Findings from a Randomized Experiment of Playworks: Selected Results from Cohort 1

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April 17, 2012

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EXECUTIVE SUMMARY

Recess periods often lack the structure needed to support physical activity and positive social development (Robert Wood Johnson Foundation 2010). The Playworks program places full-time coaches in low-income schools to provide opportunities for organized play during recess and throughout the school day. Playworks activities are designed to engage students in physical activity, foster social skills related to cooperation and conflict resolution, improve students' ability to focus on class work, decrease behavioral problems and improve school climate.

The Robert Wood Johnson Foundation (RWJF) contracted with Mathematica Policy Research and its subcontractor, the John W. Gardner Center for Youth and Their Communities (JGC) at Stanford University, to conduct a rigorous evaluation of Playworks. Twenty-five schools interested in implementing Playworks were randomly assigned to a treatment group that received Playworks in the 2010–2011 school year or to a control group that was not eligible to implement Playworks until the following year. We collected data from students, teachers and school staff in spring 2011 to document the implementation of Playworks and assess the impact of the program on key outcomes in six domains: (1) school climate, (2) conflict resolution and aggression, (3) learning and academic performance, (4) recess experience, (5) youth development and (6) student behavior. Ultimately, four additional schools will be added to the study and further analyses will be released.

Key Findings

The following significant, positive impacts of Playworks were found:

- There was a positive impact of Playworks on teachers' perceptions of students' safety and the extent to which teachers reported students felt included during recess.
- Teachers in treatment schools reported less bullying and exclusionary behavior during recess than teachers in control schools.
- Teachers in treatment schools were less likely to report difficulties in transitioning to classroom learning activities after recess and reported significantly less time to transition from recess to learning activities than teachers in control schools. Treatment students were also more likely than control students to report better behavior and attention in class after sports, games and play.
- Treatment teachers reported significantly better student behavior at recess and readiness for class than control teachers and were also more likely to report that their students enjoyed adult-organized recess activities.

The following key implementation findings were observed:

- Strong implementation occurred in seven of 14 treatment schools and moderate implementation occurred in another five schools. Two schools had weak implementation.
- Playworks implementation was stronger in schools that had recess in the past and when coaches were experienced with the program.
- Most teachers, students and principals had positive perceptions of the Playworks program.

Three future study briefs will report findings based on additional data collected via school administrative records, accelerometers and recess observations from the full sample of 29 schools.

FINDINGS FROM A RANDOMIZED EXPERIMENT OF PLAYWORKS: RESULTS FROM COHORT 1

Background

A recent, national Gallup poll shows that most elementary school principals believe recess has a positive impact on the development of students' social skills and academic achievement (Robert Wood Johnson Foundation 2010). Recess, however, has been reduced or eliminated in up to 40 percent of school districts across the country (Zygmunt-Fillwalk and Bilello 2005), and these declines have disproportionately affected low-income minority students in urban areas (Barros, Silver and Stein 2009). In schools where recess is still offered, recess periods often lack the structure needed to support physical activity and positive social development, often leading to increased discipline-related problems (Robert Wood Johnson Foundation 2010).

The Playworks program places full-time coaches in low-income schools to provide opportunities for organized play during recess and class time. Playworks activities are designed to engage students in physical activity, foster social skills related to cooperation and conflict resolution, improve students' ability to focus on class work, decrease behavioral problems and improve school climate. The Playworks model includes the following components, the first three of which are examined in this study:

- ***Structured Recess Activities***. During recess, the coach teaches conflict resolution skills and fosters student play by encouraging involvement in structured, inclusive activities. The coach introduces a common set of rules to games and models conflict resolution tools such as ro-sham-bo (rock-paper-scissors), with the goal of reducing the number of conflicts that arise, enabling youth to resolve their own disputes and creating an environment of positive play.
- ***Class Game Time.*** Class game time provides an opportunity for coaches to model positive language and involve teachers in activities.
- ***Junior Coach Program.*** This program provides fourth- and fifth-grade students with an opportunity to develop leadership and conflict resolution skills so they can act as role models and facilitators during recess.
- ***After-School Activities.*** Playworks also includes an after-school program, a sports league and school staff trainings.

Past Research

Research suggests that participating in physical activity and play during recess may be linked to improvements in both academic and prosocial behaviors (Centers for Disease Control and Prevention [CDC] 2010; Department of Health and Human Services [DHHS] 2008; Ginsburg 2007). In terms of academic behaviors, physical activity among children has been associated with improvements in cognition (Ginsburg 2007; Tomporowski et al. 2008; Sibley and Etnier 2003), on-task behavior (Mahar et al. 2006; Jarrett et al. 1998), problem solving (Molloy 1989), concentration and attentiveness (Taras 2005; Pellegrini, Huberty and Jones 1995; Evenson et al. 2009; Caterino and Polak 1999). Moreover, a comprehensive report published by the CDC (2010) reviewed eight studies that looked at academic performance and recess in elementary schools and found that children who spent time in recess appeared to have increased attention, concentration and on-task behavior in the classroom. Although recess may take away from classroom time, there is no evidence that time spent

in recess is negatively associated with cognitive skills, attitudes, academic behaviors or academic achievement (CDC 2010; DHHS 2008; Trudeau and Shephard 2010; Taras 2005; Ericsson 2008; Maeda and Randall 2003; Ahamed et al. 2007; Coe et al. 2006). In fact, some evidence points to improved academic achievement as a result of increased physical activity (CDC 2010; Nelson and Gordon-Larsen 2006; Shephard 1997; Tremarche, Robinson and Graham 2007; Smith and Lounsbery 2009). Moreover, a recently published research brief found that 11 out of 14 published studies analyzing relationships between physical activity and academic performance determined that regular physical activity was associated with improved academic performance (Active Living Research 2009).

There is also some evidence suggesting that participating in play activities at recess increases prosocial behaviors (Ginsburg 2007). Through play at recess, students have opportunities to develop social relationships with their peers (Pellegrini and Bohn 2005; Pellegrini et al. 2002) and to experiment with social strategies such as sharing, problem solving and conflict resolution (Zygmunt-Fillwalk and Bilello 2005; Molloy 1989). Structured play during recess is also associated with decreases in aggression and bullying (Leff, Costigan and Power 2004). Another study found that increased physical activity during the school day improved classroom behavior according to teacher reports (Maeda and Randall 2003). The duration of recess appears to be less important, however. One study found that, among children who received daily recess, an increase in the length of recess was not associated with improved teacher ratings of students' classroom behavior (Barros, Silver and Stein 2009).

A recent study (London et al. 2010) investigated the ways in which the Playworks program was implemented in eight schools in the San Francisco Bay area. The findings from this study suggested that when Playworks was fully implemented, recess was more structured and organized, students were more engaged during recess activities and students learned to use conflict resolution skills. A rigorous random assignment evaluation, however, has not yet been conducted to measure the effects of the Playworks program on important outcomes.

Current Study

To help fill this gap in the literature, RWJF contracted with Mathematica Policy Research and its subcontractor, Stanford University's John W. Gardner Center for Youth and Their Communities (JGC), to conduct a rigorous evaluation of the implementation and impact of Playworks. Twenty-five schools interested in implementing Playworks were randomly assigned to a treatment group that received Playworks in the 2010–2011 school year or to a control group that was not eligible to implement Playworks until the following year.

We address three research questions related to program implementation in the current brief:

1. How was Playworks implemented in the treatment schools?
2. In what context was Playworks implemented?
3. What were school staff and students' experiences with and perceptions of Playworks?[1]

This brief also addresses the following research question relating to the program's impact:

1. What is the effect of Playworks on six outcome domains: (1) school climate, (2) conflict resolution and aggression, (3) learning and academic performance, (4) recess experience, (5) youth development, and (6) student behavior?[2]

Study Design

Twenty-five schools from five cities across the U.S. were recruited for the first year of the Playworks evaluation; 14 of these schools were assigned to the treatment group and 11 were assigned to the control group. Random assignment of schools helped to ensure that there were no systematic differences between the treatment and control groups' observed and unobserved characteristics and that the differences in outcomes between the two groups could be attributed solely to the effect of Playworks. To improve the statistical precision of impact estimates and reduce the chance of differences between the treatment and control groups in the characteristics of schools, random assignment was conducted within matched pairs (or trios) of schools that were similar in terms of observable characteristics (see Appendix 1 for additional details on random assignment).

Baseline comparisons of the evaluation's treatment and control schools were conducted based on data from the Common Core of Data and time-invariant characteristics of students and teachers from the student and teacher surveys (see Tables 1 and 2 in Appendix 2). Only two significant differences were found between treatment and control schools, teachers and students; treatment teachers were significantly more likely to be white and significantly less likely to be African American, relative to control teachers. These two significant differences are what one might expect by chance when conducting 32 tests with a 5 percent critical value (that is, 5 percent of 32 is 1.6, which rounds to 2). We included race indicators in the impact models to account for these differences.

Outcomes and Data Sources

The evaluation's data collection activities were designed to document the implementation of Playworks and collect information on key outcomes in the six domains listed above. To that end, we collected data from students, teachers and school staff in spring 2011. Each data collection activity is described below. Additional information, including response rates, is included in Appendix 1.

- ***Student Survey.*** A total of 1982 students from 101 fourth- and fifth-grade classrooms in 24 study schools participated in a survey that captured information about perceptions of school climate, conflict resolution, learning and achievement, recess experience and relationships with adults and peers.
- ***Teacher Survey.*** A total of 247 teachers from 25 study schools participated in a survey that assessed perceptions of school climate and students' recess experiences, behavior, learning, achievement and social competence.
- ***Administrative Records.*** All 25 study schools provided a list of teachers and student rosters for each classroom that was selected for participation in the study.
- ***Interviews with Principals, Teachers and Playworks Coaches.*** A total of 25 principals, 43 teachers and 14 Playworks coaches responded to questions about opportunities for play and physical activity at school, discipline issues that arise at recess and experiences with and perceptions of Playworks.
- ***Focus Groups with Junior Coaches.*** Students from 13 treatment schools who served as Playworks junior coaches talked about their experiences as junior coaches and perceptions of Playworks.

- ***Playworks Observations.*** Playworks coach involvement and strategies, student participation in Playworks games, and yard monitor and teacher activities were observed during recess and Playworks in-class game time at all 14 treatment schools.

Three future study briefs will report on findings based on additional outcome data that were collected as part of the evaluation. Response rates and additional details about each of the study's data sources (including data that will be presented in future briefs) can be found in Appendix 1.

Key Findings

A. Implementation Findings

The implementation component of the evaluation assessed key program goals, how Playworks was implemented in treatment schools, the context within which the program was implemented and student and staff perceptions of Playworks. Key findings in each of these areas are described below. A full set of tables that define each scale and display all implementation findings is provided in Appendix 2.

Principals Described the Key Program Goals. Principals were the main driving force behind bringing the Playworks program to schools. According to principals, key goals for Playworks were to (1) organize recess, (2) improve overall school climate and help students work together and (3) improve school safety and reduce conflicts. Less frequently cited goals were to improve physical activity levels and promote student leadership (see Table 3, Appendix 2).

Site Visits Suggest Strong Implementation Occurred in Half of the Study Schools and Moderate Implementation Occurred in 5 of the Study Schools. Overall, we observed strong implementation of the Playworks program in seven of the 14 treatment schools, with moderate implementation in five schools and weak implementation in two schools. We defined schools as having "strong" implementation if the following were observed during site visits:

- Recess was structured and organized, students were engaged in games and other play activities, coaches were engaged with students, junior coaches were doing their jobs, positive and inclusive language was being used and conflicts were resolved quickly.
- Teachers, principals and other staff were knowledgeable about Playworks and supportive of its values and goals.
- Principals were willing to schedule regular in-class game times and accommodate junior coaches to work at younger students' recesses.
- School policies and structures supported Playworks activities and goals.

