

The Relationship between Playworks Participation and Student Attendance in Two School Districts

Jacob Leos-Urbel & Monika Sanchez

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INTRODUCTION

Educators across the country are exploring ways to integrate positive development experiences for their students throughout the school day, including opportunities for physical activity and play. Playworks is a program that aims to create “safe, inclusive school environments where kids can grow, lead, and thrive” (Playworks, 2013a). Through trained, full-time “coaches” focused on recess in low-income elementary schools across the country, Playworks provides opportunities for inclusive play, and physical activity. Prior research has found that not only can Playworks increase physical activity but the program also can improve school climate, for instance by increasing safety and reducing incidence of bullying (Bleeker, Beyler, James-Burdumy, & Fortson, 2015; London, Westrich, Stokes-Guinan, & McLaughlin, 2015).

The Robert Wood Johnson Foundation, Playworks, and two San Francisco Bay Area school districts have partnered with the John W. Gardner Center for Youth and Their Communities at Stanford University (Gardner Center) to study whether the positive outcomes of the Playworks program translate into improved school attendance of students at Playworks schools. The importance of school attendance is well established in the education literature (Aud, Fox, & Kewal Ramani, 2010; Chang & Romero, 2008; Gottfried, 2010, 2011; Romero & Lee, 2007). Based on prior research indicating that Playworks improves school climate and reduces bullying, we hypothesize that the program may reduce absenteeism by decreasing student aversion to coming to school. We also hypothesize that the program is unlikely to influence absences related to other factors including parental discretion or barriers such as transportation or health, and therefore we anticipate the magnitude of any increases in attendance associated with the program to be small.

This study investigating the relationship between schools’ Playworks participation and student attendance focuses on elementary and K-8 schools and students participating in Playworks in the San Francisco and Oakland Unified School Districts. Our research design includes a comparison group of students in similar schools not currently participating in Playworks¹, and a series of multivariate regression analyses estimating the relationship between Playworks participation and student attendance.

Key Findings

- Participation in Playworks is associated with a very small increase in school attendance rate of approximately 0.2%, equivalent to an average increase of approximately one-third of a school day per student per year.
- Aggregated to a school of 450 students, this 0.2% increase represents approximately 150 additional days of attendance among all students during the school year.

¹ Schools for this study fall into three categories: “Playworks” if the school is participating in Playworks that year, “Pre-Playworks” if a school has not yet participated but does in a future year, and “Post-Playworks” if the school is not participating in Playworks that year but has participated in a prior year.

- For students who were chronically absent in the prior school year, Playworks is associated with slightly larger increases in attendance of about 0.4%, equivalent to an average increase of approximately two-thirds of a school day per student per year.
- Consistent with its mission to serve low-income students, schools that participate in Playworks have much higher levels of students participating in the federal Free and Reduced Price Lunch Program and lower levels of parent education compared to schools that never participate in Playworks.

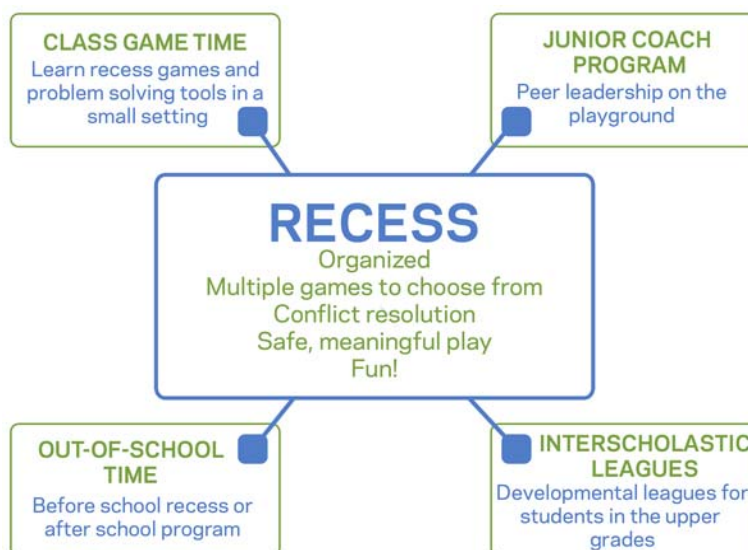
This report briefly describes the Playworks program, discusses prior research related to student absence, and lays out a conceptual framework for why we may expect Playworks to influence student attendance. Next, we discuss the data and sample for this analysis, research design, key findings, and implications for practice and policy. More technical aspects of the research design and results are described in the appendices.

