



EDUCATION

The Value of Out-of-School Time Programs

Appendix

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Appendix

To examine the evidence base on OST programs and better understand the possible effects of programs, we reviewed meta-analyses and large-scale, rigorous experimental and quasi-experimental evaluations of after-school and summer programs. We focused primarily on recent (from 2000 on) evaluations of multipurpose programs. Here, we provide a complete list of studies reviewed and their key findings. Findings are categorized as:

- Positive: A desired outcome and statistically significant at the 0.05 level.
- Negative: A nondesirable outcome and statistically significant at the 0.05 level.
- Null: Outcome that was not statistically significant at the 0.05 level.

Note that most reviewed studies were not corrected for multiple hypothesis testing.

Table A.1. Key Studies Reviewed (Multipurpose Programs)

Program Evaluation	Research Design	Program Activities	Frequency	Primary Outcomes Examined	Secondary Outcomes Examined
<p><i>When Schools Stay Open Late: The National Evaluation of the 21st Century Community Learning Centers Program: First Year Findings</i> (Dynarski et al., 2003)</p>	<p>Random assignment of two cohorts of elementary school students that applied to oversubscribed 21st CCLC to treatment and comparison groups</p> <p>Propensity Score Matching (PSM) was used to determine comparison groups of middle school students who never attended 21st CCLC</p>	<p>Varied by center and typically included</p> <ul style="list-style-type: none"> • 45 minutes of academic assistance (i.e., homework help and other services, such as tutoring, teaching test skills, and computer-based instruction) • Recreation activities (sports, dance, drama, martial arts); cultural enrichment activities (e.g., Japanese, photography, drama); interpersonal development (e.g., leadership, conflict resolution) 	<p>Elementary school programs were typically open five days a week for 2.5 hours each day throughout school year</p> <p>Middle school centers were typically open four days a week for 2.5 hours each day throughout school year</p>	<p>Supervision</p> <ul style="list-style-type: none"> • Positive: Nonparent adult care and reduced sibling and parental care • Positive: Amount of time students spent at school during after-school hours and decrease in time being at the home of others after school (middle school only) • Negative: Increase in having one's property damaged on purpose (middle school only) • Null: Self-care <p>Opportunities</p> <ul style="list-style-type: none"> • Positive: Students reporting that they engaged in academic activities after school (middle school only) • Positive: Students reporting that they engaged in nonacademic activities (e.g., band, drama, organized sports) (middle school only) • Null: Students' activities after school (elementary school only) <p>Homework</p> <ul style="list-style-type: none"> • Positive: Teachers reporting that student completes assignment to satisfaction (middle school only) • Null: Teachers reporting that students were likely to complete their homework often and to be prepared and ready to learn in class (middle school only) 	<p>Noncognitive, Developmental</p> <ul style="list-style-type: none"> • Positive: Students reporting having helped another student after school (elementary school only) • Positive: Students who think they will graduate from college (middle school only) • Positive: Students who think they will graduate from high school but not college (middle school only) • Negative: Students working out their own conflicts (middle school only); parents reporting that their child works hard at school (elementary school only) • Null: Feelings of school safety • Null: Social engagement (e.g., how well students get along with others and how easily they can make and keep friends) (middle school only); peer interaction and empathy; parents reporting that their child worked hard at school (middle school only); interpersonal skills (e.g., getting along with others their age, working with others) <p>Behavior</p> <ul style="list-style-type: none"> • Positive: Teachers reporting that students usually try hard in reading or in English (elementary school only); effort in school (middle school only) • Positive: School day attendance (middle school only) • Positive: Reduced school tardiness (middle school only) • Negative: Increase in negative behavior (e.g., stealing, selling illegal drugs, getting arrested) (middle school only) • Null: School behavior problems, such as skipping school and receiving detention (middle school only); suspensions, absences, tardiness, and other disciplinary problems (elementary school only) <p>Academic Achievement</p> <ul style="list-style-type: none"> • Positive: Social studies grade (elementary school only) • Positive: Mathematics achievement (middle school only) • Null: Reading and math achievement (elementary school only); English, science, social studies, and history achievement (middle school only)