Schools had "moderate" implementation when most program components were in place and commitment was strong from some, but not all, staff members. "Weak" implementation occurred in schools where staff commitment to the program was not strong and key components were not implemented as intended.

In addition to looking at overall program implementation, we examined implementation of specific key components of Playworks and found the following:

- **Program strategies were modeled by coaches and used by students during the majority of recess periods at treatment schools.** Coaches used positive messaging such as "good job, nice try" at an average of 68 percent of recesses observed at treatment schools. They promoted inclusive behavior, encouraging students to join games and participate in activities at an average of 61 percent of recesses and were observed playing with students at an average of 62 percent of recesses. When coaches were not playing, they typically moved around the recess yard to supervise games or manage conflicts. In an average of one-third of recesses, we observed students using ro-sham-bo (rock-paper-scissors) to resolve minor conflicts at recess, either on their own or with encouragement from an adult (Table 4, Appendix 2).

- **Class game time provided a fun opportunity for coaches to model Playworks strategies and techniques in a smaller group setting.** Coaches used positive language at an average of 86 percent of in-class game time periods observed in treatment schools, and teachers played with their students at an average of 42 percent of in-class game time periods (Table 4, Appendix 2). Most teachers who participated in the teacher survey reported that class game time was fun for students (91 percent), provided students with good exercise (88 percent) and helped students learn new games (89 percent) (Table 5, Appendix 2). Most teachers (72 percent) reported in interviews that they were supportive of in-class game time; those who were not as supportive mentioned several challenges, including scheduling problems, the inability of the coach to work effectively with students or teachers and a concern—especially among fifth-grade teachers—that it interfered with instructional time.

- **The junior coach program provided students with the opportunity to gain leadership skills.** Junior coaches at all schools were scheduled to support at least one recess per week and had an opportunity to work with younger students at recess. In four schools, upper and lower grades had combined or overlapping recess periods, allowing junior coaches to act as role models for younger students during their own recess time. Students at seven schools were allowed to miss some class time to work at younger students' recesses, though not all younger students' recesses had a junior coach. Junior coaches at three schools ate quickly and worked their Playworks shifts during their regular lunchtime. Nearly all teachers felt that students who served as junior coaches gained leadership skills (90 percent), taught other students games (80 percent) and enjoyed their role at recess (88 percent) (Table 6, Appendix 2).

- **Coaches cited several challenges to implementing the junior coach program.** Frequently cited issues included problems selecting the right students for the program, students missing their shift because of academic or behavioral issues and students forgetting to come to their recess shift. Most Playworks coaches also reported that at least a few junior coaches had to be removed from the program because of academic or behavioral concerns.

Playworks Implementation Varied by School Context and Coach Experience. Our implementation site visits suggested that several contextual factors were associated with the implementation of Playworks:

- **Principals in schools at risk of failing to meet Adequate Yearly Progress student achievement targets (36 percent of treatment schools had not met these targets in the year prior to Playworks implementation) either saw Playworks as part of their overall strategy for improving achievement or were concerned that the program would take time away from academics.** Principals in the first group reported that they explicitly used Playworks as part of an overall strategy for improving school climate (e.g., student behavior and safety), because they felt the program would ultimately improve student achievement. Principals in the second group diminished the time allotted to Playworks and the importance given to recess, including limiting class game time and the availability of junior coaches at younger students' recesses.

- **A history of recess prior to Playworks implementation was associated with the quality of the program's implementation.** Two of the treatment schools did not have a history of recess prior to implementation of the Playworks program. Students in these schools were not always released for recess (or for the full recess period), so coaches were not able to implement the program consistently from day to day.

- **Coaches who were experienced with the program were observed to have a stronger implementation of Playworks.** Among the nine first-year coaches, 33 percent had strong implementation. In contrast, among the five experienced coaches, 80 percent had strong implementation.

- **Principals' years of experience at the schools did not seem to be associated with implementation.** Although 43 percent of principals in treatment schools were new, schools with first-year principals were not observed to have lower-quality implementation.

Most Teachers, Students and Principals Had Favorable Impressions of Playworks. Surveys and interviews conducted in treatment schools showed that teachers, students and principals generally had positive perceptions of the Playworks program.

- **Most teacher survey respondents in treatment schools reported a positive relationship and good communication with the Playworks coach.** Teachers felt their coaches were well prepared (96 percent) and used appropriate techniques when working with students (93 percent) (Table 6, Appendix 2). Teachers also reported that Playworks was highly valued by students (96 percent), staff (85 percent) and, to a lesser extent, parents (57 percent) (Table 7, Appendix 2). In fact, 100 percent of interviewed teachers and 97 percent of surveyed teachers reported that they wanted Playworks in their school again the following year.

- **Teachers in treatment schools viewed Playworks as benefiting students in multiple ways, including providing their students with a positive recess experience.** Most teachers agreed that the program addressed important student needs (86 percent), reinforced positive behavior on the recess yard (96 percent) and helped students stay out of trouble (91 percent). They also felt that students had learned new games (97 percent) and recess rules (95 percent) (Table 7, Appendix 2).

- **Students in treatment schools reported being engaged with Playworks.** Data from the student survey found that in the two weeks prior to the survey, most

students reported having participated in Playworks activities (74 percent), and the vast majority reported enjoying activities at recess (89 percent) and in-class game time (90 percent) (Table 8, Appendix 2).

- **Principals in all treatment schools reported that their schools needed Playworks again in the following year.** Principals were concerned about continued program funding and resulting sustainability. Playworks was funded mainly by schools and school districts. Just three schools (two treatment and one control) used—or planned to use, in the case of the control school—external grants to support the program. This speaks to schools' commitment to the program but also highlights the issue of long-term sustainability in an era of shrinking school budgets.

B. Impact Findings

The impact evaluation examined the effect of Playworks on six outcome domains. Significant impacts were observed in domains covering school climate, conflict resolution and aggression, learning and academic performance, and recess experience, suggesting that Playworks had positive effects. No significant impacts were detected in the other two domains addressing outcomes related to youth development and student behavior (see Appendix 1 for additional details on our approach for estimating impacts and the methods used to adjust *p*-values for multiple hypothesis testing). A subset of the impact results is summarized by domain in the exhibits below. A full set of tables that define each scale and display the impact results for each outcome is provided in Appendix 2.

School Climate. Playworks had a positive impact on two of the five teacher-reported measures of school climate but had no significant impact on the three student-reported measures of school climate (Exhibit 1). In particular, with regard to feelings of safety at school and sense of community, teachers in treatment schools were significantly more likely than teachers in control schools to report positive perceptions of students' safety and engagement in inclusive behavior at recess. Playworks had no significant impact, however, on students' feelings of safety at recess or school or about how well students and teachers treat each other within the school community. The percentage of teachers who agreed or strongly agreed that students in their school used positive, encouraging language was higher for the treatment group than the control group, although this difference was not quite statistically significant. Our observations of recess in treatment schools showed Playworks coaches promoting inclusive behavior in 61 percent of recesses observed (Table 4, Appendix 2).

Exhibit 1. Impacts on School Climate

Outcome (mean unless otherwise noted below)	Treatment	Control	Difference
School as Community			
Student-Reported Sense of School as Community Scale Score	2.8	2.7	0.1
Percentage of Teachers that "Agree" or "Strongly Agree" that Students in Their School Use Positive, Encouraging Language	51.7	27.7	24.0
Feelings of Safety			
Student-Reported Feelings of Safety at School Scale Score	2.6	2.5	0.1
Student-Reported Feelings of Safety at Recess Scale Score	2.8	2.6	0.2
Teacher-Reported Feelings of Students' Safety at School Scale Score	3.8	3.2	0.6
Teacher-Reported Feelings of Students' Safety/Inclusion at Recess Scale Score	4.0	3.1	0.8***
Support for Organized Play			
Teacher Support for Organized Play During the School Day Scale Score	4.2	4.1	0.1

Outcome (mean unless otherwise noted below)	Treatment	Control	Difference
Teacher-Reported School Staff Support for Organized Play During the School Day Scale Score	4.3	3.9	0.4*

Sources: Student (n = 1937) and teacher surveys (n = 246) conducted in spring 2011 (sample sizes may be smaller for some outcomes due to missing responses).
Note: See full table in Appendix 2, Table 9.
*Significantly different from zero at the .10 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

Findings related to the impact of Playworks on support for organized play were mixed. Teachers in treatment schools were significantly more likely to report school staff support for organized play during the school day (for activities like physical education class and Playworks) than teachers in control schools. Treatment teachers themselves, however, were no more likely to report support for organized play than control teachers.

Conflict Resolution and Aggression. Teachers in treatment schools reported significantly less bullying and exclusionary behavior during recess than teachers in control schools (Exhibit 2). However, no significant impacts were found on teacher reports of more general aggressive behavior (for example, talking back to teachers and showing off), student reports of aggressive behavior, students' beliefs about aggression or students' reports on their relationships with other students (for example, getting along well with others at recess and being able to resolve conflicts without fighting).

Rather than striving to eliminate all conflict, Playworks aims to give students the tools to better manage conflicts when they arise. There was evidence that the junior coach program provided selected students in grades four and five with the opportunity to develop conflict resolution skills. Most teachers who participated in the teacher survey reported that junior coaches helped resolve conflicts (67 percent) (Table 6, Appendix 2). We observed junior coaches intervening in conflicts in 25 percent of schools; these junior coaches had varying degrees of success at resolving the conflicts. When asked about conflict resolution in the focus groups, junior coaches from nearly all schools (85 percent) reported that they used ro-sham-bo at recess to resolve conflicts.

Exhibit 2. Impacts on Conflict Resolution and Aggression

Outcome (mean unless otherwise noted below)	Treatment	Control	Difference
Interactions with Other Students			
Student-Reported Relationships with Other Students Scale Score	3.2	3.1	0.1
Teacher-Reported Student Bullying/Exclusion Scale Score	0.6	1.0	-0.5**
Aggression			
Student-Reported Aggressive Behavior Scale Score	1.4	1.5	0.0
Student-Reported Normative Beliefs About Aggression Scale Score	1.6	1.7	-0.1
Teacher-Reported Student BASC Aggression Subscale Score	6.2	6.7	-0.5

Sources: Student (n = 1942) and teacher surveys (n = 245) conducted in spring 2011 (sample sizes may be smaller for some outcomes due to missing responses).
Note: See full table in Appendix 2, Table 10
**Significantly different from zero at the .05 level, two-tailed test.
BASC = Behavior Assessment System for Children

Learning and Academic Performance. Playworks had a positive impact on both student and teacher perceptions of the transition from recess to classroom activities (Exhibit 3). Students in both treatment and control schools were asked about the effect of sports, games and play on their behavior in class; treatment students were significantly more likely to report better behavior and attention in class after participating in sports, games and play than control students. Similarly,

teachers in treatment schools were significantly less likely to report difficulties in transitioning to learning activities after recess and reported significantly less time taken to transition from recess to learning activities than teachers in control schools (a difference of 2.5 minutes on the most recent day in which students participated in recess). There were no significant differences on six additional outcome measures that assessed student engagement with classroom activities and academic performance, homework completion and motivation to succeed academically.

