementary (43%) and 498 middle school (58%) students did not attend any days. For the two school years combined, about 64% ( $n = 1,158$ ) of the full elementary sample and 59% ( $n = 663$ ) of the full middle school sample attended a program at least 1 day, with average 2-year attendance rates of 141 days and 79 days, respectively. About 36% ( $n = 638$ ) of the full elementary sample and 41% ( $n = 455$ ) of the full middle school sample did not attend the programs during the combined 2-year period.

From the program attendance data, we created a *program intensity* variable based on the number of days the students attended the promising programs across the 2-year period. We stipulated five intensity levels: *none/minimal* (0-9 days), *low* (10-59 days), *moderate* (60-119

Table 3.1  
*Program Attendance Descriptive Statistics*

	1 year: 2003-2004			1 year: 2004-2005			2 years: 2003-2005					
	<i>n</i>	<i>M</i>	<i>SD</i>	Range	<i>n</i>	<i>M</i>	<i>SD</i>	Range	<i>n</i>	<i>M</i>	<i>SD</i>	Range
Including 0 days												
Elementary	1,796	52.2	63.3	0-182	1,434	48.6	61.6	0-188	1,796	91.0	110.4	0-366
Middle	1,118	27.3	41.4	0-169	855	25.8	48.6	0-178	1,118	47.1	73.9	0-345
Excluding 0 days												
Elementary	1,030	91.1	58.7	1-182	814	85.6	59.3	1-188	1,158	141.2	108.7	1-366
Middle	597	51.2	44.6	1-169	357	61.9	58.5	1-178	663	79.4	81.5	1-345

days), *substantial* (120-179 days), and *high* (180 or more days). All recruited students were assigned a 2-year intensity level. As shown in Table 3.2, about one third of the elementary students experienced substantial or high program intensity, whereas only 14% of the middle school students experienced these intensity levels. Nearly 40% of the elementary students, and about half the middle school students, had no or minimal experience in the programs.

Table 3.2  
*Program Intensity Across Two School Years (2003-2005)*

	Elementary students <i>N</i>	Middle school students <i>N</i>
None/minimal, 0-9 days	698 (39%)	556 (49%)
Low, 10-59 days	307 (17%)	252 (23%)
Moderate, 60-119 days	214 (12%)	157 (14%)
High, 120-179 days	205 (11%)	77 (7%)
Very high, 180+ days	372 (21%)	76 (7%)

### **Other After-School Experiences**

Students reported their involvement in other structured after-school activities (organized sports; school activities such as band, choir, yearbook; and lessons in music, art, dance, sports) and three types of unsupervised after-school settings (home alone after school without an adult there, taking care of a brother or sister after school without an adult there, and hanging out with friends after school without an adult there) at three time points: Fall 2003, Spring 2004, and Spring 2005. Amount of involvement in the activities since the beginning of the applicable semester was reported using 4-point scales (1 = *not at all/once or twice per semester*, 2 = *about once a week*, 3 = *2-3 days a week*, 4 = *4 or more days a week*). We computed mean 2-year participation scores from the data collected at the three time points (Fall 2003, Spring 2004,

Spring 2005) for each type of structured and unstructured activity other than the after-school programs (see Table 3.3). Then, to examine the stability of the participation scores within each activity category, we calculated correlations among scores for each activity across the three time points of measurement (Table 3.4). The small to moderate size of these correlations suggests that participation in various after-school activities and settings is somewhat fluid across a single school year and across school years.

Table 3.3  
*Two-Year Participation in Structured and Unstructured After-School Experiences*

	Elementary students <i>M (SD)</i>	Middle school students <i>M (SD)</i>
Coached sports	1.76 (0.93)	1.83 (0.95)
School-based activities	1.51 (0.77)	1.65 (0.83)
Lessons	2.03 (0.97)	1.90 (0.91)
Home alone	1.43 (0.73)	1.85 (0.96)
Caring for siblings	1.32 (0.63)	1.49 (0.79)
With peers unsupervised	1.49 (0.78)	1.90 (0.97)

*Note.* Scores are mean participation rates at three time points across two school years (1 = not at all/once or twice per semester, 2 = about once a week, 3 = 2-3 days a week, 4 = 4 or more days a week).

Table 3.4  
*Correlations of Program Attendance and Child-Reported Activity Participation Scores Across Time*

	Elementary (N = 1,796)				Middle school (N = 1,118)			
	Fall 2003- Spring 2004	Spring 2004- Spring 2005	Fall 2003- Spring 2005		Fall 2003- Spring 2004	Spring 2004- Spring 2005	Fall 2003- Spring 2005	
Program dosage	.86***	.62***	.56***		.83***	.46***	.40***	
Coached sports	.30***	.40***	.21***		.38***	.42***	.36***	
School-based activities	.19***	.24***	.26***		.28***	.31***	.20***	
Lessons	.23***	.25***	.19***		.25***	.29***	.19***	
Home alone	.26***	.28***	.20***		.45***	.49***	.36***	
Care for siblings	.21***	.22***	.19***		.39***	.47***	.35***	
Unsupervised with peers	.28***	.30***	.23***		.43***	.37***	.29***	

\*\*\*  $p \leq .001$



## Chapter 4

### Measures of Child and Youth Functioning

Measures of student functioning were collected at three time points, in Fall 2003 (baseline), Spring 2004 (intermediate follow-up), and Spring 2005 (longer term follow-up), from multiple sources including classroom teachers, students, and parents (see [www.wcer.wisc.edu/childcare/des3.html](http://www.wcer.wisc.edu/childcare/des3.html) for copies of the measures). This report concerns student outcomes at the longer term follow-up; results of the intermediate follow-up were presented in an earlier report (Vandell, Reisner, et al., 2005). Descriptive statistics for all measures of student outcomes are reported in Table 4.1 at the end of this chapter.

#### Teacher Measures

Teacher surveys were completed by classroom teachers for the elementary school sample, and by language arts teachers for the middle school sample. The surveys were delivered to classroom teachers by mail or in person, and retrieved by mail when completed. We received completed teacher surveys for 82% of the recruited elementary sample at baseline and 68% at the longer term follow-up. For the recruited middle school sample, we received completed teacher surveys for 88% at baseline and 63% at longer term follow-up.