Program Evaluation	Research Design	Program Activities	Frequency	Primary Outcomes Examined	Secondary Outcomes Examined
<p><i>When Schools Stay Open Late: The National Evaluation of the 21st Century Community Learning Centers Program: New Findings</i> (Dynarski et al., 2004)</p>	<p>See Dynarski et al., 2003</p>	<p>See Dynarski et al., 2003</p>	<p>See Dynarski et al., 2003</p>	<p>Supervision</p> <ul style="list-style-type: none"> • Positive: Decrease in sibling care • Positive: Increase in nonparent adult care • Positive: Amount of time students spent at school or another place outside of school during the after-school hours and decrease in time spent at home during after-school hours (elementary school only) • Positive: Decrease in students reporting not feeling safe after school (elementary school only) • Negative: Increase in having one's property damaged on purpose (middle school only) • Null: Feeling safe after school (middle school only) • Null: Self-care <p>Homework</p> <ul style="list-style-type: none"> • Negative: Teachers reporting that students complete their homework often (elementary school only) • Null: Amount of time spent on homework and homework completion <p>Parental Employment</p> <ul style="list-style-type: none"> • Positive: Mothers reporting labor force participation <p>Opportunities</p> <ul style="list-style-type: none"> • Positive: Tutoring, lessons, clubs (elementary school only) • Positive: Decrease in caring for siblings (elementary school only) 	<p>Parent Involvement</p> <ul style="list-style-type: none"> • Positive: Parent participation (e.g., attending an open house, parent-teacher conference, a school event) • Positive: Parents assisting their child with classwork and homework (elementary school only) <p>Noncognitive, Developmental</p> <ul style="list-style-type: none"> • Positive: Students reporting having helped another student after school (elementary school only) • Positive: Increase in students who think they will graduate from college (middle school only) • Null: Students' social and interpersonal skills (e.g., getting along with other students their age, working with others, or sticking to their beliefs) (elementary school only) • Null: Effort in school <p>Behavior</p> <ul style="list-style-type: none"> • Positive: Increase in attendance (middle school only) • Negative: Increased negative behavior (e.g., stealing, selling illegal drugs, getting arrested) (middle school only) • Null: Preparedness (elementary school only) • Null: Absenteeism (elementary school only) • Null: Student discipline (middle school only) <p>Academic Achievement</p> <ul style="list-style-type: none"> • Positive: Social studies grades (middle school only) • Null: Math, English, science, and social studies grades and/or achievement (elementary school only) • Null: Math, English, and science grades and/or achievement (middle school only) <p>Parent Involvement</p> <ul style="list-style-type: none"> • Positive: Parent attending an after-school event; helping students with homework; and asking their child about class (elementary school only) • Null: Parental attendance at school open houses, parent-teacher organization meetings, or how much parents volunteered at school • Null: Parents assisting child with homework (middle school only)

Program Evaluation	Research Design	Program Activities	Frequency	Primary Outcomes Examined	Secondary Outcomes Examined
<i>When Schools Stay Open Late: The National Evaluation of the 21st Century Community Learning Centers Program: Final Report</i> (James-Burdumy et al., 2005)	Follow-up on Dynarski et al., 2003; this report examines the two-year effects on the combined cohorts of elementary school students	See Dynarski et al., 2003	See Dynarski et al., 2003	<p>Supervision</p> <ul style="list-style-type: none"> • Positive: Increase in nonparental adult care and decrease in parent and sibling care • Positive: Amount of time students spent at school or in another place outside of home during the after-school hours • Null: Self-care • Positive: Students reporting feeling safe after school (elementary school only) • Null: Students reporting feeling safe after school (middle school only) <p>Homework</p> <ul style="list-style-type: none"> • Null: Homework completion or completing assignment to teacher's satisfaction (elementary school only) <p>Parental Employment</p> <ul style="list-style-type: none"> • Null: Mothers worked or were looking for work <p>Opportunities</p> <ul style="list-style-type: none"> • Positive: Tutoring 	<p>Noncognitive, Developmental</p> <ul style="list-style-type: none"> • Positive: Students who think they will graduate from college (middle school only) • Negative: Students' ability to work with others (elementary school only) • Negative: Student effort • Null: Reporting getting along with other students their age, working with others, sticking to their beliefs, setting goals, and helping other students (elementary school only) <p>Student Behavior</p> <ul style="list-style-type: none"> • Positive: Decrease in absenteeism (middle school only) • Negative: Students engaging in negative behavior (middle school only) • Negative: Student discipline • Null: Teachers reporting sending students to the office for misbehaving or giving students detention (elementary school only) • Null: Absenteeism and preparation for class (elementary school) <p>Academic Achievement</p> <ul style="list-style-type: none"> • Null: Reading, math, English, and social studies (elementary school only) <p>Parent Involvement</p> <ul style="list-style-type: none"> • Null: Parental involvement
"Effects of Participation in After-School Programs for Middle School Students: A Randomized Trial" (Gottfredson et al., 2010)	Random assignment of middle school students (grades 6–8) to treatment and comparison groups	<ul style="list-style-type: none"> • Three hours on prevention education, academic assistance (i.e., homework assistance and workbooks each week) • Six hours on recreation each week 	Students in treatment were offered nine hours of after-school programming across three days of each week; 96 days of programming offered	<p>Safety and Supervision</p> <ul style="list-style-type: none"> • Positive: Decreases in the number of days of unsupervised socializing 	<p>Academic Achievement</p> <ul style="list-style-type: none"> • Null: Reading and mathematics <p>Student Behavior</p> <ul style="list-style-type: none"> • Null: Conduct problems <p>Noncognitive, Developmental</p> <ul style="list-style-type: none"> • Null: Prosocial/antidrug attitudes, social competence, positive peer influence, social competence, school bonding, or positive peer influence
<i>Washington 21st Century Community Learning Centers Program Evaluation: 2012–13 and 2013–14</i> (Naftzger et al., 2015)	PSM	Varied by center and included <ul style="list-style-type: none"> • Academic enrichment learning programs • Recreational activities • Homework help • Other activities 	On average, 4.4 days of programming per week, or 11.9–13.4 hours per week, for 32 weeks during school year		<p>Attendance Mediators</p> <ul style="list-style-type: none"> • Students with 30+ or 60+ days had improved student behavior, grades, and academics