During our interviews, we asked treatment teachers an open-ended question about how Playworks was related to students' behavior in their classroom. Several themes emerged; for instance, 28 percent of teachers reported that students were now more likely to come to class ready to learn (compared to last year) because fewer conflicts carried over from recess, 40 percent of teachers reported that Playworks resulted in students using ro-sham-bo in class to resolve conflicts or make decisions and 14 percent of teachers reported improvements in teamwork and inclusiveness in class. Some teachers reported that Playworks served as an incentive to positively influence students' class performance because they did not want to lose the opportunity to participate in Playworks activities. Less than a quarter of teachers reported that Playworks positively affected their practices in the classroom; in particular, 23 percent reported using Playworks games on their own, 14 percent reported using group facilitation techniques and signals learned from Playworks and 14 percent reported spending less time dealing with conflict in the classroom (Table 12, Appendix 2). Finally, very few teachers reported that the junior coach program, which in some schools required students to miss class time, was a detriment to the academic performance of the junior coaches.

Exhibit 3. Impacts on Learning and Academic Performance

Outcome (mean unless otherwise noted below)	Treatment	Control	Difference
Transition from Recess to Classroom Activities			
Student-Reported Effect of Recess on Behavior in Class Scale Score	2.5	2.4	0.1
Student-Reported Effect of Sports, Games and Play on Behavior in Class Scale Score	2.7	2.5	0.2*
Percentage of Students That Report That It Is "Somewhat True" or "Very True" That Beginning Class Work After Recess Is Easy	59.8	53.8	6.0
Teacher-Reported Number of Minutes to Transition from Recess to Learning Activities	6.8	9.3	-2.5*
Teacher-Reported Difficult Transition to Learning After Recess Scale Score	2.4	3.2	-0.8***

Sources: Student (n = 1934) and teacher surveys (n = 243) conducted in spring 2011 (sample sizes may be smaller for some outcomes due to missing responses).
Note: See full table in Appendix 2, Table 11
*Significantly different from zero at the .10 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

Recess Experience. Playworks had a positive impact on teacher perceptions of students' recess experiences but did not lead to any significant differences on student-reported perceptions of recess. In particular, teachers in treatment schools reported significantly better student behavior than teachers in control schools on a five-item scale that measured student behavior at recess and readiness for class after recess. A significantly higher percentage of teachers in treatment schools relative to control schools also agreed that their students enjoyed adult-organized activities at recess. There was no significant difference between the treatment and control groups in the percentage of teachers who agreed that their students felt ownership over their activities during recess (Exhibit 4).

Playworks had no significant impact on students' perceptions of recess, as measured in the student survey. In particular, there was no significant impact on six items that measured the type of recess activities in which students were engaged, such as talking with friends or playing games and sports with adults during recess. There was also no impact on six items that measured student perceptions of recess, such as enjoyment of recess or getting to play the games they wanted to play.

In addition, no impact was found on six items that measured student perceptions of how they handle conflict at recess, such as asking an adult to help them solve a conflict or getting into an argument with other students during recess.

Youth Development. There were no significant impacts of Playworks on eight measures of youth development. In particular, students in treatment and control schools had similar reports on a six-item scale that measured feelings about adult interactions (such as "At my school, there is an adult who listens to me when I have something to say"). In addition, a similar percentage of treatment and control students reported getting along well with other students. There was also no significant difference on a scale that included eight items asking students to indicate their effectiveness at interacting with peers in conflict situations, such as their ability to tell kids to stop teasing a friend. Teachers in treatment and control schools also reported similar perceptions of students' abilities to regulate their emotions, act responsibly and engage in prosocial and altruistic behavior (Table 14, Appendix 2).

Exhibit 4. Impacts on Recess Experience

Outcome (mean unless otherwise noted below)	Treatment	Control	Difference
Conflict and Behavior During Recess			
Teacher-Reported Student Recess Behavior and Readiness for Class Scale Score	3.8	3.3	0.5*
Percentage of Students That Report That They Do the Following "Sometimes" or "A Lot":			
Ask an adult to help them solve a conflict during recess	36.9	36.4	0.5
Get teased about not being good at games or sports during recess	26.6	28.7	-2.0
Get into an argument with other students during recess	31.8	33.7	-1.9
Fight or hit other students during recess	7.7	11.2	-3.5
Work out problems with other students during recess without fighting	69.8	66.9	2.9
Say encouraging things to other students during recess	84.3	80.1	4.2
Teacher Perceptions of Students' Feelings about Recess			
Percentage of Teachers That "Agree" or "Strongly Agree" That Their Students:			
Look forward to recess	98.8	95.0	3.8
Enjoy adult-organized activities at recess	95.1	71.4	23.7***
Would be upset about missing recess	95.9	92.1	3.8
Feel ownership over their activities during recess	74.7	53.3	21.3

Sources: Student (n = 1943) and teacher surveys (n = 246) conducted in spring 2011 (sample sizes may be smaller for some outcomes due to missing responses).
Note: See full table in Appendix 2, Table 13
***Significantly different from zero at the .01 level, two-tailed test.

Student Behavior. Despite the fact that most treatment teachers who responded to the survey felt that Playworks reinforced positive behavior during recess (96 percent) and resulted in fewer students getting into trouble (91 percent) (Table 7, Appendix 2), there were no significant impacts of Playworks on multiple indicators of student behavior. Treatment and control group students who took the student survey reported similar levels of disruptive behavior in class and behavioral problems at school. Teachers in treatment and control schools reported similar amounts of student misbehavior, absences, tardiness, suspensions and detentions among their students. The number of disciplinary incidents in the treatment and control schools, measured via discipline referral data gathered from principals, was also not significantly different overall, by setting (for example, at recess), or by reason (for fighting, profanity and so on) (Table 15, Appendix 2). One caveat with respect to the findings based on the discipline referral data is that the findings are based on a small sample size (22 schools).

Conclusions

The current evaluation found positive impacts of the Playworks program on some measures of school climate, conflict resolution and aggression, learning and academic performance and recess experience, and showed no negative impacts of the program in any of the six domains that were assessed. In particular, our impact analyses showed the following:

- There was a significant positive impact of Playworks on teachers' perceptions of students' safety and engagement in inclusive behavior at recess, but no significant impact was found on three student-reported measures of school climate.
- Teachers in treatment schools reported less bullying and exclusionary behavior during recess than teachers in control schools. No impacts were found, however, on teacher and student reports of aggressive behavior, students' beliefs about aggression or students' reports on their relationships with other students.
- Teachers in treatment schools were significantly less likely to report difficulties in transitioning to learning activities after recess and reported significantly less time to transition from recess to learning activities than teachers in control schools. Treatment students also were more likely than control students to report better behavior and attention in class after sports, games and play. We found no impacts of Playworks, however, on academic performance or student engagement with classroom activities.
- Treatment teachers reported significantly better student behavior at recess than control teachers and were more likely to report that their students enjoyed adult-organized recess activities. We found no significant impact, however, on students' perceptions of their ability to handle conflict at recess or on the recess activities in which students were engaged, such as talking with friends or playing games with adults. In contrast to the potential criticism that Playworks may result in students having less control over their recess activities, we found no differences in the extent to which treatment and control students reported enjoying recess or being able to play the games they wanted to play during recess. There also were no differences between treatment and control teachers in the extent to which they reported students felt ownership over their activities during recess.
- We found no significant impacts of Playworks on measures of youth development, such as students' feelings about interactions with adults or peers, and teachers' perceptions of students' abilities to regulate their emotions and engage in positive social behaviors.
- There were no significant impacts of Playworks on multiple indicators of student behavior. Interestingly, when asked about recess behavior, treatment teachers did report significantly better student behavior on a scale that measured behavior at recess and readiness for class after recess; perhaps an impact was found on this scale because it included items about readiness for class after recess, whereas the student behavior variables measured in this domain focused exclusively on behavior. A future brief will use data collected through administrative records to examine whether the program had an impact on school-level indicators of behavior, such as daily attendance and suspensions.

The implementation component of the evaluation provided additional insight into the school context at each study school, the degree to which each component of the program was carried out and student and staff perceptions of Playworks. In particular, our implementation site visits at each school suggested the following:

- Strong implementation occurred in seven of 14 treatment schools and moderate implementation occurred in another five schools. Program strategies such as positive messaging, promotion of inclusive behavior and conflict resolution strategies were modeled by coaches during the majority of recess periods observed at treatment schools. Most teachers reported that class game time was fun for students and provided them with good exercise and an opportunity to learn new games. Although coaches cited several challenges to implementing the junior coach program, junior coaches at all schools were scheduled to support at least one recess per week and had an opportunity to gain leadership skills by working with younger students at recess.
- Playworks implementation was stronger in schools that had recess in the past and in schools that had experienced Playworks coaches. Principal experience at the school did not seem to be associated with the strength of implementation.
- Most teachers, students and principals had positive perceptions of the Playworks program. Teachers reported positive relationships with the coach, felt coaches were well prepared and believed that the program addressed important student needs, such as reinforcing positive behavior on the recess yard and helping students stay out of trouble. The majority of students reported enjoying recess and class game time activities, and principals in all treatment schools reported that their schools needed Playworks again the following year.

In addition to the original 25 study schools described in the current brief, four study schools from one additional site were randomly assigned to the treatment or control group for the 2011–2012 school year. Three future study briefs will report on the full sample of 29 schools and include findings based on additional data collected via administrative records, accelerometers and recess observations. It is possible that the findings described here may change with the addition of the four new study schools added to the sample in the 2011-2012 school year.

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Endnotes

1. Opportunities for physical activity and play and the recess environment in both treatment and control schools will be addressed in future briefs.

2. The impact of Playworks on students' physical activity during the school day will be addressed in a future brief.

APPENDIX 1

DESCRIPTION OF STUDY DESIGN AND DATA SOURCES

Random Assignment Design

Random assignment of schools was used to help ensure that there were no systematic differences between the treatment and control groups, and so that the observed differences in outcomes between the two groups could be attributed solely to the effect of Playworks. The 25 schools from 5 cities that participated in the first year of the study were matched into blocks within each city prior to random assignment, with the goal of reducing the probability of chance differences between groups and improving the precision of the impact estimates. Data from the U.S. Department of Education's Common Core of Data (CCD) from 2007–2008 were used to create the blocks. The CCD variables used included the highest grade in the school; school size (number of students); the percentage of black, Hispanic, and/or white students in the school; and the percentage of students eligible for free or reduced-price lunch. Three of the five cities had two blocks of matched schools, one had four blocks of matched schools and one had a single block of schools that required no matching. In total, there were 11 blocks of matched schools, three of which were trios and eight of which were pairs. For a block of paired schools, one school was randomly assigned to the treatment group and one school to the control group. For blocks of three schools, two were randomly assigned to the treatment group and one to the control group. Under this design, 14 schools were randomly assigned to the treatment group and 11 schools were randomly assigned to the control group.

Approach for Estimating Impacts

The impacts of Playworks on students, teachers (or classrooms) and schools were determined by comparing the average outcomes in treatment and control group schools using regression models that were customized to the unit of analysis (for example, school, teacher/classroom and student). For outcomes based on school-level data, we estimated the impact of Playworks with the following model:

$$Y_s = \alpha + \beta X_s + \gamma T_s + \varepsilon_s,$$

where Y_s is the outcome for school s, α is a vector of indicator variables denoting the random assignment block in which the school was located, X_s is a vector of school baseline characteristics, T_s indicates whether the school was assigned to the treatment group, ε_s is a school-level random error term, and β and γ are parameters to be estimated from the model (γ represents the impact of Playworks on the school-level outcome). For outcomes based on teacher-level (or classroom-level) data, we estimated the following model:

$$Y_{js} = \alpha + \beta X_{js} + \gamma T_s + \mu_s + \varepsilon_{js},$$

where Y_{js} is the outcome for classroom (or teacher) j in school s, α is a vector of indicator variables denoting the random assignment block in which the school was located, X_{js} is a vector of classroom (or teacher) baseline characteristics, T_s indicates whether the school in which the classroom (or teacher) was located was assigned to the treatment group, μ_s is a school-specific random error term, ε_{js} is a classroom-level (or teacher-level) random error term, and β and γ are parameters to be estimated. For outcomes based on student-level data, we estimated the following model:

$$Y_{ijs} = \alpha + \beta X_{ijs} + \gamma T_s + \mu_s + \varepsilon_{ijs},$$

where Y_{ijs} is the outcome for student i in classroom j in school s, α is a vector of indicator variables denoting the random assignment block in which the school was located, X_{ijs} is a vector of student baseline characteristics, T_s indicates whether the school in which the student was enrolled was assigned to the treatment group, μ_s is a school-specific random error term, ε_{ijs} is a student-level random error term, and β and γ are parameters to be estimated. Indicators for teacher race were included as baseline characteristics (X) in the teacher-level (or classroom-level) impact models to account for the significant baseline differences in teacher race observed between the treatment and control groups. Random assignment block indicators (α) were included in all impact models, except for models based on school-level discipline referral data.