**Work habits.** Teachers completed the six-item Work Habits scale from the *Mock Report Card* (Pierce, Hamm, & Vandell, 1999), a measure of students' classroom work habits, and four additional work habits items developed for this study. Items were rated on a 5-point scale (1 = *very poor*, 5 = *very good*). Sample items from the original scale include "Follows classroom procedures" and "Completes work promptly." The four additional items were "Completes assignments to my satisfaction," "Is attentive in class," "Participates in class," and "Turns in homework promptly." The measure is reliable (Cronbach's alpha = .97-.98) and is related to maternal reports of their children's work habits as well as students' self-reports of academic

competence (Vandell & Pierce, 1998).

**Task persistence.** Teachers completed an adaptation of the eight-item *Self-Efficacy Scale* (Walker & Arbreton, 2004), a student self-report measure. The items were reworded for administration to teachers and rated on a 4-point scale (1 = *not at all true*, 4 = *really true*). Sample items include “This student gives up on things before finishing them” and “This student is unsure about his/her ability to do things.” Several negatively worded items were reverse coded prior to scoring. Cronbach’s alpha was .93.

**Academic performance.** Teachers completed the Academic Performance scale from the *Mock Report Card* (Pierce et al., 1999), a measure that was developed in order to obtain standardized information about students’ academic performance across school districts that utilize different grading systems. Performance in several subject areas was rated on a 5-point scale (1 = *child is performing below grade level*, 5 = *child is performing beyond grade level*). Middle school language arts teachers and elementary classroom teachers rated their students’ performance in reading, oral language, and written language. Elementary teachers also rated performance in math, science, and social studies. An overall academic performance score was computed as the mean of the item scores (Cronbach’s alpha = .95-.96). The validity of this measure has been established in other research, where it was positively correlated with achievement test scores (Vandell & Pierce, 1998).

**Social skills.** Teachers completed the Prosocial Behavior scale from the *Teacher Checklist of Peer Relations* (Coie & Dodge, 1988), a measure of students’ social skills with peers. The seven items are rated on a 5-point scale (1 = *very poor*, 5 = *very good*). Sample items include “Accurately interprets what peers are trying to do” and “Is aware of the effects of his/her behavior on others.” Cronbach’s alpha was .96. Other researchers have reported moderate negative associations between this measure and time sample observations of students’ negative

peer interactions in after-school programs (Pierce et al., 1999).

**Behavior toward peers.** Teachers completed 17 items from the *Child Behavior Scale* (Ladd & Profilet, 1996), a measure of students' aggressive, withdrawn, and prosocial behaviors that are rated using a 3-point response scale (0 = *not true*, 1 = *sometimes true*, 2 = *often true*). The selected items form two scales, **Prosocial with Peers** (8 items; Cronbach's alpha = .92-.93) and **Aggressive with Peers** (9 items; Cronbach's alpha = .93-.95). Sample items measuring prosocial behavior are "Compromises in conflicts with classmates" and "Offers help or comfort when classmates are upset." Sample items measuring aggressive behavior are "Is an aggressive child" and "Annoys or irritates classmates." Ladd and Profilet reported significant correlations of the two scales in the expected directions with observational ratings of students' prosocial and aggressive behavior during free play periods at school, and with withdrawal and aggression scores on the Teacher Report Form (Achenbach, 1991), the teacher version of Achenbach's Child Behavior Checklist.

### **Student Measures**

Elementary and middle school students provided self-reports on their functioning. Surveys were administered to small groups of students by our research staff during the day at school or after school, at both baseline and follow-up. Surveys were administered to students in Spanish as needed, utilizing a back-translated<sup>1</sup> version of the survey. In the recruited elementary sample, 95% completed the baseline survey and 70% completed the longer term follow-up survey. In the recruited middle school sample, 92% completed the baseline survey and 68% the longer term follow-up survey.

**Work habits.** Elementary and middle school students completed an adaptation of the six-

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<sup>1</sup> In back translation, a document that has been translated into another language is translated back into the original language by a different translator. This procedure verifies the quality of the translation from the original language (in this case, English) to the new language (in this case, Spanish).

item Work Habits scale from the *Mock Report Card* (Pierce et al., 1999), a measure of students' classroom work habits initially developed to obtain teacher perceptions of student behavior. The items were reworded for the student self-report and the response scale was modified (1 = *not at all true*, 4 = *really true*). Sample items include "I follow the rules in my classroom" and "I finish my work on time." Cronbach's alphas ranged from .72 to .76 for the elementary school children and .75 to .79 for the middle school youth. In other studies, student reports of work habits, using similar items, were associated with academic performance and school attendance (Walker & Arbreton, 2004).

**Self-efficacy.** Middle school students completed a seven-item modification of the *Self-Efficacy Scale* (Walker & Arbreton, 2004). Sample items include "I give up on things before finishing them" and "I am not sure how good I am at things." The response scale was modified to a 4-point scale (1 = *not at all true*, 4 = *really true*). Negatively worded items were reverse coded prior to scoring. Cronbach's alpha was .63 at baseline and .68 at the longer term follow-up. Walker & Arbreton found that increases in nonfamily adult support (at school and after-school programs) and increases in peer support were associated with increased self-efficacy, which in turn was associated with work habits and grades.

**Misconduct.** Elementary and middle school students completed the 11-item *Misconduct Scale*, an adaptation of the *Self-Reported Behavior Index* (Brown, Clasen, & Eicher, 1986), about their behavior since the start of the school year (Fall 2003 administration) or since January (Spring 2005 administration). The measure utilizes a 5-point response scale (0 = *never*, 4 = *4 or more times a week*). Sample items include "Gotten into a fight at school," "Taken something from a store without paying for it," and "Done something your parents told you not to do." Cronbach's alpha ranged from .82 to .83. Brown et al. reported close correspondence between scores on the *Self-Reported Behavior Index* and reports of misconduct obtained in national

surveys.

**Substance use.** Middle school students completed four items about their use of tobacco, alcohol, marijuana, and other drugs. The items are from the *Self-Reported Behavior Index* (Brown et al., 1986) and were rated using a 5-point scale (0 = *never*, 4 = *4 or more times a week*). Students indicated the frequency with which they used substances since the beginning of the school year (Fall 2003 administration) or since January (Spring 2005 administration). Cronbach's alpha was .83 and .79 for the baseline and follow-up administration, respectively. Brown et al. reported similar percentages of students reporting substance use on the *Self-Reported Behavior Index* as in a national survey of high school students.