Program Evaluation	Research Design	Program Activities	Frequency	Primary Outcomes Examined	Secondary Outcomes Examined
<i>Texas 21st Century Community Learning Centers: 2012–2013 and 2013–2014 Combined Evaluation</i> , (Devaney et al., 2015)	PSM	Varied by center and included <ul style="list-style-type: none"> • Academic enrichment learning programs • Recreational activities • Homework help • Other activities 	Not reported		Attendance Mediators <ul style="list-style-type: none"> • Students with 30+ or 60+ days had improved student behavior, grades, and academics
<i>Texas 21st Century Community Learning Centers: 2014-2015</i> (Devaney et al., 2016)	PSM	Varied by center and included <ul style="list-style-type: none"> • Academic enrichment learning programs • Recreational activities • Homework help • Other activities 			Attendance Mediators <ul style="list-style-type: none"> • Students with 30+ or 60+ days had improved academic achievement and student behavior

Table A.2. Key Studies Reviewed (Academic Programs)

Program Evaluation	Research Design	Program Activities	Frequency	Significant Primary Outcomes Examined	Significant Secondary Outcomes Examined
<p><i>Achieving Academic Success After School: A Randomized Evaluation of the Higher Achievement Program</i> (Linden, Herrera, and Grossman, 2011)</p> <p>and</p> <p><i>Staying On Track: Testing Higher Achievement's Long-Term Impact on Academic Outcomes and High School Choice</i> (Herrera, Grossman, and Linden, 2013)</p>	<ul style="list-style-type: none"> • Random assignment of three cohorts of fifth- and sixth-graders into the program, and follow-up one, two, and four years after baseline 	<ul style="list-style-type: none"> • Higher Achievement is year-round program serving disadvantaged but academically motivated fifth- and sixth-graders for three or four years, respectively, through Afterschool Academy and Summer Academy 	<p>Afterschool Academy runs 3:30–8:00 p.m. three days a week over 25 weeks; Summer Academy runs 8 a.m.–4 p.m. five days a week for six weeks</p>	<p>Academic Achievement</p> <ul style="list-style-type: none"> • Positive: Math test scores after two and four years • Positive: Reading test scores after two years • Null: Reading after four years <p>School Selection</p> <ul style="list-style-type: none"> • Positive: Student expression of interest to go to more-competitive high schools after two or three years (depending on the cohort) • Positive: Parent reporting of child matriculating in private schools and decreases in parent reporting of child matriculating in noncompetitive charter or magnet schools <p>School Selection</p> <ul style="list-style-type: none"> • Positive: Increase in students visiting high schools, getting more information about a high school, talking with nonparental adults and peers about high school, and deciding where to apply 	<p>Noncognitive, Developmental</p> <ul style="list-style-type: none"> • Negative: Decreases in self-reports of persistence, certainty, enjoyment of learning, and curiosity after one year • Negative: Decrease in students' perceptions of their academic abilities after one year • Null: Students' perceptions of their academic abilities after two years • Null: Self-reports of persistence, certainty, enjoyment of learning, and curiosity after two years <p>Student Behavior</p> <ul style="list-style-type: none"> • Negative: Increases in self-report of general misconduct (e.g., having broken something on purpose) and school-related misconduct (e.g., being sent to the principal's office) after one year and two years • Null: No impact in how academically supportive students perceived peers to be • Null: No impact on whether students had helped their peers with their schoolwork, presented their ideas in front of a group of peers, gotten praise from their peers for their achievements, or talked with their peers about a math or science project outside of school • Null: No impact on students' perceptions on the amount of support they received from adults and peers after two years <p>Parental Involvement</p> <ul style="list-style-type: none"> • Positive: Increase in parent reporting that they spent time on child's high school applications • Positive: Increase in youth reporting that parents provided help in test preparation and applying for financial aid