Models for continuous outcome variables were estimated using least squares estimation, and models of binary outcome variables were estimated using logistic regression estimation. Standard errors for the estimated impacts on teacher- and student-level outcomes accounted for clustering at the school level using a generalized estimating equations approach. Outcomes were grouped into domains for the purpose of estimating impacts while accounting for multiple hypothesis testing (MHT). Each outcome was included in a single domain. We used our best judgment when grouping outcomes into domains, realizing that some outcomes may be appropriate for multiple domains. All statistically significant impacts discussed in the brief and presented in Appendix 2 are based on the MHT adjusted *p*-values. For the adjustments, we calculated statistical significance tests based on critical values from the multivariate t-distribution, taking into account correlations among the tests. Accounting for correlations among tests reduces the magnitude of the MHT adjustment, thereby increasing statistical power while still controlling the probability of finding a false impact (Hothorn, Bretz and Westfall 2008).

Sampling weights were used for estimating the impacts of teacher- and student-level outcomes to account for sampling of teachers and students within schools and attrition (nonresponse) occurring after sampling. The sampling weights were constructed so that teachers and students used in the impact analysis represented all eligible teachers and students, respectively, in the participating schools. That is, teachers and students were weighted so that larger schools were given more overall weight than smaller schools to account for the fact that the larger schools had more eligible teachers and students. In a sensitivity analysis, we confirmed that the impact estimates based on weighted teacher- and student-level observations yielded similar results to the impact estimates based on unweighted observations, where teachers and students were all given equal weight across schools.

Data Sources

To address the study's primary research questions, we obtained data from both treatment and control schools from a variety of sources near the end of the school year (spring 2011). Data collection activities for the impact study included administration of student and teacher surveys and collection of administrative records. The implementation study included interviews with principals, teachers and Playworks coaches; focus groups with Playworks junior coaches; and observations of Playworks class game time and recess. The data collection activities that are the focus of this brief are described below.

- **Student Survey.** A total of 1982 students from 101 fourth- and fifth-grade classrooms in 24 study schools participated in a survey during the regular school day. A team of experienced survey administration staff from Mathematica conducted the 30-minute survey in each classroom. The survey captured information about students' perceptions of school climate, conflict resolution,

learning and achievement, recess experience and relationships with adults and peers. In schools with five or fewer fourth- and fifth-grade classrooms, all fourth- and fifth-grade classrooms were asked to participate in the survey. In schools with more than five classrooms, we selected a random sample of five classrooms, balanced across the fourth and fifth grades. Students from one study school did not participate in the student survey because the school did not have any separate fourth- or fifth-grade classrooms (these students were combined with lower and higher grade level classrooms in the school); this school and the school it was matched with during random assignment were dropped from the student survey data analysis, leaving 23 schools. The response rate for the student survey was 81 percent (treatment schools: 81 percent; control schools: 82 percent).

- **Teacher Survey.** A total of 247 teachers from 25 study schools completed a 50-minute, self-administered, hard-copy instrument. The first half of the survey asked teachers to report on school climate (perceptions of safety, overall school environment and school support for organized play activities) as well as their perceptions of students' recess experience. The second half asked teachers about a random sample of five students in their classroom; teachers were asked to report on these students' behavior at school, learning and achievement and social competence. In schools with fewer than 15 teachers, all teachers were asked to participate in the survey. In schools with more than 15 teachers, we selected a random sample of 15 teachers to complete the survey, balanced across grade levels (grades one through five). The response rate for the teacher survey was 82 percent (treatment schools: 84 percent; control schools: 79 percent).

- **Administrative Records.** All 25 study schools provided a list of teachers to Mathematica Policy Research. Schools then provided students rosters for each classroom that was selected for participation in the study.

- **Interviews with Principals.** JGC staff interviewed one principal from each study school (n = 25) during the school day for about 60 to 90 minutes. Assistant principals were also interviewed in several schools. Interviews at both treatment and control schools were designed to collect information about non-Playworks opportunities for play and physical activity; reasons for wanting to bring Playworks to the school; typical recess experiences of students and teachers; school context and student population; and the principals' views of play. At treatment schools, interviews also included questions about issues such as Playworks rollout at the school; integration of the Playworks coach into the school; views of the Playworks model and its effects on recess, physical activity, discipline, class behavior, and learning; and challenges faced. Principals at all study schools were also asked to report on discipline referrals to the principal's office that occurred over the course of the week prior to the interview. One school did not provide discipline referral data; this school was part of a trio of schools for randomization, so all three schools were dropped from the discipline referral data analysis, leaving 22 schools.

- **Interviews with Teachers.** JGC staff interviewed a total of 43 teachers from treatment schools for about 30 minutes. We sampled one teacher from grade five, one teacher from grade three or four and one teacher from grade one or two in each study school. Teacher interviews focused on topics such as the typical recess experiences for students and teachers; Playworks rollout at the school, including individual components; staff training and experiences; relationships with the

Playworks coach; views of the Playworks model and its effects on students; and challenges faced.

- **Interviews with Playworks Coaches.** JGC staff interviewed the Playworks coach in each study school (n = 14) for about 60 minutes. Interview topics included reasons for working with Playworks; previous experience and training; Playworks rollout at the school (including individual components); relationships with principals and teachers and integration of the Playworks coach into the school; views of the Playworks model and its effects on recess, physical activity and students; and challenges faced.

- **Focus Groups with Junior Coaches.** JGC staff conducted focus groups with students who were junior coaches at 13 treatment schools. Focus groups took place after school in a secure room without Playworks staff present and lasted about 90 minutes. Students were asked to describe reasons for wanting to become a junior coach; the training they received; experiences as a junior coach; other students' perceptions of Playworks; and challenges faced.

- **Playworks Observations.** JGC staff conducted recess observations in all 14 treatment schools to assess Playworks coach involvement and strategies, student participation in Playworks games, students' use of Playworks strategies and language, yard monitor and teacher activities and junior coach participation. Staff also observed class game time in order to assess the coaches' relationships with students in smaller groups and examine teacher and coach interactions and discipline styles.

Future Study Briefs

In addition to the original 25 study schools, 4 study schools from one additional site were randomly assigned to the treatment or control group for the 2011–2012 school year. The same data collection protocols used in spring 2011 will be used to gather impact and implementation data in these 4 additional schools in spring 2012. We will not collect any additional information from students in the original 25 schools.

Three future study briefs will report on findings from the full sample of 29 schools. These future briefs will include findings based on additional outcome data collected in the original set of schools in spring 2011 and will be collected in the 4 new study schools in spring 2012. Each of these additional data collection activities is described below.

- **Administrative Records.** Mathematica collected school-level data on student demographic characteristics, attendance, disciplinary events and academic performance from each study school/district.

- **Recess Observations.** A team of trained observers from Mathematica measured students' physical activity and active participation in organized games during six recess periods at each school using a structured observation protocol. Mathematica staff also measured negative interactions (such as teasing, verbal abuse or aggression) and positive interactions (such as supportive language or use of conflict resolution skills) among students. JGC staff also conducted recess observations in treatment and control schools; during these observations, JGC assessed

organization of recess, engagement in games and play, conflicts and resolution, inclusiveness and physical activity.

- **Objective Physical Activity Data from Accelerometers.** Fourth- and fifth-grade students in each school were asked to wear accelerometers for one full school day to measure their physical activity. Accelerometers are movement monitors similar to pedometers. They are recognized as one of the most effective ways to record frequency, intensity and duration of physical activity with minimal burden on participants.
- **Physical Activity.** The student survey described in this brief included a section that asked students to report on their extent and enjoyment of physical activity, confidence in physical skills and capabilities and physical activity outside of school. These outcomes are not described in the current brief but will be included in a future brief.

APPENDIX 2

TABLES

Table 1. Characteristics of Schools in the Study

Outcome (mean unless otherwise noted)	Sample Size (data source)	Treatment	Control	Difference	*p*-Value
Percentage of Schools Receiving Title I	25 (CCD)				
Title I-eligible school		92.0	92.0	0.0	1.00
Schoolwide Title I		85.2	82.3	2.8	0.81
Percentage of Schools in the Following Areas:	25 (CCD)				
Urban		100.0	100.0	0.0	1.00
Suburban		0.0	0.0	0.0	1.00
Town		0.0	0.0	0.0	1.00
Rural		0.0	0.0	0.0	1.00
Number of Students Per Teacher	25 (CCD)	16.2	16.3	0.0	0.94
Number of Students Per School	25 (CCD)	487.7	556.0	-68.3	0.41
Percentage of Students Eligible for Free or Reduced-Price Lunch	25 (CCD)	81.1	83.1	-2.1	0.64
Percentage of Students that Are the Following Race/Ethnicity:[a]	25 (CCD)				
Black		44.4	41.9	2.5	0.79
Hispanic		21.7	28.1	-6.3	0.51
White		16.0	12.2	3.8	0.30
Asian		15.1	8.2	6.8	0.13
Native American		0.7	0.8	-0.1	0.46

Sources: Common Core of Data (CCD) from the 2009-2010 school year.

Note: The treatment mean minus the control mean does not always equal the number shown in the difference column due to rounding.

[a] These percentages do not necessarily sum to 100 because they are calculated by averaging school-level percentages.

Table 2. Characteristics of Students and Teachers in the Study

Outcome (mean unless otherwise noted)	Sample Size (data source)	Treatment	Control	Difference	*p*-Value
Student Characteristics					
Percentage of Students that Are Female	1,957 (student survey)	53.2	50.7	2.4	0.13
Percentage of Students that Are in the Following Grades:	1,957 (administrative records)				
4th		52.1	52.6	-0.4	0.94
5th		47.9	47.4	0.4	0.94
Percentage of Students that Are the Following Race/Ethnicity:[a]	1,912 (student survey)				
Black or African American		36.5	33.4	3.1	0.69
Hispanic		28.3	42.4	-14.0	0.19
White		26.0	22.4	3.6	0.21
Asian, Native Hawaiian, or Other Pacific Islander		26.4	14.7	11.8	0.14
American Indian or Alaskan Native		8.9	6.8	2.1	0.23
Teacher Characteristics					
Percentage of Teachers that Are Female	247 (teacher survey)	89.7	88.1	1.6	0.69
Percentage of Teachers that Are Hispanic or Latino	243 (teacher survey)	6.5	10.9	-4.5	0.28
Percentage of Teachers that Are the Following Race:[b]	228 (teacher survey)				
White		84.6	70.2	14.5***	0.00
African American		9.6	20.5	-10.9***	0.01
Other race[c]		6.6	10.3	-3.8	0.32
Percentage of Teachers with the Following Highest Level of Education:	244 (teacher survey)				
Bachelor's degree		32.4	36.3	-4.0	0.65
Master's degree		58.2	56.8	1.3	0.86
Other degree		9.4	6.7	2.7	0.43
Number of Years Teaching Experience	242 (teacher survey)	12.1	12.5	-0.5	0.75
Number of Years Teaching at the Current School	242 (teacher survey)	6.2	6.9	-0.8	0.63

Sources: Student and teacher surveys conducted in spring 2011 and administrative records data collected from schools.