### **Parent Measure**

Parent surveys were distributed to students in their school classrooms with instructions to take them home to their parents. Parents returned the completed surveys to the school in a sealed envelope, or mailed the survey directly to the research team using a postage-paid envelope. Parents had the option of completing a Spanish, Portuguese, or Khmer version of the survey, developed using back-translation procedures. Return rates for the parent surveys were 84% for the recruited elementary sample and 87% for the recruited middle school sample at baseline; return rates at the longer term follow-up were 56% and 48%, respectively.

Parents completed the *Child Adjustment Scale* (Santrock & Warshak, 1979), a 35-item measure of children's socioemotional adjustment that utilizes a 4-point response scale. We used 33 items (modified in order to simplify the language) with a 5-point response scale (1 = *hardly ever*, 5 = *almost always*). We created scores for three of the measure's four scales: **Work Habits** (9 items, Cronbach's alpha = .75-.79), **Peer Relations** (13 items, Cronbach's alpha = .64-.76), and **Compliance** (3 items, Cronbach's alpha = .71-.80).

Table 4.1  
*Descriptive Statistics for Outcome Measures*

Scale	Elementary school sample (N = 1,796)						Middle school sample (N = 1,118)						
	Fall 2003			Spring 2005			Fall 2003			Spring 2005			
	n	M	SD	n	M	SD	n	M	SD	n	M	SD	
<b>Teacher report</b>													
Work habits	1-5	1468	3.30	1.10	1222	3.48	1.10	979	3.46	1.13	704	3.53	1.10
Task persistence	1-4	1466	2.89	0.73	1221	2.95	0.72	977	2.96	0.71	704	2.98	0.72
Academic performance	1-5	1463	2.69	0.96	1213	2.93	1.05	977	2.87	1.18	703	3.06	1.19
Social skills	1-5	1465	3.33	0.97	1220	3.55	0.99	950	3.47	0.96	703	3.55	0.97
Prosocial with peers	0-2	1462	1.50	0.49	1220	1.52	0.47	972	1.48	0.48	701	1.45	0.48
Aggressive with peers	0-2	1462	0.30	0.45	1219	0.35	0.49	974	0.27	0.43	701	0.33	0.49
<b>Child/youth report</b>													
Work habits	1-4	1699	3.42	0.56	1255	3.26	0.57	1015	3.21	0.58	754	3.15	0.51
Self-efficacy	1-4							1013	3.16	0.51	754	3.16	0.49
Misconduct	0-4	1705	0.47	0.60	1260	0.53	0.58	1019	0.53	0.56	753	0.63	0.56
Substance use	0-4							1021	0.08	0.34	754	0.13	0.40
<b>Parent report</b>													
Work habits	1-5	1486	3.83	0.62	981	3.91	0.61	950	3.80	0.65	526	3.87	0.62
Peer relations	1-5	1477	4.12	0.46	981	4.17	0.46	954	4.09	0.48	527	4.14	0.47
Compliance	1-5	1507	4.24	0.85	996	4.22	0.80	969	4.06	0.92	535	4.08	0.92

## Chapter 5

### Findings: After-School Experience Clusters

Data analyses proceeded through three steps. First, cluster analyses were conducted to identify groups of students sharing common sets of after-school experiences. Second, we examined the demographic characteristics of the clusters in order to situate the clusters within a broader social-ecological context. Third, the after-school clusters were examined in relation to changes in student functioning from baseline (Fall 2003) to the longer term follow-up (Spring 2005). All analyses were conducted separately for the elementary and middle school samples.

#### Creation of After-School Clusters

We conducted cluster analyses so that we could identify groups of students with similar sets of after-school experiences across two school years (2003-04 and 2004-05). Cluster analysis is a statistical technique that places individual in groups, or “clusters,” based on their scores on a set of variables. A hierarchical agglomerative cluster analysis was carried out using SLEIPNER version 2.1 (Bergman & El-Khoury, 2002; Bergman, Magnusson, & El-Khoury, 2003). Eight measures of after-school experiences were included in the cluster analyses: (1) program status (program group = attended a promising program for 5 or more days in at least one semester; comparison group = attended fewer than 5 days in all semesters); (2) program dosage, based on the number of days attended a selected promising program across the two school years (0 = 0-9 days, 1 = 10-59 days, 2 = 60-119 days, 3 = 120-179 days, 4 = 180 or more days across two school years), and student reports of time spent (3) in coached sports; (4) in school-based activities; (5) in lessons; (6) home alone; (7) caring for siblings; and (8) hanging out with peers without adult supervision. Ward’s method of linkage was employed to identify homogenous clusters using the CLUSTER procedure; misfitting observations were then reclassified using the RELOCATE procedure so that all observations were positioned closest to their nearest cluster.

Similar four-cluster solutions were obtained for the elementary and middle school samples. These clusters correspond to the clusters that were evident in the first year of the study (see Vandell, Reisner, et al., 2005). Mean scores on the clustering variables for each cluster in the elementary and middle school samples are shown in Tables 5.1 and 5.2, respectively.

The first cluster, accounting for 18% ( $n = 310$ ) of the elementary students and 17% ( $n = 178$ ) of the middle school students, was comprised of individuals who had high levels of involvement in both a selected promising after-school program and other extracurricular activities. We labeled this cluster the *program + activities* group. In the second cluster, *program only*, 37% ( $n = 639$ ) of the elementary students and 32% ( $n = 351$ ) of the middle school students were characterized by high attendance at the promising programs but low scores on most of the other measures of after-school experiences. A third cluster, which we labeled *self-care + activities*, contained students who had high levels of time in unsupervised settings (especially hanging out with peers), low levels of attendance at the promising programs, and moderate involvement in other organized activities (primarily coached sports). This cluster included 15% ( $n = 262$ ) of the elementary students and 15% ( $n = 166$ ) of the middle school students. The final cluster manifested relatively low scores on all of the clustering variables; we labeled this cluster *supervised at home*. It included 30% ( $n = 535$ ) of the elementary sample and 36% ( $n = 390$ ) of the middle school sample.

The sensitivity of the four-cluster solution was examined by conducting analyses in an alternative software program, SPSS 11.5, which uses a different starting configuration in performing the cluster analysis. We compared the full sample four-cluster solutions obtained in SLEIPNER with the four-cluster solutions obtained in SPSS using the K-means method. There were minimal differences between the SLEIPNER and SPSS clustering solutions, with classification consistency of .81 for the elementary sample and .94 for the middle school sample.