Program Evaluation	Research Design	Program Activities	Frequency	Significant Primary Outcomes Examined	Significant Secondary Outcomes Examined
<p><i>The Evaluation of Academic Instruction in After-School Programs: Findings After the First Year of Implementation</i> (Black et al., 2008)</p> <p>and</p> <p><i>The Evaluation of Academic Instruction in After-School Programs: Final Report</i> (Black et al., 2009)</p>	<ul style="list-style-type: none"> • Random assignment of students in grades 2–5 to treatment or comparison groups to estimate the ITT effects of treatment (Black et al., 2008) • Study extended for one year to estimate ITT effects of two years of treatment (Black et al., 2009); a subset of year one study participated in this year two study • Year two report has two cohorts with one year of treatment, and a two-year sample with two years of treatment 	<ul style="list-style-type: none"> • Both treatment and comparison groups attended after-school programs for two to three hours, but students in treatment were offered 45 minutes of formal academic instruction, compared with unstructured academic support • Treatment was either an enhanced math program, Mathletics, developed by Harcourt School Publishers, or an enhanced reading program, Adventure Island, developed by Success for All Foundation 	<p>Treatment is, on average, about 180 minutes per week across three or four days; math program offered, on average, for 95 days during school year; reading program was offered between 70 and 90 days</p>	<p>Academic Achievement</p> <ul style="list-style-type: none"> • Positive: Increased math test scores after one year for the first study and both cohorts in the extended study • Null: No impact on reading test scores after one year for the first study • Positive: Increases in oral fluency scores after one year for the first study • Negative: Decreases in reading test scores after one year for cohort one and the two-year sample <p>Homework</p> <ul style="list-style-type: none"> • Null: No impact on homework completion 	<p>Student Behavior</p> <ul style="list-style-type: none"> • Null: No significant impact on how disruptive or attentive students reported being in class

Program Evaluation	Research Design	Program Activities	Frequency	Significant Primary Outcomes Examined	Significant Secondary Outcomes Examined
<p>"A Randomized Experiment of a Mixed-Methods Literacy Intervention for Struggling Readers in Grades 4–6: Effects on Word Reading Efficiency, Reading Comprehension and Vocabulary, and Oral Reading Fluency" (Kim et al., 2010)</p> <p>and</p> <p>"Can a Mixed-Method Literacy Intervention Improve the Reading Achievement of Low-Performing Elementary School Students in an After-School Program? Results from a Randomized Controlled Trial of READ 180 Enterprise" (Kim et al., 2011)</p>	<ul style="list-style-type: none"> • Random assignment of students in grades 4–6 to READ 180 treatment program or comparison program, which was usual after-school programming 	<ul style="list-style-type: none"> • One hour on snacks and homework help • One hour of READ 180 • Full 90-minute READ 180 program design starts with teacher-led whole-group lesson of 20–30 minutes, which primes three subsequent small-group rotation exercises (individualized computer-assisted reading activities, independent and model reading of leveled books, and teacher-directed lessons with the small group) • Kim et al. (2010) evaluates 60-minute version of READ 180 program, in which students participate in only rotations • Kim et al. (2011) evaluates 60-minute version in which elementary students participate in teacher-led whole-group exercise and two of three rotations each day 	<p>Four days per week for 23 weeks, which adds up to 92 days (or 92 hours of READ 180 instruction)</p>	<p>Academic Achievement</p> <ul style="list-style-type: none"> • Positive: Increase in oral reading fluency • Positive: Increase in time spent reading books • Null: No impact on word reading efficiency, phonetic decoding, sight word reading, comprehension, and vocabulary <p>Academic Achievement</p> <ul style="list-style-type: none"> • Positive: Increases in vocabulary • Positive: Increases in reading comprehension • Null: No significant impact on spelling or oral reading fluency 	<p>Student Behavior</p> <ul style="list-style-type: none"> • Positive: Increase in school-day attendance

