

# **Outcomes Linked to High-Quality Afterschool Programs: Longitudinal Findings from the Study of Promising Afterschool Programs**

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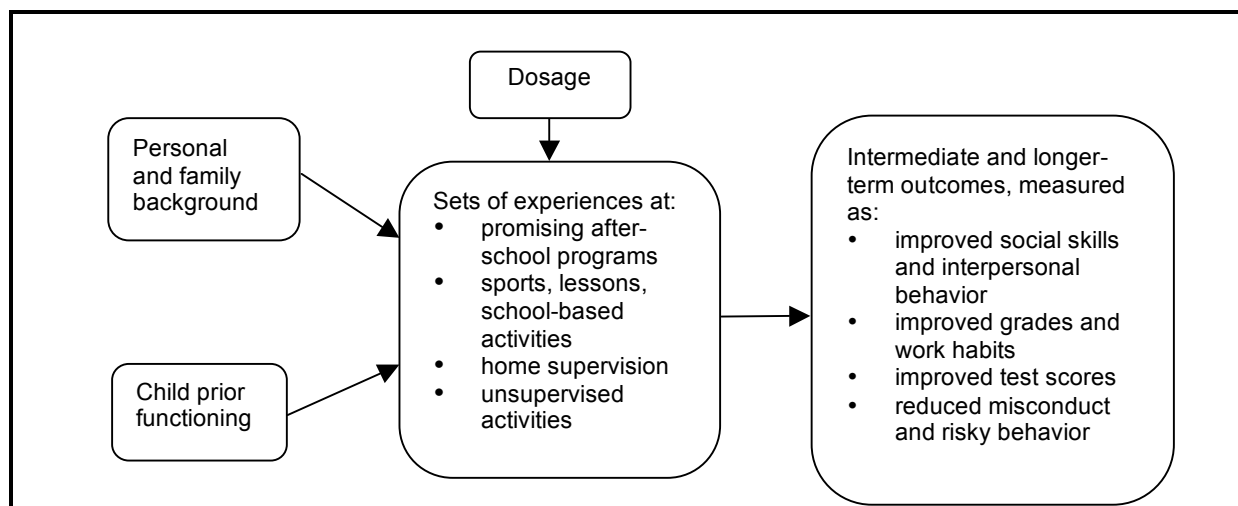
## Summary

A new study by researchers at the University of California, Irvine, the University of Wisconsin-Madison and Policy Studies Associates, Inc. finds that regular participation in high-quality afterschool programs is linked to significant gains in standardized test scores and work habits as well as reductions in behavior problems among disadvantaged students. These gains help offset the negative impact of a lack of supervision after school. The two-year study followed almost 3,000 low-income, ethnically diverse elementary and middle school students from eight states in six major metropolitan centers and six smaller urban and rural locations. About half of the young people attended high-quality afterschool programs at their schools or in their communities.

## Background on the Study

The Study of Promising Afterschool Programs was designed to examine relations between high-quality afterschool programs and desired academic and behavioral outcomes for low-income students. The study was grounded in an assets orientation, which understands that all young people, including those living in poverty, have capacities to make healthy, positive choices if given the opportunity. The research team reviewed previous research on child and youth development in order to depict the processes that lead to positive student outcomes, as shown in Exhibit 1.

### Exhibit 1 Theoretical Linkages between Afterschool Experiences and Student Outcomes in the Elementary and Middle Grades



***Program Characteristics.*** The study's research team identified over 200 candidate programs from a review of published materials, recommendations from afterschool experts, and evidence from evaluations. Through telephone interviews, document reviews, and site visits, team members screened the programs to narrow the list. As a final step, researchers conducted on-site interviews and quality-verification observations to confirm the quality of the 35 programs selected for the research study. Nineteen programs served elementary school students; 16 programs served middle school students. Programs were based either in schools or in community centers that coordinated with nearby schools. Study sites were geographically diverse and included: Aurora, CO; Baldwin, MI; Bridgeport, CT, Central Falls, RI; Denver, CO; Los Angeles, CA; Missoula, MT; New York, NY; Oakland, CA; Pawtucket, RI; Salem, OR; San Diego, CA; San Ysidro, CA; Seaside, CA. All programs served high concentrations of ethnically diverse, low-income youth in high-poverty communities.