Table 5.1  
*Means (Standard Deviations) and Percentages on Clustering Variables, Elementary Clusters*

	Program + activities <i>n</i> = 310	Program only <i>n</i> = 639	Self-care + activities <i>n</i> = 262	Supervised at home <i>n</i> = 535	Statistical significance
Group assignment <sup>1</sup>					
Comparison	13 (4%)	0 (0%)	84 (32%)	535 (100%)	$\chi^2_{(3, N=1746)} = 1444.96^{***}$
Program	297 (96%)	639 (100%)	178 (68%)	0 (0%)	
Program dosage <sup>2</sup>	2.99 <sup>a</sup> (1.24)	2.30 <sup>b</sup> (1.26)	1.63 <sup>c</sup> (1.53)	0.00 <sup>d</sup> (0.00)	$F_{(3, 1742)} = 629.85^{***}$
Coached sports <sup>3</sup>	2.31 <sup>a</sup> (1.04)	1.41 <sup>b</sup> (0.63)	2.44 <sup>a</sup> (1.05)	1.51 <sup>b</sup> (0.76)	$F_{(3, 1742)} = 159.30^{***}$
School-based activities <sup>3</sup>	2.61 <sup>a</sup> (0.85)	1.23 <sup>c</sup> (0.40)	1.53 <sup>b</sup> (0.71)	1.18 <sup>c</sup> (0.40)	$F_{(3, 1742)} = 518.20^{***}$
Lessons <sup>3</sup>	3.05 <sup>a</sup> (0.77)	1.73 <sup>c</sup> (0.76)	2.43 <sup>b</sup> (0.98)	1.62 <sup>c</sup> (0.77)	$F_{(3, 1742)} = 264.43^{***}$
Home alone <sup>3</sup>	1.23 <sup>b</sup> (0.46)	1.25 <sup>b</sup> (0.48)	2.47 <sup>a</sup> (0.94)	1.25 <sup>b</sup> (0.51)	$F_{(3, 1742)} = 330.80^{***}$
Home with siblings <sup>3</sup>	1.26 <sup>b</sup> (0.49)	1.16 <sup>c</sup> (0.39)	2.16 <sup>a</sup> (0.89)	1.15 <sup>c</sup> (0.41)	$F_{(3, 1742)} = 270.92^{***}$
Hang out with peers <sup>3</sup>	1.43 <sup>b</sup> (0.60)	1.23 <sup>c</sup> (0.47)	2.62 <sup>a</sup> (0.93)	1.27 <sup>c</sup> (0.54)	$F_{(3, 1742)} = 369.82^{***}$

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

<sup>1</sup> Program group if attended program 5 or more days in at least one semester across two school years.

<sup>2</sup> Program dosage is an ordinal variable: 0 = 0-9 days, 1 = 10-59 days, 2 = 60-119 days, 3 = 120-179 days, 4 = 180 or more days across two school years.

<sup>3</sup> Time spent in other after-school contexts is an ordinal variable representing the mean of scores from Fall 2003, Spring 2004, and Spring 2005: 1 = not at all/once or twice per semester, 2 = about once a week, 3 = 2-3 days a week, 4 = 4 or more days a week.

\*\*\*  
 $p \leq .001$

Table 5.2  
*Means (Standard Deviations) and Percentages on Clustering Variables, Middle School Clusters*

	Program + activities <i>n</i> = 178	Program only <i>n</i> = 351	Self-care + activities <i>n</i> = 166	Supervised at home <i>n</i> = 390	Statistical significance
Group assignment <sup>1</sup>					
Comparison	19 (11%)	0 (0%)	84 (51%)	390 (100%)	$\chi^2_{(3, N=1085)} = 849.17^{***}$
Program	159 (89%)	351 (100%)	82 (49%)	0 (0%)	
Program dosage <sup>2</sup>	2.00 <sup>a</sup> (1.31)	1.77 <sup>b</sup> (1.11)	0.66 <sup>c</sup> (0.89)	0.00 <sup>d</sup> (0.00)	$F_{(3, 1081)} = 331.17^{***}$
Coached sports <sup>3</sup>	2.75 <sup>a</sup> (0.94)	1.57 <sup>c</sup> (0.74)	2.17 <sup>b</sup> (1.03)	1.51 <sup>c</sup> (0.75)	$F_{(3, 1081)} = 115.10^{***}$
School-based activities <sup>3</sup>	2.73 <sup>a</sup> (0.87)	1.41 <sup>c</sup> (0.52)	1.67 <sup>b</sup> (0.76)	1.36 <sup>c</sup> (0.63)	$F_{(3, 1081)} = 194.92^{***}$
Lessons <sup>3</sup>	3.07 <sup>a</sup> (0.68)	1.62 <sup>c</sup> (0.66)	2.10 <sup>b</sup> (0.89)	1.54 <sup>c</sup> (0.72)	$F_{(3, 1081)} = 209.20^{***}$
Home alone <sup>3</sup>	1.65 <sup>b</sup> (0.81)	1.59 <sup>b</sup> (0.79)	3.11 <sup>a</sup> (0.77)	1.64 <sup>b</sup> (0.82)	$F_{(3, 1081)} = 162.76^{***}$
Home with siblings <sup>3</sup>	1.30 <sup>b</sup> (0.49)	1.21 <sup>b</sup> (0.43)	2.88 <sup>a</sup> (0.81)	1.24 <sup>b</sup> (0.46)	$F_{(3, 1081)} = 458.29^{***}$
Hang out with peers <sup>3</sup>	1.76 <sup>b</sup> (0.87)	1.66 <sup>b</sup> (0.80)	2.91 <sup>a</sup> (0.87)	1.75 <sup>b</sup> (0.91)	$F_{(3, 1081)} = 89.77^{***}$

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

<sup>1</sup> Program group if attended program 5 or more days in at least one semester across two school years.

<sup>2</sup> Program dosage is an ordinal variable: 0 = 0-9 days, 1 = 10-59 days, 2 = 60-119 days, 3 = 120-179 days, 4 = 180 or more days across two school years.

<sup>3</sup> Time spent in other after-school contexts is an ordinal variable representing the mean of scores from Fall 2003, Spring 2004, and Spring 2005: 1 = not at all/once or twice per semester, 2 = about once a week, 3 = 2-3 days a week, 4 = 4 or more days a week.