Program Evaluation	Research Design	Program Activities	Frequency	Significant Primary Outcomes Examined	Significant Secondary Outcomes Examined
<p><i>Ready for Fall? Near-Term Effects of Voluntary Summer Learning Programs on Low-Income Students' Learning Opportunities and Outcomes</i> (McCombs et al., 2014)</p> <p>and</p> <p><i>Learning from Summer: Effects of Voluntary Summer Learning Programs on Low-Income Urban Youth</i> (Augustine et al., 2016)</p>	<ul style="list-style-type: none"> • Random assignment of rising fourth-grade students to treatment and control in five districts • Students in treatment group were eligible for two summers of programming 	<ul style="list-style-type: none"> • Three hours of academic instruction in reading and mathematics taught by academic teachers and 3–4 hours of enrichment activities 	Five or six weeks, five days per week during the summer	<p>Academic Achievement</p> <ul style="list-style-type: none"> • Positive: Mathematics measured in fall 2013 • Null: English/language arts and mathematics in spring 2014 and 2015 <p>Attendance Mediators</p> <ul style="list-style-type: none"> • Positive: High attenders have positive math outcomes in spring 2014 • Positive: High attenders after second summer have positive reading outcomes in fall and spring <p>Quality Mediators</p> <ul style="list-style-type: none"> • Students receiving high-quality English/language arts instruction benefited in English/language arts 	<p>Noncognitive, Developmental Behavior</p> <ul style="list-style-type: none"> • Null: Social and emotional outcomes • Null: School-year attendance • Null: School-year suspensions <p>Attendance Mediators</p> <ul style="list-style-type: none"> • Positive: High attenders after second summer have stronger social and emotional outcomes
<p>"Halting the Summer Achievement Slide: A Randomized Field Trial of the KindergARTen Summer Camp" (Borman, Goetz, and Dowling, 2009)</p>	<ul style="list-style-type: none"> • Random assignment of students to treatment and control groups • Rising kindergarten 	<ul style="list-style-type: none"> • Three hours of literacy instruction led by a certified teacher and supported by college interns and two hours of enrichment in the arts; weekly field trips included 	Six weeks, five days per week during summer	<p>Academic Achievement</p> <ul style="list-style-type: none"> • Positive: Positive effects in two of five tests—word list and Developmental Reading Assessment • Null: Effects on three other literacy tests 	
<p>"Longitudinal Achievement Effects of Multiyear Summer School: Evidence from the Teach Baltimore Randomized Field Trial" (Borman and Dowling, 2006)</p>	<ul style="list-style-type: none"> • Random assignment of students to treatment and control groups • Rising kindergarten 	<ul style="list-style-type: none"> • Three hours of literacy instruction taught by trained college volunteers 	Seven weeks, five days per week over the summer	<p>Academic Achievement</p> <ul style="list-style-type: none"> • Null: reading outcomes for treatment group • Attendance mediators: Treatment compliers held advantages of 40–50% of one grade level on the final literacy post-tests 	
<p><i>Impacts of a Summer Learning Program: A Random Assignment Study of Building Educated Leaders for Life (BELL)</i> (Chaplin and Capizzano, 2006)</p>	<ul style="list-style-type: none"> • Random assignment to treatment and control groups • Rising 1–8 grade 	<ul style="list-style-type: none"> • Each week, students receive approximately eight hours of literacy instruction (two hours per day, four days a week), four hours of math instruction (one hour a day, four days per week) and 6.5 hours of community time (0.5 hours four days a week and a Friday half-day field trip) • Every Friday, students attend a speaker series where they hear from and ask questions of prominent citizens in their community 	Six weeks, five days per week during the summer	<p>Academic Achievement</p> <ul style="list-style-type: none"> • Positive: Reading achievement 	<p>Noncognitive, Developmental</p> <ul style="list-style-type: none"> • Null: Social and emotional skills

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