Note: The treatment mean minus the control mean does not always equal the number shown in the difference column due to rounding.

[a] These percentages can sum to more than 100 because students could report more than one race or ethnicity.

[b] These percentages can sum to more than 100 because teachers could report more than one race.

[c] This includes Asian, Native Hawaiian, Other Pacific Islander, American Indian, and Alaskan Native.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

Table 3. School Contextual Issues and Pre-Implementation Features in Treatment Schools

	Sample Size (data source)	Treatment
Percentage of Schools that:	14 (principal interviews)	
Had recess in year before evaluation		85.7
Had a new principal in 2010–2011		42.9
Did not make AYP in 2009–2010		35.7
Percentage of Schools in Which the Following Person Was Responsible for Bringing in the Program:	14 (principal interviews)	
Current principal		64.3
Former principal		0.0
Another school staff member		14.3
School parent organization		7.1
Another person		14.3
Percentage of Schools in Which the Program Was or Would Have Been Funded by:[a]	14 (principal interviews)	
School budget/Title 1 funds		57.1
School district		21.4
External grant		14.3
Parent organization		14.3
Percentage of Schools in Which the Key Reason the Program Was Desired Was to:[a]	14 (principal interviews)	
Organize/formalize recess games		64.3
Improve sense of community, teamwork, and school climate		28.6
Increase safety/decrease conflicts		21.4
Increase physical activity		14.3
Promote leadership		7.1
Improve or add recess generally		14.3

Source: Interviews with treatment principals conducted in spring 2011.

[a] Percentages do not sum to 100 because data capture multiple responses per school.

AYP = adequate yearly progress.

Table 4. Implementation of Key Program Components in Playworks Schools

	Sample Size (data source)	Treatment
Recess Implementation		
Percentage of Recesses in Which the Following Was Observed:	82 (recess observations)	
Use of positive messaging by the coach		67.5
Use of positive messaging by other adults		40.6
Use of inclusive behavior by the coach		61.4
Use of inclusive behavior by other adults		21.8
Coach played with students		62.2
Other adults played with students		43.0
Use of ro-sham-bo by students		32.9
Class Game Time Implementation		
Percentage of Class Game Times in Which the Following Was Observed:	47 (class game time observations)	
Use of positive messaging by the coach		86.2
Use of ro-sham-bo by students		34.0
Teacher played with students		42.1
Use of positive messaging by the teacher		30.5
Coach addressed negative student behavior		54.1
Teacher addressed negative student behavior		64.8
Junior Coach Program		
Percentage of Junior Coaches that Reported Using Ro-Sham-Bo at Recess	13 (junior coach focus groups)	84.6
Percentage of Recesses in Which Junior Coaches Were Observed Intervening in Conflict	82 (recess observations)	23.5
Percentage of Schools with 19 or Fewer Junior Coaches	14 (Playworks coach interviews)	50.0
Percentage of Schools with 20 or More Junior Coaches	14 (Playworks coach interviews)	50.0

Sources: Recess observations, class game time observations, focus groups, and interviews with Playworks coaches conducted in spring 2011.

Table 5. Teacher Participation in and Perceptions of Playworks Class Game Time

	Sample Size (data source)	Treatment
Percentage of Teachers that Report that Their Class Participated in Playworks Class Game Time 3 or More Times in the Past 30 Days	138 (teacher survey)	65.8
Percentage of Teachers that "Agree" or "Strongly Agree" that Playworks Class Game Time:	138 (teacher survey)	
Helps their students learn new games		88.6
Helps them learn new games		85.4
Helps their students learn recess rules		81.2
Helps them learn recess rules		59.5
Is fun for their students		90.6
Is good exercise for their students		87.7
Takes away from students' academic learning		11.7
Allows them to play with their students		68.4
Is an important part of Playworks		85.3

Source: Teacher surveys conducted in spring 2011.

Note: Sample sizes based on the same data source might be different due to missing responses.

Table 6. Teacher Perceptions of Junior Coaches and Playworks Coaches

	Sample Size (data source)	Treatment
Junior Coaches		
Percentage of Teachers Reporting Having One or More Playworks Junior Coaches in Their Class	135 (teacher survey)	24.5
Percentage of Teachers that "Agree" or "Strongly Agree" that Junior Coaches:	106 (teacher survey)	
Enjoy their role at recess		88.3
Have gained leadership skills through their participation		89.9
Have improved their own recess conduct		68.8
Teach other students games		80.2
Help resolve conflicts at recess		66.7
Have reduced their own incidents of conflict with others		64.4
Include others at recess		78.3
Are good role models		74.4
Are eager to be junior coaches		80.5
Playworks Coaches		
Percentage of Teachers that "Agree" or "Strongly Agree" that the Playworks Coach at Their School:	139 (teacher survey)	
Is adequately trained		95.9
Gets along well with students		98.8
Is successful at including all students in organized activities		93.3
Gets along well with school staff		92.4
Communicates well with teachers		87.2
Communicates well with students		92.9
Uses appropriate techniques when working with students		93.0
Percentage of Teachers that "Agree" or "Strongly Agree" that Students Feel Connected to the Playworks Coach	139 (teacher survey)	90.6
Percentage of Teachers that "Agree" or "Strongly Agree" that They Have a Positive Relationship with the Playworks Coach	139 (teacher survey)	89.3

Source: Teacher surveys conducted in spring 2011.

Note: Sample sizes based on the same data source might be different due to missing responses.

Table 7. Teacher Perceptions of Playworks

	Sample Size (data source)	Treatment
Percentage of Teachers that "Agree" or "Strongly Agree" that the Playworks Program:	139 (teacher survey)	
Helps students stay out of trouble		91.2
Provides positive experiences for students during recess		98.7
Reinforces positive behavior during recess		95.9
Addresses important student needs at their school		85.7
Takes away important time that children have for unstructured play		5.2
Is valued by the staff at their school		84.8
Is valued by the students at their school		95.8
Is valued by the parent community at their school		56.9
Percentage of Teachers that "Agree" or "Strongly Agree" that Playworks Recess Activities:	138 (teacher survey)	
Help their students learn new games		97.4
Help them learn new games		82.1
Help their students learn recess rules		94.7
Are fun for their students		98.6
Provide good exercise for their students		98.7
Take away from students' academic learning		5.1
Allow them to play with their students		56.2
Are an important part of Playworks		95.9
Percentage of Teachers that Report Hoping that Playworks Is Implemented in the Future at Their School	138 (teacher survey)	96.8

Source: Teacher surveys conducted in spring 2011.

Note: Sample sizes based on the same data source might be different due to missing responses.

Table 8. Student Participation in and Perceptions of Playworks

	Sample Size (data source)	All Treatment Students	Treatment Students with Above-Average Participation[a]	Treatment Students with Below-Average Participation[a]
Percentage of Students that Report that They Did the Following "A Few Times" or "Many Times":	1,024 (student survey)			
Participated in activities organized by their Playworks coach during the past two weeks		74.0	94.7	50.9
Participated in games with their Playworks coach during class game time during the past two weeks		72.4	93.8	48.6
Participated in Playworks games led by their teacher in class during the past two weeks		44.9	68.5	18.7
Used ro-sham-bo to resolve conflicts during recess		67.3	89.4	42.8
Percentage of Students that Report that They Agree "A Little" or "A Lot" with the Following:	1,023 (student survey)			
I enjoy participating in class game time with my Playworks coach		89.9	96.0	83.0
I enjoy participating in Playworks games with my teacher		80.9	88.3	72.6
I enjoy recess activities with my Playworks coach		88.6	96.5	79.7
My Playworks coach does games with us that I like to play		86.9	93.6	79.3

Source: Student surveys conducted in spring 2011.

Note: Sample sizes based on the same data source might be different due to missing responses.

[a] The treatment students with above-average participation in Playworks were the students with a value above the overall mean score for the Participation in Playworks Activities Scale. The treatment students with below-average participation were the students with a value below the overall mean score for the Participation in Playworks Activities Scale. The Participation in Playworks Activities Scale averages student responses to four items from the student survey: (I2) "During the last two weeks, how often have you participated in activities organized by your Playworks coach during recess?"; (I3) "During the last two weeks, how often has your class participated in games with your Playworks coach during class game time?"; (I4) "During the last two weeks, how often has your teacher led you in Playworks games during class?"; and (I5) "During recess, how often do you use 'ro-sham-bo' to resolve conflicts?." Responses are coded on a 4-point scale ranging from 0 (never) to 3 (many times). Higher values on the scale indicate greater participation in Playworks activities. The scale is coded as missing if responses were missing for two or more items.

Table 9. Impacts on School Climate

Outcome (mean unless otherwise noted)	Sample Size (data source)	Treatment	Control	Difference	*p*-Value
School as Community					
Sense of School as Community Scale Score[a]	1,935 (student survey)	2.8	2.7	0.1	0.85
Percentage of Teachers that "Agree" or "Strongly Agree" that Students in Their School Use Positive, Encouraging Language	242 (teacher survey)	51.7	27.7	24.0	0.10
Feelings of Safety					
Student-Reported Feelings of Safety at School Scale Score[b]	1,937 (student survey)	2.6	2.5	0.1	0.76
Student-Reported Feelings of Safety at Recess Scale Score[c]	1,936 (student survey)	2.8	2.6	0.2	0.23
Teacher-Reported Feelings of Students' Safety at School Scale Score[d]	245 (teacher survey)	3.8	3.2	0.6	0.15
Teacher-Reported Feelings of Students' Safety/Inclusion at Recess Scale Score[e]	244 (teacher survey)	4.0	3.1	0.8***	0.00
Support for Organized Play					
Teacher Support for Organized Play During the School Day Scale Score[f]	241 (teacher survey)	4.2	4.1	0.1	0.73
School Staff Support for Organized Play During the School Day Scale Score[g]	246 (teacher survey)	4.3	3.9	0.4*	0.07

Sources: Student and teacher surveys conducted in spring 2011.

Note: Random assignment block indicators were included as covariates in all impact models; indicators for teachers' race were included as covariates in the impact models for teacher survey outcomes. The *p*-values reported in this table account for clustering of students and teachers within schools and for multiple hypothesis testing (MHT) to control the probability of finding any falsely significant impacts (the family-wise error rate) at 5 percent. The adjustment for MHT is based on the multivariate t-distribution and takes into account correlations among test statistics. The adjustment accounts for the tests presented in this table, but not for tests presented in other tables. Sample sizes based on the same data source might be different due to missing responses. The treatment mean minus the control mean does not always equal the number shown in the difference column due to rounding.

[a] The Sense of School as Community Scale averages student responses to 13 items from the student survey: (A1) "Students at this school really care about each other."; (A2) "Students at this school are willing to go out of their way to help someone,"; (A3) "When I'm having a problem, some other student will help me."; (A4) "Teachers and students treat each other with respect in this school."; (A5) "People care about each other in this school."; (A6) "Students at this school work together to solve problems."; (A7) "Students in this school don't seem to like each other very well."; (A8) "Students in this school are just looking out for themselves."; (A9) "Students in this school treat each other with respect."; (A10) "The students in this school don't really care about each other."; (A11) "I feel that I can talk to the teachers in this school about things that are bothering me."; (A12) "Teachers and students in this school don't seem to like each other."; and (A13) "Students in this school help each other, even if they are not friends." Responses are coded on a 4-point scale ranging from 1 (agree a lot) to 4 (disagree a lot) for A7, A8, A10, and A12 and from 1 (disagree a lot) to 4 (agree a lot) for all other items. Higher values on the scale indicate more positive

Table 9 (continued)

student feelings about their sense of school as community. The scale is coded as missing if responses were missing for four or more items.