\*\*\*  
 $p \leq .001$

### **Demographic Characteristics of the After-School Clusters**

Our theory of change recognizes that personal and family factors influence child and youth participation in various after-school settings. We considered six demographic factors in relation to cluster membership: child gender, child ethnicity, family structure (two-parent vs. all others), maternal employment status (full time vs. all others), maternal education, and family income. Tables 5.3 and 5.4 provide the demographic characteristics of the elementary and middle school clusters, respectively.

In the **elementary** sample (see Table 5.3), the *program + activities* group had the largest proportion of girls, whereas boys predominated in the *self-care + activities* cluster. Consistent with the study sample, all of the clusters had high proportions of Hispanic students, but the proportions were especially high in the *program + activities* and *supervised at home* groups. The *supervised at home* group contained relatively more children from two-parent households and children whose mothers did not work full time. The *self-care + activities* group had the greatest proportion of mothers who did not graduate from high school. Family income did not differ significantly between the clusters.

In the **middle school** sample (see Table 5.4), the *supervised at home* group had the largest proportion of girls as well as the largest proportion of two-parent households and the smallest proportion of mothers who worked full time. The *self-care + activities* cluster had the highest percentage of mothers who worked full time, and the *supervised at home* and *program only* groups had lower incomes than the other groups. The *program + activities* and *program only* clusters were predominantly Hispanic and had lower proportions of White students. Maternal education did not vary significantly between the clusters.

### **Longer Term Links Between the After-School Clusters and Student Functioning**

In order to examine after-school experiences in relation to longer term student

Table 5.3  
*Percentage Distribution of Elementary School Clusters on Background Variables*

	Program + activities <i>n</i> = 310	Program only <i>n</i> = 639	Self-care + activities <i>n</i> = 262	Supervised at home <i>n</i> = 535
Child gender, $\chi^2_{(3, N=1742)} = 50.01^{***}$				
Female	60	56	33	54
Child ethnicity, $\chi^2_{(9, N=1740)} = 63.66^{***}$				
Asian/other	2	4	2	4
Black	8	9	12	5
Hispanic	80	70	71	85
White	10	17	15	6
Family structure, $\chi^2_{(3, N=1567)} = 15.56^{***}$				
Two parents	59	61	60	71
Maternal employment, $\chi^2_{(3, N=1506)} = 18.47^{***}$				
Full time	45	47	51	36
Maternal education, $\chi^2_{(9, N=1536)} = 20.95^*$				
Did not graduate high school	41	31	43	39
High school diploma/GED	22	30	26	25
Some college	26	31	23	29
4-year college degree	11	8	8	7
Family income, $\chi^2_{(9, N=1504)} = 13.70$				
Less than \$11,000	29	30	34	34
\$11,000-19,999	31	23	22	23
\$20,000-29,999	21	21	22	21
\$30,000 or more	19	26	22	22

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

Table 5.4  
*Percentage Distribution of Middle School Clusters on Background Variables*

	Program + activities <i>n</i> = 178	Program only <i>n</i> = 351	Self-care + activities <i>n</i> = 166	Supervised at home <i>n</i> = 390
Child gender, $\chi^2_{(3, N=1085)} = 10.75^*$				
Female	54	47	52	59
Child ethnicity, $\chi^2_{(9, N=1085)} = 21.06^*$				
Asian/other	8	6	5	7
Black	15	12	19	12
Hispanic	50	55	39	45
White	27	27	37	36
Family structure, $\chi^2_{(3, N=980)} = 14.09^{**}$				
Two parents	65	61	59	73
Maternal employment, $\chi^2_{(3, N=949)} = 13.08^{**}$				
Full time	50	48	61	43
Maternal education, $\chi^2_{(9, N=959)} = 12.23$				
Did not graduate high school	30	30	28	36
High school diploma/GED	25	23	27	27
Some college	28	33	34	27
4-year college degree	17	14	11	10
Family income, $\chi^2_{(9, N=931)} = 21.33^*$				
Less than \$11,000	17	25	20	24
\$11,000-19,999	27	23	16	23
\$20,000-29,999	13	22	18	20
\$30,000 or more	43	30	46	33

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

functioning, we performed a set of hierarchical linear modeling (HLM) analyses. Prior to conducting the HLM analyses, we used a multiple imputation procedure (Rubin, 1987) to address missing data that were due to attrition and failure to complete all assessments. In this procedure, missing data are replaced by a sample of observations drawn randomly from a multivariate distribution fit to the variable and covariates. The advantage of this approach is that all observations are included in the analysis, and missing observations are treated as unknown only to the degree that they cannot be reliably inferred from other variables. Consequently, the potential for bias in the estimated effects due to missing observations is minimized, and the standard errors for model parameter estimates are computed correctly.

Five imputed data sets were created in which different samples were selected for missing observations, utilizing a Markov chain Monte Carlo procedure implemented in LISREL 8.71 (Jöreskog & Sörbom, 2004). The HLM software accommodates the multiple imputation procedure by performing separate analyses on each data set and then pooling results across the analyses.

Following imputation of missing data, two-level random-intercept HLM models were fit in which students (Level 1) were nested within schools (Level 2) for each child and youth developmental outcome. These models allowed us to assess relative change in child and youth performance across 2 years with respect to both school factors and individual factors including sets or clusters of after-school experiences. HLM also accounts for the statistical dependence that emerges among observations collected in multilevel samples, a common source of model misspecification when applying single-level models.

In the HLM analyses, we contrasted the *program + activities* cluster, the *program only* cluster, and the *supervised at home* cluster with the *self-care + activities* cluster in terms of outcomes measured in Spring 2005. These contrasts allowed us to examine whether the selected

after-school programs and enrichment activities would be protective for children and youth who are at risk for social and academic problems. We controlled for a number of personal and family characteristics that potentially influence participation in various after-school settings, including child gender and ethnicity, and family background (family income, family structure, maternal education, and maternal work status). We also controlled for student functioning at baseline (Fall 2003) on each outcome variable, which allowed us to assess relative *change* in functioning across the 2-year period.

Results of the HLM analyses of student-reported outcomes are summarized in Table 5.5 for both the elementary and middle school samples. Analyses of teacher-reported outcomes are reported in Tables 5.6 and 5.7 for the elementary and middle school samples, respectively. Results of the HLM analyses of parent-reported outcomes for both samples are shown in Table 5.8. The coefficients shown in the tables quantify the relative change in the outcomes. A positive coefficient indicates that the students in the indicated cluster (*program + activities*, *program only*, or *supervised at home*) had higher scores on the outcome compared to the *self-care + activities* cluster, whereas a negative coefficient indicates that these groups had low scores relative to the *self-care + activities* students on the outcome.