THE PLAYWORKS PROGRAM

Playworks is a program that “creates safe, inclusive school environments where kids can grow, lead, and thrive” (Playworks, 2013a). Through trained, full-time “coaches” focused on recess in low-income elementary schools across the country, Playworks provides opportunities for inclusive play and physical activity. For schools to receive on-site direct-service from a Playworks coach, at least 50 percent of students enrolled must be eligible for the federal Free or Reduced Price Lunch Program (FRPL) (Playworks, 2013b). Playworks has operated as a nonprofit organization since 1996, sending coaches to 320 schools in 23 U.S. cities and providing training support to 1,190 schools and youth organizations nationwide in 2013 (Playworks, 2013c).

In the Playworks direct-service model, Playworks coaches lead and organize games during recess, work with teachers and lead games in the classroom, run a before or after school program, and coordinate out of school sports leagues. According to Playworks, these key components transform play into a positive school environment (Playworks, 2013c). As outlined in Exhibit 1, central to these components is recess time that is organized, promotes conflict resolution, and fosters safe, meaningful play. Components that support Playworks recess are: 1) class game time where students, classroom peers, and teachers learn games and tools to solve problems; 2) the Junior Coach program, which provides students in the upper grades with opportunities to be leaders on the playground; 3) out-of-school-time support and mentoring for Junior Coaches provided by the Playworks coach; and 4) interscholastic leagues that promote skill building in particular sports to students in the upper grades.

Exhibit 1. Playworks Direct Service Model



Source: Playworks. (2013). Playworks Direct Service: Building Play as a Cornerstone of the School Day. Retrieved January 8, 2015, from <http://www.playworks.org/about/how-playworks/five-components-of-direct-service>

Prior Research on Playworks

In 2009, Playworks partnered with the Gardner Center to study the program's implementation in six San Francisco bay area schools. Findings from this study indicated that even as early as the fall of the initial school year, Playworks coaches had implemented the five components of the program, with some variations to fit the particular school context (London, Mallonee, Stokes-Guinan, & Westrich, 2010). This study also found that the program put in place high-quality recess, as defined by the American Academy of Pediatrics, which led to positive shifts in recess climate (London, Westrich, Stokes-Guinan, & McLaughlin, 2015). These shifts included improved perceptions of student and adult relationships, physical and emotional safety, and student connectedness and engagement. These changes in the recess climate, in turn, improved the overall climate of the school as students brought elements of the Playworks program— inclusiveness, self-regulation, problem solving, and positive language—into the classroom.

Other non-experimental research has found that students from Playworks schools reported higher levels of physical activity, meaningful participation at school, and problem-solving skills on the California Healthy Kids Survey compared to students from other schools (Madsen, Hicks, & Thompson, 2011). This study also found that these positive effects were increased with more years of exposure to the Playworks program. Additionally, a small-scale evaluation of one Playworks site (then Sports4Kids) found that the program increased physical activity, improved students' teamwork and cooperation skills, and increased physical and emotional safety during play at school (Harvard Family Research Project, 2007).

To attribute these observed changes definitively to the Playworks program, a randomized controlled trial was conducted in 2010-2012 in 17 Playworks schools and 12 control schools

across the country. This impact study supported many of the observations from earlier studies; in particular, that Playworks reduced bullying and exclusionary behavior; increased physical activity; improved safety; increased students' use of positive, encouraging language; and improved some measures of school climate at implementing schools (Beyler et al., 2013; Fortson et al., 2013). Particular physical activity benefits were found for girls attending Playworks schools (Bleeker, Beyler, James-Burdumy, & Fortson, 2015).

The Present Study

This study focuses on elementary schools and students participating in Playworks in the San Francisco (SFUSD) and Oakland Unified School Districts (OUSD) and investigates the relationship between Playworks participation and student attendance. Over the course of prior research, Playworks staff heard repeatedly from practitioners and other stakeholders that the school climate effects brought on by the program could potentially cause students to attend more regularly because school had been transformed into a positive place to be. We explore this possibility using school-level information from Playworks and individual-level administrative data from the two school districts.

This analysis utilizes longitudinal student-level attendance and demographic data from both SFUSD and OUSD for the 2009-10 to 2012-13 academic years matched to school-level data indicating whether or not a school participated in Playworks in a given year. We use data for the number of school days attended and enrolled to calculate an individual student attendance rate (defined as the number of days attended divided by the number of days enrolled). This analysis aims to shed light on three important research questions:

1. What are the absenteeism patterns in Playworks schools, in similar schools that do not have Playworks, and in schools prior to or after their Playworks implementation? How do these patterns vary among student subgroups?
2. To what extent does Playworks influence school attendance for all students as well as student subgroups such as ethnicity, gender, grade level, or prior chronic absence status?
3. Does program duration (i.e., years of participation) play a role in any observed differences among Playworks schools on student absenteeism?