[b] The Student-Reported Feelings of Safety at School Scale averages student responses to four items from the student survey: (A14) "Students feel afraid that someone will bully them at school."; (A15) "Students feel afraid that someone will hurt them at school."; (A16) "Students feel afraid that someone will tease them at school."; and (A17) "Students feel safe at this school." Responses are coded on a 4-point scale ranging from 1 (disagree a lot) to 4 (agree a lot) for A17 and from 1 (agree a lot) to 4 (disagree a lot) for the other three items. Higher values on the scale indicate more positive student feelings about safety at school. The scale is coded as missing if responses were missing for two or more items.

[c] The Student-Reported Feelings of Safety at Recess Scale averages student responses to four items from the student survey: (A18) "Students feel afraid that someone will bully them at recess."; (A19) "Students feel afraid that someone will hurt them at recess."; (A20) "Students feel afraid that someone will tease them at recess."; and (A21) "Students feel safe during recess." Responses are coded on a 4-point scale ranging from 1 (disagree a lot) to 4 (agree a lot) for A21 and from 1 (agree a lot) to 4 (disagree a lot) for the other three items. Higher values on the scale indicate more positive student feelings about safety at recess. The scale is coded as missing if responses were missing for two or more items.

[d] The Teacher-Reported Feelings of Students' Safety at School Scale averages teacher responses to two items from the teacher survey: (B5) "Students feel safe at this school." and (B6) "Students feel afraid that someone will hurt them at school." Responses are coded on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree) for B5 and from 1 (strongly agree) to 5 (strongly disagree) for B6. Higher values on the scale indicate more positive teacher feelings about safety at school. The scale is coded as missing if responses were missing for either item.

[e] The Teacher-Reported Feelings of Students' Safety/Inclusion at Recess Scale averages teacher responses to three items from the teacher survey: (B7) "Students feel safe at recess."; (B8) "Students feel included at recess."; and (B9) "Students feel afraid that someone will hurt them at recess." Responses are coded on a 5-point scale ranging from 1 (strongly agree) to 5 (strongly disagree) for B9 and from 1 (strongly disagree) to 5 (strongly agree) for B7 and B8. Higher values on the scale indicate more positive teacher feelings about safety/inclusion at recess. The scale is coded as missing if responses were missing for one or more items.

[f] The Teacher Support for Organized Play During the School Day Scale averages teacher responses to eight items from the teacher survey: (A19) "The transition back to class after recess is shortened if students have participated in organized play/activities during recess."; (A20) "Conflict in the classroom is reduced if students have participated in organized play/activities during recess."; (A21) "Students are more likely to feel included if they participate in organized play/activities during recess."; (A22) "Participating in organized play/activities during recess helps increase students' physical activity levels."; (A23) "When there are organized play/activities during recess, kids are less likely to get involved in arguments or fights."; (A24) "Scheduling physical activity programs during the school day takes away important time that my students need to focus on their academic achievement."; (A25) "Participating in play/activities organized by adults during recess takes away important time that children have for unstructured play."; and (B3) "It is important for students to have the opportunity to play during the school day." Responses are coded on a 5-point scale ranging from 1 (strongly agree) to 5 (strongly disagree) for A24 and A25 and from 1 (strongly disagree) to 5 (strongly agree) for all other items. Higher values on the scale indicate higher levels of teacher support for organized play activities during the school day. The scale is coded as missing if responses were missing for three or more items.

[g] The School Staff Support for Organized Play During the School Day Scale averages teacher responses to two items from the teacher survey: (B1) "Staff at our school think it is important to provide students with an opportunity to play during the school day." and (B2) "Staff at our school think it is important to have recess for students." Responses are coded on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree) for both items. Higher values on the scale indicate higher levels of staff support for organized play during the school day. The scale is coded as missing if responses were missing for either item.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

Table 10. Impacts on Conflict Resolution and Aggression

Outcome (mean unless otherwise noted)	Sample Size (data source)	Treatment	Control	Difference	*p*-Value
Interactions with Other Students					
Relationships with Other Students Scale Score[a]	1,925 (student survey)	3.2	3.1	0.1	0.91
Student Bullying/Exclusion Scale Score[b]	245 (teacher survey)	0.6	1.0	-0.5**	0.05
Aggression					
Aggressive Behavior Scale Score[c]	1,942 (student survey)	1.4	1.5	0.0	0.90
Normative Beliefs About Aggression Scale Score[d]	1,940 (student survey)	1.6	1.7	-0.1	0.61
BASC Aggression Subscale Score[e]	1,198 (teacher survey, student-specific portion)	6.2	6.7	-0.5	0.95

Sources: Student and teacher surveys conducted in spring 2011.

Note: Random assignment block indicators were included as covariates in all impact models; indicators for teachers' race were included as covariates in the impact models for teacher survey outcomes. The *p*-values reported in this table account for clustering of students and teachers within schools and for multiple hypothesis testing (MHT) to control the probability of finding any falsely significant impacts (the family-wise error rate) at 5 percent. The adjustment for MHT is based on the multivariate t-distribution and takes into account correlations among test statistics. The adjustment accounts for the tests presented in this table, but not for tests presented in other tables. Sample sizes based on the same data source might be different due to missing responses. The treatment mean minus the control mean does not always equal the number shown in the difference column due to rounding.

[a] The Relationships with Other Students Scale averages student responses to three items from the student survey: (B7) "I get along well with other kids during recess."; (B8) "If a disagreement with another kid happens at school, I know how to work things out without getting into a fight."; and (B9) "If a disagreement with another kid happens during recess, I know how to work things out without getting into a fight." Responses are coded on a 4-point scale ranging from 1 (disagree a lot) to 4 (agree a lot) for all items. Higher values on the scale indicate more positive views of relationships with other students. The scale is coded as missing if responses were missing for one or more items.

[b] The Student Bullying/Exclusion Scale averages teacher responses to seven items from the teacher survey: (B10) "In the past 30 days, how often have students reported to you that they have been a victim of name-calling during recess?"; (B11) "In the past 30 days, how often have students reported to you that they have been hit or pushed by another student during recess?"; (B12) "In the past 30 days, how often have students reported that they have been isolated from their normal peer group during recess?"; (B13) "In the past 30 days, how often have students reported to you that they have been bossed or coerced to do something they didn't want to do during recess?"; (B14) "In the past 30 days, how often have students indicated that they are afraid to come to school because of the fear of being bullied?"; (B15) "In the past 30 days, how often have students indicated that they are afraid to go to recess because of the fear of being bullied?"; and (B16) "In the past 30 days, how often has a parent indicated that their child is afraid to come to school because of the fear of being bullied?" Responses are coded on a 4-point scale ranging from 0 (never) to 3 (5 or more times) for all items. Higher values on the scale indicate higher levels of bullying/exclusion. The scale is coded as missing if responses were missing for two or more items.

[c] The Aggressive Behavior Scale averages student responses to six items from the student survey: (B1) "In the past two weeks I teased a kid at school."; (B2) "In the past two weeks I pushed, shoved, or hit a kid at school."; (B3) "In the past two weeks I called a kid at school a bad name."; (B4) "In the past two weeks I said that I would hit a kid at school."; (B5) "In the past two weeks I left out another kid on purpose."; and (B6) "In the past two weeks I made up something about other students to make other kids not like them

Table 10 (continued)

anymore." Responses are coded on a 4-point scale ranging from 1 (never) to 4 (many times) for all items. Higher values on the scale indicate higher frequency of aggressive behavior. The scale is coded as missing if responses were missing for two or more items.

[d] The Normative Beliefs About Aggression Scale averages student responses to eight items from the student survey: (B10) "It is OK to take your anger out on others by using physical force."; (B11) "If you're angry, it is OK to say mean things to other people."; (B12) "It is OK to yell at others and say bad things."; (B13) "It is OK to punch or shove other people around if you're mad."; (B14) "It is wrong to insult (that is put down or make fun of) other people."; (B15) "It is wrong to take it out on others by saying mean things when you're mad."; (B16) "It is wrong to get into physical fights with other people."; and (B17) "It is wrong to hit other people." Response are coded on a 4-point scale ranging from 1 (disagree a lot) to 4 (agree a lot) for B10 to B13 and from 1 (agree a lot) to 4 (disagree a lot) for B14 to B17. Higher values on the scale indicate higher general approval of aggression. The scale is coded as missing if responses were missing for three or more items.

[e] The BASC Aggression Subscale is created by summing teacher responses to 14 items from the student-specific portion of the teacher survey: (G1) "This student argues when denied his/her own way."; (G2) "This student blames others."; (G3) "This student shows off."; (G4) "This student threatens to hurt others."; (G5) "This student breaks other children's things."; (G6) "This student hits other children."; (G7) "This student is a sore loser."; (G8) "This student is critical of others."; (G9) "This student talks back to teachers."; (G10) "This student complains about rules."; (G11) "This student teases others."; (G12) "This student calls other children names."; (G13) "This student bullies others."; and (G14) "This student orders others around." Responses are coded on a 4-point scale ranging from 0 (never) to 3 (almost always) for all items. Higher values on the scale indicate higher levels of aggression in the student. The scale is coded as missing if responses were missing for three or more items.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

BASC = Behavioral Assessment System for Children.

Table 11. Impacts on Learning and Academic Performance

Outcome (mean unless otherwise noted)	Sample Size (data source)	Treatment	Control	Difference	*p*-Value
Transition from Recess to Classroom Activities					
Effect of Recess on Behavior in Class Scale Score[a]	1,904 (student survey)	2.5	2.4	0.1	0.97
Effect of Sports, Games, and Play on Behavior in Class Scale Score[b]	1,897 (student survey)	2.7	2.5	0.2*	0.07
Percentage of Students that Report that It Is "Somewhat True" or "Very True" that Beginning Class Work After Recess Is Easy	1,934 (student survey)	59.8	53.8	6.0	0.81
Number of Minutes to Transition from Recess to Learning Activities[c]	238 (teacher survey)	6.8	9.3	-2.5*	0.08
Difficult Transition to Learning After Recess Scale Score[d]	243 (teacher survey)	2.4	3.2	-0.8***	0.01
Engagement with Classroom Activities					
Engagement Versus Disaffection with Learning Scale Score[e]	1,934 (student survey)	3.3	3.2	0.1	0.52
Percentage of Teachers that "Agree" or "Strongly Agree" that Their Students:	1,197 (teacher survey, student-specific portion)				
Are attentive in class		60.0	54.7	5.3	1.00
Participate in class		77.5	68.7	8.8	0.45
Academic Performance					
Percentage of Teachers that Report that Their Students "Often" or "Always or Almost Always" Complete Their Homework	1,211 (teacher survey, student-specific portion)	79.5	77.7	1.8	1.00
Percentage of Teachers that Report that Their Students' Academic Performance Is "Somewhat" or "Far" Above Grade Level	1,210 (teacher survey, student-specific portion)	7.9	15.0	-7.2	0.50
Percentage of Teachers that Report that Their Students' Motivation to Succeed Academically Is "High" or "Extremely High"	1,211 (teacher survey, student-specific portion)	35.6	35.6	0.0	1.00

Sources: Student and teacher surveys conducted in spring 2011.