**Student-reported outcomes.** As shown in Table 5.5, links between the after-school clusters and longer term functioning were found for self-reported work habits and misconduct in both the elementary and middle school samples, and for middle school students' self-reported substance use. **Elementary** students in the *program + activities*, *program only*, and *supervised at home* clusters reported relatively better work habits and relatively less misconduct compared to the *self-care + activities* group. Similar results were observed in the **middle school** sample. When contrasted with the *self-care + activities* group, middle school students in the *program + activities*, *program only*, and *supervised at home* groups reported relatively less

Table 5.5  
*HLM Analyses of Relative Change from Baseline to Second-Year Follow-Up, Student Reports*

	Elementary school		Middle school			
	Work habits	Misconduct	Work habits	Self-efficacy	Misconduct	Substance use
FIXED EFFECT						
Intercept	2.14***	.94***	1.67***	2.12***	.68***	.39***
Gender (1 = female)	.20***	-.26***	.13***	-.01	-.08**	-.01
White	.06	-.16*	-.09	-.07	.09*	.09
Black	-.05	-.17	-.15*	-.03	.17**	.03
Hispanic	-.07	-.13	-.17**	-.08	.12	.06
Family income	-.01	.02*	-.00	.00	.00	-.01
Family structure (1 = two parents)	.02	-.12***	.02	.02	-.05	-.05
Maternal education	-.01	-.00	.04*	.04	-.03**	-.02**
Maternal work (1 = full time)	.06*	.00	-.03	-.03	-.01	.04
Fall 2003 baseline	.27***	.26***	.42***	.30***	.46***	-.09
Program + activities cluster	.20***	-.24***	.13*	.01	-.28***	-.24***
Program only cluster	.12**	-.31***	.08*	-.01	-.24***	-.17***
Supervised at home cluster	.14***	-.31***	.00	.00	-.24***	-.22***
RANDOM EFFECT						
School mean, variance component <sup>1</sup>	.001	.004***	.01***	.001	.003*	.003**
Level-1 effect, variance component <sup>2</sup>	.24	.22	.16	.18	.19	.13

*Note.* Clusters are compared against the *self-care + activities* cluster.

<sup>1</sup> Indicates whether there are differences between schools in terms of degree of change.

<sup>2</sup> Indicates the amount of residual (unexplained) variance within clusters.

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



Table 5.6  
*HLM Analyses of Relative Change from Baseline to Second-Year Follow-Up, Elementary Teacher Reports*

	Work habits	Task persistence	Academic performance	Social skills	Prosocial w/peers	Aggressive w/peers
FIXED EFFECT						
Intercept	1.59***	1.37***	1.18***	1.97***	.91***	.27*
Gender (1 = female)	.27***	.14***	.01	.31***	.17***	-.17***
White	-.38	-.15	-.18	-.41	-.07	.12
Black	-.55*	-.21	-.35*	-.74*	-.23*	.25*
Hispanic	-.49*	-.17	-.32	-.42	-.09	.14
Family income	-.03***	-.00	-.01	-.02	-.00	.01
Family structure (1 = two parents)	.09	.10*	.10	.07	.03	-.04
Maternal education	.03	.01	.01	.03	.00	-.01
Maternal work (1 = full time)	.13	.03	.14**	.07	.02	-.01
Fall 2003 baseline	.57***	.50***	.67***	.48***	.33***	.50***
Program + activities cluster	.27***	.17***	.18*	.23**	.08*	-.11*
Program only cluster	.24***	.13**	.10	.16*	.09*	-.13**
Supervised at home cluster	.26**	.16**	.16**	.24**	.12**	-.14***
RANDOM EFFECT						
School mean, variance component <sup>1</sup>	.02***	.01***	.02***	.01***	.001**	.002***
Level-1 effect, variance component <sup>2</sup>	.61	.31	.53	.58	.15	.15

*Note.* Clusters are compared against the *self-care + activities* cluster.

<sup>1</sup> Indicates whether there are differences between schools in terms of degree of change.

<sup>2</sup> Indicates the amount of residual (unexplained) variance within clusters.

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

Table 5.7  
*HLM Analyses of Relative Change from Baseline to Second-Year Follow-Up, Middle School Teacher Reports*

	Work habits	Task persistence	Academic performance	Social skills	Prosocial w/peers	Aggressive w/peers
FIXED EFFECT						
Intercept	1.23***	1.38***	1.05***	1.36***	.70***	.39***
Gender (1 = female)	.40***	.19***	.24***	.42***	.27***	-.12**
White	.07	-.01	-.11	-.05	-.05	.06
Black	.00	-.03	-.13	-.06	-.08	.18*
Hispanic	-.02	-.03	-.29	-.05	-.04	.07
Family income	.02	.02	.06***	.02	.02	-.01*
Family structure (1 = two parents)	.13*	.09*	-.12*	.05	.08	-.05
Maternal education	-.01	-.00	.05	.05	.01	-.01
Maternal work (1 = full time)	-.02	.00	-.14*	.05	.03	-.06*
Fall 2003 baseline	.52***	.44***	.54***	.45***	.27***	.54***
Program + activities cluster	.05	.12	.13	.03	.02	-.03
Program only cluster	.01	.01	.09	-.04	.03	.02
Supervised at home cluster	-.03	.00	.10	-.02	-.01	-.04
RANDOM EFFECT						
School mean, variance component <sup>1</sup>	.03***	.01***	.05***	.03***	.001**	.004***
Level-1 effect, variance component <sup>2</sup>	.63	.31	.61	.53	.15	.15

*Note.* Clusters are compared against the *self-care + activities* cluster.

<sup>1</sup> Indicates whether there are differences between schools in terms of degree of change.

<sup>2</sup> Indicates the amount of residual (unexplained) variance within clusters.