The programs offered services four or five days a week and were free of charge to students. Program leaders expected students to participate regularly throughout the school year. Each of the selected programs served at least 30 students in one or both of the two age groups studied, elementary school children in third or fourth grade and middle school youth in sixth or seventh grade.

The programs had strong partnerships with neighborhoods, schools, and community organizations. These partnerships were instrumental in ensuring that the afterschool organizations were well established in their communities and were likely to continue operation over the two-year study period.

Because the study was designed to assess the effects of high-quality programs, the research team verified each program's continuing quality during annual visits to conduct interviews and observe youth activities. Using a rating system, researchers assessed programs based on evidence of supportive relationships between staff and child participants and among participants, and on evidence of rich and varied academic support, recreation, arts opportunities, and other enrichment activities. Ratings were consistently positive. Students typically were highly engaged with one another and with program activities, and group leaders structured activities to maximize learning and positive relationships. Adults facilitated activities without imposing controls that limited student learning opportunities. Disruptive or chaotic behavior was rarely observed; when behavioral disruptions occurred, leaders managed them calmly and constructively.

Through a mix of academic enrichment, recreational, arts, and other activities, programs were observed to nurture positive interpersonal relationships among students and to actively engage them. Programs offered age-appropriate learning opportunities, including tutoring and games designed to improve math and reading skills, plus recreational activities, community-based service and other experiences, and arts opportunities. Program staff was trained and, in surveys, expressed satisfaction with their working environment. Programs maintained low youth-to-staff ratios and strong connections with partner schools and with parents.

***Student Characteristics.*** A total of 2,914 students (1,796 elementary school and 1,118 middle school) were studied. At recruitment, the elementary sample was in either third or fourth grade, and the middle school sample was in either sixth or seventh grade. The elementary sample was 47% male and 89% received free or reduced-price lunch at school; 88% were students of color (77% Hispanic, 8% Black, 3% Asian). 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 was 47% male and 63% received free or reduced-price school lunch; 69% were students of color (49% Hispanic, 13% Black, 7% Asian). Mothers had about the same level of educational attainment as the elementary group, and average annual family incomes were in the \$20,000 to \$25,000 range. The characteristics of the study participants mirrored the characteristics of the schools they attended.

At the end of the second year, 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.

***Participation in Afterschool Programs and Other Activities.*** Initially the research team sought high-quality afterschool programs that operated as stand-alone programs. They soon found, however, that many students sampled for the research were participating in multiple afterschool experiences in addition to those provided in the sampled programs. Students were also spending time supervised at home, and some spent substantial time with no adult supervision at all.

High-quality afterschool programs were a significant resource for the students, but they sometimes competed to attract students who also had access to community centers, sports teams or leagues, and churches and other faith-based organizations that hosted recreational programs, tutoring, and religious lessons. Also, through provisions of the No Child Left Behind Act, many low-performing schools extended the school day with supplementary academic support programs. Other options for students at the close of the school day were homes with no adult present in the afterschool hours as well as street corners, shopping malls, and other unsupervised settings.

Over the two-year period, 54% of the children in the elementary school sample routinely participated in one of the high-quality afterschool programs, typically attending the programs for 2-3 days a week. Most program children (about two-thirds) did not participate in other activities after school and were categorized ***Program Only***. One-third of the program children, however, attended the programs for 2-3 days a week while also participating in other activities (organized sports, church, Boys and Girls Club, etc.). This group of children was categorized ***Program Plus***. About 15% of the elementary school children spent 1-3 days a week unsupervised by adults after school, and dropped in sporadically on a mix of sports, school-based activities, and academic, arts, or religious lessons. This group was categorized as ***Low Supervision***.