Note: Random assignment block indicators were included as covariates in all impact models; indicators for teachers' race were included as covariates in the impact models for teacher survey outcomes. The *p*-values reported in this table account for clustering of students and teachers within schools and for multiple hypothesis testing (MHT) to control the probability of finding any falsely significant impacts (the family-wise error rate) at 5 percent. The adjustment for MHT is based on the multivariate t-distribution and takes into account correlations among test statistics. The adjustment accounts for the tests presented in this table, but not for tests presented in other tables. Sample sizes based on the same data source

Table 11 (continued)

might be different due to missing responses. The treatment mean minus the control mean does not always equal the number shown in the difference column due to rounding.

[a] The Effect of Recess on Behavior in Class Scale averages student responses to three items from the student survey: (C1) "Problems that happened during recess make it hard for my teacher to start lessons after recess."; (C3) "It is hard to get settled down after recess."; and (C7) "I sometimes make it hard for my teacher to start lessons after recess." Responses are coded on a 4-point scale ranging from 1 (very true) to 4 (not at all true) for all items. Higher values on the scale indicate more positive effects from recess on class. The scale is coded as missing if responses were missing for one or more items.

[b] The Effect of Sports, Games, and Play on Behavior in Class Scale averages student responses to three items from the student survey: (C4) "It is easier to pay attention in class on days when I play and run around than on days when I don't play and run around."; (C5) "Participating in sports and games at recess helps me pay attention in class."; and (C6) "Participating in sports and games at recess helps me behave better in class." Responses are coded on a 4-point scale ranging from 1 (not at all true) to 4 (very true) for all items. Higher values on the scale indicate more positive effects from playing sports on class. The scale is coded as missing if responses were missing for one or more items.

[c] This outcome averages teacher responses to the following question from the teacher survey: (A15) "On the most recent school day in which your students participated in recess, approximately how many minutes did it take for the majority of students to become engaged in their first classroom activity after recess?"

[d] The Difficult Transition to Learning After Recess Scale averages teacher responses to three items from the teacher survey: (A16) "Think about the most recent school day in which your students participated in recess. In the 15 minutes just after recess, some students became restless and began to lose focus on their tasks."; (A17) "Think about the most recent school day in which your students participated in recess. In the 15 minutes just after recess, there were incidents of negative student behavior toward peers or the teacher (e.g., teasing, name-calling, aggression, or exclusionary behavior)."; and (A18) "Think about the most recent school day in which your students participated in recess. In the 15 minutes just after recess, I spent more time than I would have liked redirecting student misbehavior." Responses are coded on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher values on the scale indicate a rougher transition to learning after recess. The scale is coded as missing if responses were missing for one or more items.

[e] The Engagement Versus Disaffection with Learning Scale averages student responses to 10 items from the student survey: (C13) "I pay attention in class."; (C14) "When I'm in class, I join in on class discussions."; (C15) "I try hard to do well in school."; (C16) "In class, I work as hard as I can."; (C17) "When I am in class, I listen very carefully."; (C18) "When I'm in class, I just pretend like I'm working."; (C19) "I don't try very hard at school."; (C20) "In class, I only work as much as I have to so I don't get in trouble."; (C21) "When I'm in class, I think about other things."; and (C22) "When I'm in class, my mind wanders." Responses are coded on a 4-point scale ranging from 1 (disagree a lot) to 4 (agree a lot) for questions C13, C14, C15, C16, and C17 and from 1 (agree a lot) to 4 (disagree a lot) for all other items. Higher values on the scale indicate higher levels of engagement with learning. The scale is coded as missing if responses were missing for two or more items from C13 to C17 and/or two or more items from C18 to C22.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

Table 12. Playworks' Role in Class Environment

	Sample Size (data source)	Treatment
Percentage of Teachers that Reported that Playworks Had the Following Effects on Students in Their Classrooms:	43 (teacher interviews)	
Students used ro-sham-bo		39.5
Students showed an increase in teamwork/inclusiveness		14.0
Students were more ready to learn, compared with previous year		27.9
Students participated more in class, compared with previous year		7.0
Students behaved better		7.0
Junior coaches' academics were negatively affected by missing class time		4.7
Percentage of Teachers Who Reported that Playworks Had the Following Effects on Them as Teachers:	43 (teacher interviews)	
Used games learned during class game time in classroom		23.3
Used Playworks' facilitation and management strategies		14.0
Spent less time dealing with conflict in classroom		14.0

Source: Teacher interviews conducted in spring 2012.

Table 13. Impacts on Recess Experience

Outcome (mean unless otherwise noted)	Sample Size (data source)	Treatment	Control	Difference	*p*-Value
Recess Activities					
Participation in Individual Activities During Recess Scale Score[a]	1,943 (student survey)	0.7	0.8	-0.1	0.92
Participation in Organized Games During Recess Scale Score[b]	1,938 (student survey)	2.1	1.9	0.1	0.55
Percentage of Students that Report that They Do the Following "Sometimes" or "A Lot":	1,937 (student survey)				
Play games and sports with adults during recess		59.8	45.7	14.1	0.36
Play games and sports with their teacher during recess		39.5	30.5	9.0	0.66
Talk with friends during recess		91.6	90.0	1.5	1.00
Participate in recess activities that make them sweat or breathe hard		77.3	76.9	0.4	1.00
Percentage of Teachers that "Agree" or "Strongly Agree" that Their Students Participate in Activities that Make Them Sweat and Breathe Hard	243 (teacher survey)	79.3	58.4	20.9	0.30
Students' Perceptions of Recess					
Enjoyment of Recess Scale Score[c]	1,936 (student survey)	3.6	3.6	0.0	1.00
Percentage of Students that Agree "A Little" or "A Lot" that They:	1,942 (student survey)				
Like to play games and sports at recess		91.0	88.9	2.0	0.94
Feel like they can join other kids in a game on the playground		81.6	81.9	-0.3	1.00
Feel left out at recess		19.9	23.2	-3.3	0.87
Percentage of Students that Report that They Do the Following "Sometimes" or "A Lot":	1,939 (student survey)				
Get to play a game that they want during recess		77.7	76.7	1.0	1.00
Have to play a game that adults want them to play during recess		41.7	36.3	5.4	0.92
Conflict and Behavior During Recess					
Recess Behavior and Readiness for Class Scale Score[d]	244 (teacher survey)	3.8	3.3	0.5*	0.07
Percentage of Students that Report that They Do the Following "Sometimes" or "A Lot":	1,941 (student survey)				
Ask an adult to help them solve a conflict during recess		36.9	36.4	0.5	1.00
Get teased about not being good at games or sports during recess		26.6	28.7	-2.0	1.00
Get into an argument with other		31.8	33.7	-1.9	1.00

Table 13 (continued)

Outcome (mean unless otherwise noted)	Sample Size (data source)	Treatment	Control	Difference	*p*-Value
students during recess					
Fight or hit other students during recess		7.7	11.2	-3.5	0.90
Work out problems with other students during recess without fighting		69.8	66.9	2.9	0.98
Say encouraging things to other students during recess		84.3	80.1	4.2	0.75
Teachers' Perceptions of Students' Feelings about Recess					
Percentage of Teachers that "Agree" or "Strongly Agree" that Their Students:	246 (teacher survey)				
Look forward to recess		98.8	95.0	3.8	0.62
Enjoy adult-organized activities at recess		95.1	71.4	23.7***	0.00
Would be upset about missing recess		95.9	92.1	3.8	0.93
Feel ownership over their activities during recess		74.7	53.3	21.3	0.13

Sources: Student and teacher surveys conducted in spring 2011.

Note: Random assignment block indicators were included as covariates in all impact models; indicators for teachers' race were included as covariates in the impact models for teacher survey outcomes. The *p*-values reported in this table account for clustering of students and teachers within schools and for multiple hypothesis testing (MHT) to control the probability of finding any falsely significant impacts (the family-wise error rate) at 5 percent. The adjustment for MHT is based on the multivariate t-distribution and takes into account correlations among test statistics. The adjustment accounts for the tests presented in this table, but not for tests presented in other tables. Sample sizes based on the same data source might be different due to missing responses. The treatment mean minus the control mean does not always equal the number shown in the difference column due to rounding.

[a] The Participation in Individual Activities During Recess Scale averages student responses to four items from the student survey: (D12) "How often do you stand or sit someplace during recess?"; (D14) "How often do you read during recess?"; (D15) "How often do you do schoolwork during recess?"; and (D16) "How often do you play or hang out by yourself during recess?" Responses are coded on a 4-point scale ranging from 0 (never) to 3 (a lot) for all items. Higher values on the scale indicate greater participation in solo activities during recess. The scale is coded as missing if responses were missing for two or more items.

[b] The Participation in Organized Games During Recess Scale averages student responses to six items from the student survey: (D17) "How often do you play a game or sport with another student or students during recess?"; (D18) "How often do you stay involved in games during recess?"; (D19) "How often do you feel confident trying a new game during recess?"; (D20) "How often do you invite another student to play a game during recess?"; (D21) "How often do you play a game or sport that an adult has started during recess?"; and (D22) "How often do you play a game or sport that you or another student has started during recess?" Responses are coded on a 4-point scale ranging from 0 (never) to 3 (a lot) for all items. Higher values on the scale indicate greater participation in organized games during recess. The scale is coded as missing if responses were missing for two or more items.

[c] The Enjoyment of Recess Scale averages student responses to seven items from the student survey: (D26) "How much do you look forward to recess?"; (D27) "How much do you like recess?"; (D28) "How much would you like to sit out at recess?"; (D29) "How happy do you usually feel at recess?"; (D30) "How would you feel if you had to miss recess?"; (D31) "How would you feel if recess was made longer?"; and (D32) "How would you feel if your school stopped having recess?" Responses are coded on a 4-point scale ranging from 1 (not at all) to 4 (very much) for D26 and D27, from 1 (very much) to 4 (not at all) for D28, from 1 (not at all happy) to 4 (very happy) for D29 and D31, and from 1 (very happy) to 4 (not at all happy) for D30 and D32. Higher values on the scale indicate more positive views of recess. The scale is coded as missing if responses were missing for two or more items.

Table 13 (continued)

[d] The Recess Behavior and Readiness for Class Scale averages teacher responses to five items from the teacher survey: (A5) "My students come back to class ready for learning after recess."; (A6) "My students come back from recess with a good report from the recess supervisor."; (A7) "My students need to be spoken to by the school principal after recess."; (A8) "My students need me to speak with them about their recess behavior."; and (A9) "My students get along with one another and the other classes at recess." Responses are coded on a 5-point scale ranging from 1 (never) to 5 (always or almost always) for A5, A6, and A9 and from 1 (always or almost always) to 5 (never) for the other two items. Higher values on the scale indicate better behavior at recess and a smoother transition back to class. The scale is coded as missing if responses were missing for two or more items.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

Table 14. Impacts on Youth Development

Outcome (mean unless otherwise noted)	Sample Size (data source)	Treatment	Control	Difference	*p*-Value
Interactions with Peers and Adults					
Student Interactions with Adults at School Scale Score[a]	1,935 (student survey)	3.3	3.2	0.1	0.97
Percentage of Students that Agree "A Little" or "A Lot" that They Get Along Well with Other Students	1,932 (student survey)	84.3	82.4	1.8	0.99
Self-Efficacy for Peer Interaction – Conflict Subscale Score[b]	1,928 (student survey)	2.1	2.0	0.0	0.99
Self-Efficacy for Peer Interaction – Non-Conflict Subscale Score[c]	1,920 (student survey)	1.7	1.7	0.0	1.00
Social Competence					
Social Competence – Emotional Regulation Subscale Score[d]	1,202 (teacher survey, student-specific portion)	2.1	2.0	0.1	0.73
Social Competence – Prosocial Behavior Subscale Score[e]	1,201 (teacher survey, student-specific portion)	2.1	2.0	0.0	0.99
Responsibility and Altruism					
Responsibility Scale Score[f]	1,192 (teacher survey, student-specific portion)	2.0	1.9	0.1	0.71
Altruism Scale Score[g]	1,176 (teacher survey, student-specific portion)	1.3	1.4	-0.1	0.92

Sources: Student and teacher surveys conducted in spring 2011.