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

Table 5.8  
*HLM Analyses of Relative Change from Baseline to Second-Year Follow-Up, Parent Reports*

	Elementary school			Middle school		
	Work habits	Peer relations	Compliance	Work habits	Peer relations	Compliance
FIXED EFFECT						
Intercept	1.51***	1.72***	1.91***	1.50***	1.71***	1.61***
Gender (1 = female)	.07*	.08*	.13**	.06	.02	.08
White	-.07	.01	-.15	-.19***	-.17*	-.10
Black	-.01	.02	.02	-.18**	-.18*	-.00
Hispanic	-.12	.04	-.07	-.18**	-.13	-.05
Family income	-.00	-.01	-.00	.02	.01	.02
Family structure (1 = two parents)	.04	-.00	.04	-.06	.01	-.04
Maternal education	-.01	.01	-.02	.01	.01	-.01
Maternal work (1 = full time)	.02	-.06*	.03	.02	.02	-.04
Fall 2003 baseline	.63***	.57***	.50***	.60***	.58***	.56***
Program + activities cluster	.07	.05	.09	.03	.04	.08
Program only cluster	.01	.06	.19***	.06	.04	.22***
Supervised at home cluster	.09*	.05	.21**	.08	.05	.17**
RANDOM EFFECT						
School mean, variance component <sup>1</sup>	.002**	.0006	.001	.001	.0002	.003
Level-1 effect, variance component <sup>2</sup>	.17	.11	.37	.19	.11	.46

*Note.* Clusters are compared against the *self-care + activities* cluster.

<sup>1</sup> Indicates whether there are differences between schools in terms of degree of change.

<sup>2</sup> Indicates the amount of residual (unexplained) variance within clusters.

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

misconduct and substance use at the end of Year 2, controlling for behavior at baseline. Students in the two *program* clusters also reported better work habits relative to students in the *self-care + activities* cluster.

**Teacher-reported outcomes.** Pervasive differences were found in longer term developmental outcomes reported by teachers for the **elementary** sample (see Table 5.6). Students in the *self-care + activities* cluster fared more poorly than all other students in the elementary sample. Students in the *program + activities* cluster, the *program only* cluster, and the *supervised at home* cluster were reported by their teachers to exhibit more positive work habits, task persistence, social skills, and prosocial behavior with peers, and less aggressive behavior with peers, compared to students in the *self-care + activities* cluster. Students in the *program + activities* and *supervised at home* groups also were reported to exhibit better academic performance compared to students in the *self-care + activities* group. Reports from **middle school** language arts teachers (see Table 5.7) did not reveal differences in student functioning between the clusters at the end of Year 2.

**Parent-reported outcomes.** As shown in Table 5.8, parents of both elementary and middle school students reported differences in their children's functioning at the longer term follow-up. **Elementary** students in the *program only* and *supervised at home* groups were reported to be more compliant compared to students in the *self-care + activities* group. Students in the *supervised at home* cluster also were reported to exhibit better work habits at home compared to students in the *self-care + activities* cluster. As in the elementary sample, **middle school** students in the *program only* and *supervised at home* groups were reported by their parents to be more compliant compared to students in the *self-care + activities* cluster.

**Effect sizes.** In order to quantify the effectiveness of the selected after-school programs, other organized activities, and supervision at home on student outcomes relative to being

unsupervised during the after-school hours, we calculated the effect size (Cohen's *d*) for each of the contrasts between the *self-care + activities* cluster and the other clusters. These effect sizes provide information about how well each of the supervised after-school contexts (*program + activities*, *program only*, and *supervised at home*) protected the students from adverse outcomes. An effect size of 0.2 is considered small; 0.5 is of medium or moderate size, and 0.8 is large (Cohen, 1988).

The effect sizes for both the elementary and middle school samples at the end of both the first and second years of the study are shown in Table 5.9. At the end of the first year, when we examined intermediate outcomes, effect sizes ranged from .06 to .58 in the elementary sample and from .00 to .38 in the middle school sample. At the end of the second year, in our examination of longer term outcomes, effect sizes ranged from .01 to .66 in the elementary sample and from .00 to .67 in the middle school sample.

The effect sizes for nearly all the elementary outcomes increased from the first year to the second year, some substantially. For example, in the comparison of the *program + activities* and *self-care + activities* clusters in the elementary sample, the effect size for the teacher report of academic performance more than doubled, from .11 at the end of Year 1 to .25 at the end of Year 2, and the effect size for aggressive with peers was nearly five times as large at the end of Year 2 (-.29) as at the end of Year 1 (-.06). Results were more mixed for the middle school sample. Nonetheless, effect sizes increased from Year 1 to Year 2 for nearly two thirds of the middle school student- and teacher-reported outcomes. For example, in the comparison of the *program + activities* and *self-care + activities* clusters, the effect size for the student report of misconduct more than doubled from the end of Year 1 (-.31) to the end of Year 2 (-.64).

Table 5.9  
*Effect Sizes for the Cluster Comparisons*

	Program + activities vs. self-care + activities		Program only vs. self-care + activities		Supervised at home vs. self-care + activities	
	Elementary	Middle	Elementary	Middle	Elementary	Middle
Student report	1-year effect size	2-year effect size	1-year effect size	2-year effect size	1-year effect size	2-year effect size
Work habits	.36	.41	.17	.24	.19	.29
Self-efficacy	NA	.04	NA	NA	NA	NA
Misconduct	-.43	-.31	-.58	-.66	-.49	-.66
Substance use	NA	-.37	NA	NA	NA	NA
Teacher report	1-year effect size	2-year effect size	1-year effect size	2-year effect size	1-year effect size	2-year effect size
Work habits	.08	.35	.19	.31	.17	.33
Task persistence	.15	.30	.23	.23	.19	.29
Academic performance	.11	.25	.24	.13	.19	.22
Social skills	.10	.30	.18	.21	.23	.32
Prosocial w/peers	.12	.21	.17	.23	.11	.31
Aggressive w/peers	-.06	-.29	-.17	-.34	-.13	-.37
Parent report	1-year effect size	2-year effect size	1-year effect size	2-year effect size	1-year effect size	2-year effect size
Work habits	NA	.17	NA	.01	NA	.22
Peer relations	NA	.15	NA	.17	NA	.15
Compliance	NA	.15	NA	.31	NA	.34

## Chapter 6

### Conclusions

Our objective in this study was to identify after-school programs that, according to criteria established in earlier research (Eccles & Gootman, 2002), offered especially promising environments for the cognitive, social, and emotional development of elementary and middle school youth, then to assess the degree to which young people benefited from participation in these programs. Our initial analyses based on the first year of data and reported in 2005 (Vandell, Reisner, et al.) suggested that focusing solely on attendance at the after-school programs did not adequately reflect the complexity of the after-school lives of many of the study participants. Instead, we discovered that the after-school hours might be better understood as different *sets of experiences*. Through cluster analyses we found that most respondents could be placed in one of four major combinations of activities. Whereas some spent their after-school time in the selected promising after-school programs, others split time between the selected programs and school- or community-based activities. A third group participated in structured activities, but was often unsupervised by adults after school. A final group presumably spent most of their time after school at home, under the care of a parent or adult relative or guardian. There were differences among these groups in the background characteristics of group members: The *supervised at home* group contained relatively more youth from two-parent households and youth whose mothers did not work full time; a disproportionate share of the *program + activities* group members were female.