Almost half (49%) of the middle school sample routinely participated in one of the high-quality afterschool programs. Similar to the elementary sample, two-thirds of the program group in middle school could be categorized as ***Program Only***. And, one-third of the program group in middle school participated in additional activities and were categorized as ***Program Plus***.

Sixteen percent of the middle school youth were categorized as *Low Supervision* after school.

**Child Outcome Measures.** Classroom teachers and participating youth completed surveys to measure the social functioning (social skills with peers, pro-social conduct with peers), academic (grades, task persistence, work habits) and behavioral problems (misconduct, substance use, aggression) of study participants. Standardized test scores in reading and math were collected on each child through agreements with participating school systems. Data on sampled students were collected at three points over a two-year period: baseline, end of Year 1, and end of Year 2.

**Analytic Strategy.** Prior to conducting the primary substantive analyses, a multiple imputation procedure was used to address missing data 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. Ten imputed data sets were created in which different samples were selected for missing observations, utilizing a Markov chain Monte Carlo procedure implemented using the SAS v9.1 PROC MI.

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 researchers to assess change scores in child and youth performance across two years with respect to both school factors and individual factors including sets or clusters of afterschool 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, researchers contrasted changes in scores from baseline to Year 2 for the *Program Plus* vs. *Low Supervision* groups and *Program Only* vs. *Low Supervision* groups. These contrasts allowed researchers to examine whether the selected afterschool programs and enrichment activities were protective for children and youth who are at risk for social and academic problems. Researchers controlled for a number of personal and family characteristics that potentially influence participation in various afterschool settings, including child gender and ethnicity, and family background (family income, family structure, maternal education, and maternal work status). Analyses were conducted separately for the elementary and middle school samples.

In order to evaluate the meaningfulness of findings that were statistically significant, effect sizes were calculated and compared to effects from other studies. An effect size is a statistical tool that is useful in interpreting the magnitude of the difference between two measures. Unlike a test of statistical significance, the effect size is not affected by the size of the samples assembled for the study. For readers to understand the relative magnitude of the effect sizes of the findings reported below, the following benchmarks based on other recent studies may be useful:

- A study of the impact of instruction by Teach for America teachers on math achievement found an effect size of .15 on math scores after a year of participation in a classroom led by a Teach For America teacher (Decker, Mayer, & Glazerman, 2004).
- A study of the impact of the reduction in class size in elementary classrooms by eight students per class found an effect size of .23 on math scores after one year (Finn & Achilles, 1999).
- In a review of four studies of afterschool programs, Kane (2004) concluded that the expected impact of an extra hour of instruction delivered in an afterschool setting over a school year equals an effect size of .05 in reading and math.
- An evaluation of the 21<sup>st</sup> Century Community Learning Centers Program in Louisiana found that the impact of this afterschool program was an effect size of .13 on a combined measure of reading, math, and language test scores (Jenner & Jenner, 2007).

## Findings

Exhibit 2 summarizes the results of the statistical analyses.

### *Outcomes of Elementary School Students*

#### *Academic Outcomes*

- Elementary school students who regularly attended the high-quality afterschool programs (alone or in combination with other activities) across two years demonstrated significant gains in standardized math test scores, compared to their peers who were routinely unsupervised during afterschool hours. Regular participation in the programs was associated with gains of 20 percentiles in math achievement test scores over the two-year period for the Program Plus group relative to the Low Supervision group (effect size = .73) and 12 percentiles for the Program Only group relative to the Low Supervision group (effect size = .52.)
- Program Only and Program Plus students also posted gains in teacher reports of work habits (effect sizes of .31 and .35, respectively) and task persistence (.23 and .30, respectively) over the two-year period. The students also reported gains in their work habits (effect sizes = .24 to .41). These gains in work habits and task persistence may have provided important support that contributed to the gains in math achievement.