Note: Random assignment block indicators were included as covariates in all impact models; indicators for teacher's race were included as covariates in the impact models for teacher survey outcomes. The *p*-values reported in this table account for clustering of students and teachers within schools and for multiple hypothesis testing (MHT) to control the probability of finding any falsely significant impacts (the family-wise error rate) at 5 percent. The adjustment for MHT is based on the multivariate t-distribution and takes into account correlations among test statistics. The adjustment accounts for the tests presented in this table, but not for tests presented in other tables. Sample sizes based on the same data source might be different due to missing responses. The treatment mean minus the control mean does not always equal the number shown in the difference column due to rounding.

[a] The Student Interactions with Adults at School Scale averages student responses to six items from the student survey: (F1) "At my school, there is an adult who really cares about me."; (F2) "At my school, there is an adult who tells me when I do a good job."; (F3) "At my school, there is an adult who always wants me to do my best."; (F4) "At my school, there is an adult who listens to me when I have something to say."; (F5) "During recess, there is an adult who often plays or participates in activities with us."; and (F6) "During recess, there is an adult who would be happy to help me if I had a problem." Responses are coded on a 4-point scale ranging from 1 (disagree a lot) to 4 (agree a lot) for all items. Higher values on the scale indicate more positive student feelings about their interactions with adults. The scale is coded as missing if responses were missing for two or more items.

[b] The Self-Efficacy for Peer Interaction – Conflict Subscale averages student responses to eight items from the student survey: (G2) "Some kids are teasing your friend. How easy or hard would it be for you to tell them to stop:"; (G3) "A kid cuts in front of you in line. How easy or hard would it be for you to tell the kid not to cut in front of you?"; (G4) "A kid wants to do something that will get you into trouble. How easy or hard would it be for you to ask the kid to do something else?"; (G5) "Some kids are making fun of someone in your classroom. How easy or hard would it be for you to tell them to stop?"; (G6) "A kid wants to be first when you play a game. How easy or hard would it be for you to tell the kid that you are going first?"; (G7) "A kid does not like your friend. How easy or hard would it be for you to tell the kid to be nice to your friend?"; (G8) "A group of kids wants to play a game that you don't like. How easy or hard would it be for you to ask them to play a game that you like?"; and (G9) "A kid is yelling at you. How easy or hard would it be for you to tell the kid to stop?" Responses are coded on a 4-point scale ranging from 1 (really hard) to 4 (really easy) for all items. Higher values on the scale indicate more effective interacting with peers in conflict situations. The scale is coded as missing if responses were missing for three or more items.

[c] The Self Efficacy for Peer Interaction – Non-Conflict Subscale averages student responses to four items from the student survey: (G10) "Some kids are deciding what game to play. How easy or hard would it be for you to tell them about a game you like?"; (G11) "Some kids need more people to be on their teams. How easy or hard would it be for you to ask to be on their team?"; (G12) "Your class is going on a trip and everyone needs a partner. How easy or hard would it be for you to ask someone to be your partner?"; and (G13) "Some kids are going to lunch. How easy or hard would it be for you to ask if you can sit with them?" Responses are coded on a 4-point scale ranging from 1 (really hard) to 4 (really easy) for all items. Higher values on the scale indicate more effective interacting with peers in nonconflict situations. The scale is coded as missing if responses were missing for two or more items.

[d] The Social Competence – Emotional Regulation Subscale averages teacher responses to six items from the student-specific portion of the teacher survey: (H4) "This student can accept things not going his/her way."; (H5) "This student copes well with failure."; (H6) "This student accepts legitimate imposed limits."; (H7) "This student thinks before acting."; (H8) "This student can calm down when excited or all wound up."; and (H9) "This student plays by the rules of the game." Responses are coded on a 4-point scale ranging from 0 (never) to 3 (almost always) for all items. Higher values on the scale indicate higher student emotional regulation. The scale is coded as missing if responses were missing for four or more items.

[e] The Social Competence – Prosocial Behavior Subscale averages teacher responses to 12 items from the student-specific portion of the teacher survey: (H10) "This student expresses needs and feelings appropriately."; (H11) "This student resolves peer problems on his/her own."; (H12) "This student is very good at understanding other people's feelings."; (H13) "This student is aware of the effect of his/her behavior on others."; (H14) "This student works well in a group."; (H15) "This student controls his/her temper when there is a disagreement."; (H16) "This student shares materials with others."; (H17) "This student cooperates with peers without prompting."; (H18) "This student is helpful to others."; (H19) "This student listens to others' points of view."; (H20) "This student can give suggestions or opinions without being bossy."; and (H21) "This student acts friendly toward others." Responses are coded on a 4-point scale ranging from 0 (never) to 3 (almost always) for all items. Higher values on the scale indicate higher student prosocial skills. The scale is coded as missing if responses were missing for seven or more items.

[f] The Responsibility Scale averages teacher responses to three items from the student-specific portion of the teacher survey: (H1) "This student apologizes when he/she has done something wrong."; (H2) "This student can wait in line patiently when necessary."; and (H3) "This student takes responsibility for his/her own actions." Responses are coded on a 4-point scale ranging from 0 (never) to 3 (almost always) for all items. Higher values on the scale indicate more student responsibility. The scale is coded as missing if responses were missing for one or more items.

[g] The Altruism Scale averages teacher responses to two items from the student-specific portion of the teacher survey: (H22) "This student helped someone who was being picked on."; and (H23) "This student stopped a child from hurting another child." Responses are coded on a 4-point scale ranging from 0 (never) to 3 (often). Higher values indicate higher levels of student altruism. The scale is coded as missing if responses were missing for either item.

Table 15. Impacts on Student Behavior

Outcome (mean unless otherwise noted)	Sample Size (data source)	Treatment	Control	Difference	*p*-Value
Classroom Behavior					
Disruptive Behavior in Class Scale Score[a]	1,931 (student survey)	1.9	2.0	-0.1	0.98
Classroom Misbehavior/Discipline Scale Score[b]	1,183 (teacher survey, student-specific portion)	0.6	0.5	0.0	1.00
Recess Behavior					
Recess Misbehavior/Discipline Scale Score[c]	1,183 (teacher survey, student-specific portion)	0.2	0.2	0.0	1.00
General Behavior					
Bad Behaviors Scale Score[d]	1,939 (student survey)	0.3	0.4	-0.1	0.98
Attendance					
Percentage of Teachers that Reported that Their Students Were:	1,180 (teacher survey, student-specific portion)				
Absent "two or more times" in the past 30 days		26.3	31.0	-4.7	1.00
Late for class "two or more times" in the past 30 days		14.2	18.9	-4.7	1.00
Discipline					
Percentage of Teachers that Reported that Their Students:	1,180 (teacher survey, student-specific portion)				
Were suspended during this school year		0.1	0.1	0.0	1.00
Received a detention in the past 30 days		22.3	25.3	-2.9	1.00
Number of Disciplinary Incidents:[e]	22 (discipline referral data)				
Overall		15.1	21.5	-6.4	1.00
At recess		1.9	1.4	0.5	1.00
In class		10.0	12.5	-2.5	1.00
In other location		3.2	5.6	-2.4	0.99
For fighting		2.4	4.4	-2.0	1.00
For profanity		0.3	1.0	-0.7	0.85
For disrespect		2.8	4.6	-1.8	1.00
For harassment		0.7	1.1	-0.4	1.00
For disruption		3.0	4.0	-1.0	1.00
For another reason		1.5	2.5	-1.0	1.00
For multiple reasons		4.3	3.8	0.5	1.00

Sources: Student and teacher surveys conducted in spring 2011; discipline referral data collected in spring 2011.

Table 15 (continued)

Note: Random assignment block indicators were included as covariates in all impact models; indicators for teacher's race were included as covariates in the impact models for teacher survey outcomes. The *p*-values reported in this table account for clustering of students and teachers within schools and for multiple hypothesis testing (MHT) to control the probability of finding any falsely significant impacts (the family-wise error rate) at 5 percent. The adjustment for MHT is based on the multivariate t-distribution and takes into account correlations among test statistics. The adjustment accounts for the tests presented in this table, but not for tests presented in other tables. Sample sizes based on the same data source might be different due to missing responses. The treatment mean minus the control mean does not always equal the number shown in the difference column due to rounding.

[a] The Disruptive Behavior in Class Scale averages student responses to five items from the student survey: (C8) "I sometimes annoy my teacher during class."; (C9) "I sometimes get into trouble with my teacher during class."; (C10) "I sometimes behave in a way during class that annoys my teacher."; (C11) "I sometimes don't follow my teacher's directions during class."; and (C12) "I sometimes disturb the lesson that is going on in class." Responses are coded on a 4-point scale ranging from 1 (not at all true) to 4 (very true). Higher values on the scale indicate disruptive behavior. The scale is coded as missing if responses were missing for two or more items.

[b] The Classroom Misbehavior/Discipline Scale averages teacher responses to three items from the student-specific portion of the teacher survey: (F9) "How many times in the past 30 days of school have you disciplined this child for misbehaving in class (e.g., asked this child to sit-out, miss recess)?"; (F10) "How many times in the past 30 days of school have you sent this child to the principal's office for misbehaving in class?"; and (F11) "How many times in the past 30 days of school have you contacted this child's parents regarding his/her behavior in class?" Responses are coded on a 4-point scale ranging from 0 (never) to 3 (four or more times). Higher values on the scale indicate greater misbehavior. The scale is coded as missing if responses were missing for one or more items.

[c] The Recess Misbehavior/Discipline Scale averages teacher responses to three items from the student-specific portion of the teacher survey: (F13) "How many times in the past 30 days of school have you disciplined this child for misbehaving at recess (e.g., asked this child to 'sit-out,' miss recess)?"; (F14) "How many times in the past 30 days of school have you sent this child to the principal's office for misbehaving at recess?"; and (F15) "How many times in the past 30 days of school have you contacted this child's parents regarding his/her behavior at recess?" Responses are coded on a 4-point scale ranging from 0 (never) to 3 (four or more times). Higher values on the scale indicate greater misbehavior. The scale is coded as missing if responses were missing for one or more items.

[d] The Bad Behaviors Scale averages student responses to six items from the student survey: (C23) "During this school year, how many times were you sent to the principal's office for doing something wrong at recess?"; (C24) "During this school year, how many times did you get in trouble for something that happened during recess?"; (C25) "During this school year, how many times were you sent to the principal's office for bad behavior in the classroom?"; (C26) "During this school year, how many times did you have to sit out at recess for bad behavior?"; (C27) "During this school year, how many times were you given a detention (for example you had to stay after school or miss lunch for bad behavior)?"; and (C28) "During this school year, how many times were you suspended." Responses are coded on a 4-point scale ranging from 0 (never) to 3 (five or more times). Higher values on the scale indicate greater engagement in bad behavior. The scale is coded as missing if responses were missing for two or more items.

[e] Schools were asked to report on discipline referrals that occurred over the course of one week during the spring semester. Each referral to the office during the week was treated as a separate incident. Discipline referral data were missing for one of the control schools; therefore, discipline referral data from this control school and the two treatment schools matched to that control school were not included in the impact analysis.