Our first task in the current report, then, was to determine whether similar groups were evident over the longer period of time of 2 years of study. Cluster analyses again revealed four major groups of respondents in both the elementary and middle school samples. Groups had the same basic configuration as in our initial analyses, namely, a group with comparatively low adult

supervision after school, one that was involved primarily in the selected after-school programs, one that augmented program participation with other structured activities, and a group that spent most of their time at home with adult supervision.

Our earlier assessment of intermediate outcomes suggested that focused participation in promising after-school programs was an especially effective environment for youth. For the longer term outcomes, all three sets of experiences featuring adult supervision were equally distinctive from the *self-care + activities* cluster. It is possible that short-term changes are more likely when elementary school youth spend their after-school time in a consistent environment that features some variety in activities but also stable relationships with a small number of adults. The advantages of such an environment may dissipate over longer periods of time, or as students approach the end of elementary school. If so, then it would be important for communities to strive to offer a variety of after-school options for younger children, so that each child could find the environment or combination of experiences that best fit her or his interests and temperament.

According to our theory of change, we had expected to find stronger effects of after-school experiences over the full, 2-year period of the study than in the initial analyses after the first year. Not only was there more likely to be significant change on outcome measures over this longer time frame, but children and adolescents also were expected to accrue additional benefits from longer participation in various sets of experiences. Analyses generally confirmed this expectation. Effect sizes were larger in assessments of longer term outcomes than in our previous examination of intermediate outcomes. This suggests that structured after-school activities have more than an inoculative effect on youth. That is, although there may be some long-term benefit to involvement in after-school programs for a short period of time (e.g., 1 year), benefits appear to intensify as children and adolescents continue their involvement over a succession of years.

An important challenge for practitioners is to create after-school programs and



environments that will continue to attract young people over longer periods of time. Many of the programs that we studied reported a drop-off in participation of older youth (the later elementary school grades or the latter portion of middle school). Allowing youth to “graduate” into new types of activities or new combinations of programs and activities may help to stem this attrition in participation, thus allowing more youth to benefit from continued involvement in structured after-school settings.

There were two important distinctions in the patterns of findings for our two age groups. The first was that, whereas cluster differences were significant and substantial on teacher-reported outcomes for elementary students, these outcomes did not differentiate groups among middle school respondents. This may be a function of the different organization of instructional experiences in the two age groups. Elementary students spend extended time periods each day with the same teacher, giving that teacher ample opportunity to observe the child’s academic performance and social skills. Middle school students typically spend shorter periods of time with several teachers during a day, and most teachers are likely to have little contact with a student outside of one or two classroom periods. As a result, middle school teachers may not have a broad enough base of experience to accurately judge a given student’s academic or social behaviors.

A second distinction between the two age groups was not as striking but still noteworthy. For elementary students, although the *self-care + activities* group fared worse on longer term outcomes than all three other groups, the advantages of being in one group or another were dependent on the particular outcome. For example, the *program + activities* group experienced larger relative gains in work habits but smaller reductions in misconduct compared to the *program only* and *supervised at home* groups. Among middle school youth, the disadvantage for those in the *self-care + activities* group was consistently more pronounced in comparison to

peers in the *program + activities* group than the other two clusters—at least for self-reported outcomes concerning work habits and misbehavior. In other words, for middle school students there was a slight advantage to combining program attendance with participation in other activities, rather than being involved only in a promising after-school program or being supervised at home. The modest differences are consistent with assertions that early adolescence is an important time for self-discovery and experimentation (Eccles et al., 1993). Curiously, however, this distinction among groups did not extend to outcomes rated by parents, in which, if anything, the *program + activities* group was less advantaged from the *self-care + activities* group than were members of the other two clusters.

Among both age groups the strongest effects of after-school experiences were observed for measures of misbehavior: general misconduct and, for the older youth, drug use. The finding is reminiscent of the aphorism, “idle hands are the devil’s playground,” although it might be more accurate to proclaim that unsupervised, rather than idle, hands are the source of more troublesome changes across time in problem behavior. This finding is consistent with an extensive literature on the benefits of adequate parental monitoring of youth (Patterson & Stouthamer-Loeber, 1984; Steinberg, 2000), but it also affirms the principles of social control theory (Hirschi, 1969), which postulates that an effective way to stem young people’s drift into delinquency is to create bonds with conventional social institutions and caring adults who can model and reinforce socially acceptable behavior patterns. Absent these connections, young people are likely to nurture affiliations with similarly disconnected, deviantly oriented peers, who reward antisocial more than conventional behavior.

It is important to note, however, that members of the *self-care + activities* group were probably not bereft of adult contact after school. In fact, they had reasonably high rates of participation in school- or community-based activities (other than the selected after-school

programs). For these youth the problem may not be the absence of adult contact but, rather, the absence of *consistency* in relationships with adults. Without consistent contact with caring, stable adults, young people cannot easily bond with conventional social institutions that can reinforce prosocial behavior patterns (Hirschi, 1969). Thus, the challenge in working with students in the *self-care + activities* group is not so much to initiate contact with adults and structured activities as to build on affiliations already occurring. The goal would be to alter their set of after-school experiences from sporadic to more stable, sustained interactions with adults and peers in supervised settings.

Our study focused on economically disadvantaged youth, most of whom were from ethnic minority backgrounds. We do not know whether the same sets of experiences would emerge among children and adolescents in higher social status groups, or whether the comparison groups would be distinctive in the same ways. Our findings, however, offer compelling evidence of the benefits accrued from participation in high-quality after-school programs, community activities, or supervised home settings for youth from economically disadvantaged families. They emphasize the importance of variety in the types of activities available to these young people after school and underscore the need for strong coordination among leaders of various programs so that families can construct an effective set of experiences that can foster the healthy development of their children.

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