#### *Social and Behavioral Outcomes*

- Program Only and Program Plus students posted significant gains in teachers' reports of students' social skills with peers (effect sizes = .21 to .30) and pro-social behaviors (effect sizes = .21 to .23). Program Only and Program Plus students also posted significant reductions in aggressive behaviors with peers (effect sizes = .29 to .34).

- Reductions in elementary students' reports of misconduct (e.g., skipping school, getting into fights) over the two-year period were reported by the Program Only and Program Plus groups, relative to unsupervised students (effect sizes of .66 and .51, respectively).

### ***Outcomes of Middle School Students***

#### *Academic Outcomes*

- Middle school students who regularly attended the high-quality afterschool programs (alone or in combination with other activities) across two years demonstrated significant gains in standardized math test scores, compared to their peers who were routinely unsupervised during afterschool hours. Regular participation in the programs was associated with gains of 12 percentiles in math achievement test scores over the two-year period, relative to students who were routinely unsupervised after school. These gains generated effect sizes of .57 for the Program Plus group and .55 for the Program Only group, relative to the Low Supervision group.
- Middle school students who regularly participated in high-quality afterschool programs had significant gains in self-reported work habits, relative to unsupervised students (.33 for Program Plus and .20 for Program Only).

#### *Social and Behavioral Outcomes*

- Reductions in misconduct over the two-year period were reported by Program Plus and Program Only middle school students, relative to the Low Supervision group (effect sizes of .64 and .55, respectively).
- Middle school students who regularly participated in afterschool programs also reported reduced use of drugs and alcohol, compared to those in the Low Supervision group. The effect sizes (.47 for Program Only and .67 for Program Plus) are four to six times larger than those reported in a recent meta-analysis of school-based substance abuse prevention programs aimed at middle school students.

## Conclusion

This study found positive outcomes among youth who regularly attended high-quality afterschool programs, either alone or in combination with varied sets of additional enrichment experiences available in their neighborhoods. In contrast, low supervision coupled with intermittent participation in an unstructured program of extra-curricular activities posed developmental risks to both elementary school and middle school youth.

The study focused on economically disadvantaged, minority youth, many of whose families were recent immigrants. The research team could not know for certain whether the same sets of experiences and outcomes would characterize youth in different cultural groups. The findings, however, demonstrate the benefits of continuous participation in high-quality afterschool programs, community activities, and supervised home settings for youth from economically disadvantaged families.

These findings suggest that plans for high-quality afterschool programming should span entire communities. When communities and program providers unite to recruit and engage young people in high-quality afterschool experiences, programs can provide the types of benefits described here for the largest number of students. As found in this research, a lack of supervision after school is associated with seriously negative outcomes for disadvantaged youth. Working together, youth-service providers, schools, local governments, and civic organizations can reach out to youth who would otherwise be unsupervised after school and can match them with organized, adult-supervised activities in the afterschool hours.

## References

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**Exhibit 2**  
**Effect Sizes for Statistically Significant Changes from Baseline to Year 2**

Student Outcomes	Program + Activities vs. Low Supervision		Program Only vs. Low Supervision	
	Elementary	Middle	Elementary	Middle
Achievement test scores				
Math	.73	.57	.52	.55
Reading				
Student report				
Work habits	.41	.33	.24	.20
Misconduct	-.51	-.64	-.66	-.55
Substance use		-.67		-.47
Teacher report				
Academic performance	.25			
Work habits	.35		.31	
Task persistence	.30		.23	
Social skills with peers	.30		.21	
Prosocial with peers	.21		.23	
Aggressive with peers	-.29		-.34	

*Note:* An empty cell (e.g., reading achievement test scores) indicates that the finding did not meet the study's baseline criteria for reporting (statistical significance and effect size of .20 or -.20 or larger). Shading indicates that the outcome was not measured for that group.