BACKGROUND AND CONCEPTUAL FRAMEWORK

When students are absent from school, they miss important learning and developmental opportunities. It is understood among researchers and practitioners alike that missing school has adverse consequences for student academic success. In the elementary grades, student absenteeism is negatively associated with standardized test performance and other assessments of academic proficiency (Aud, Fox, & Kewal Ramani, 2010; Chang & Romero, 2008; Gottfried, 2010, 2011; Romero & Lee, 2007). At the setting level, poor average school attendance also has a negative influence on overall school standardized test performance (Lamdin, 1996; Roby,

2003). Absenteeism in elementary school has also been documented to escalate into truant behavior in later grades (Spencer, 2009).

In addition to average attendance, chronic absenteeism—a measure of missing excessive amounts of school—has garnered national attention in recent years. In California, chronic absenteeism is codified in state law as missing 10 percent or more of the school year, regardless of whether the absence is excused (EC Section 60901(c)). Chronic absence can apply to students of any age, including younger students who are absent with their parents' permission as well as older students who may or may not be truant or who may have a combination of excused and unexcused absences. Importantly, a school's high average attendance rates can mask individual students' chronic absence problems (Chang & Romero, 2008; Nauer, White, & Yerneni, 2008; Romero & Lee, 2007; Sheldon & Epstein, 2004). In our analysis we examine the attendance rates for all students, as well as for those who were chronically absent in the prior year (defined as an attendance rate of 90% or less), to gain a more nuanced understanding of the relationship between Playworks and school attendance.

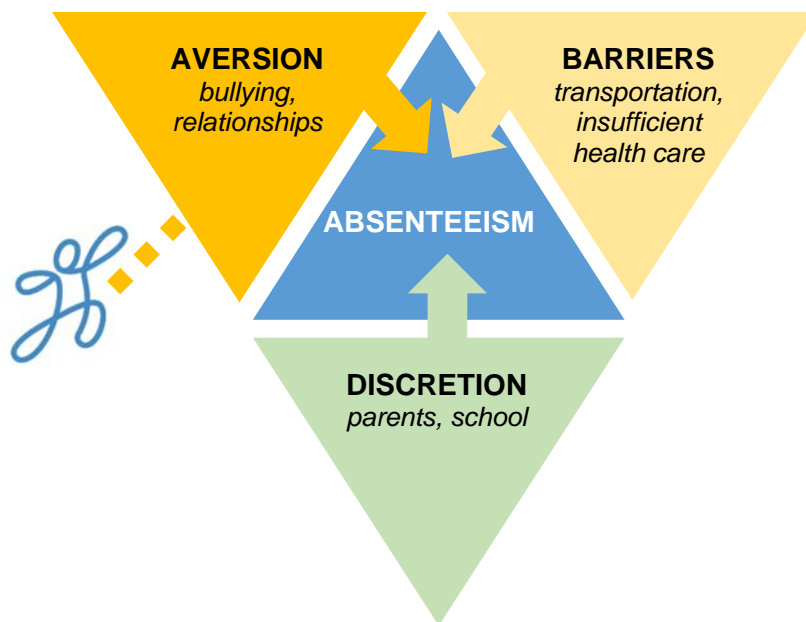
The reasons students miss school can typically be grouped into three categories (California School Boards Association, 2012): *discretion*, *aversion*, and *barriers*.

- *Discretionary* absences can occur when parents do not understand the extent to which attendance matters for student success or a school does not send the message that attendance is important.
- *Aversion* can include instances when a child avoids school because he or she is struggling academically, being bullied, or experiencing anxiety.
- *Barriers* to attendance could involve a lack of adequate health care to treat acute or chronic health issues, a safe path to school as a result of community violence, or reliable transportation. Particularly in urban settings, neighborhood characteristics such as high poverty rates and large average household size have been shown to play a significant role in student absenteeism (Gottfried, 2014).

Playworks' Potential Role in Student Attendance

Among the three reasons for student absence described above, Playworks has been shown to affect aspects of the “aversion” group. In particular, the Playworks program reduces bullying and improves perceptions of school safety and some facets of school climate. These resulting improvements in the school climate and environment may increase student attendance and mitigate absenteeism. Exhibit 2 illustrates the potential for Playworks to influence school absences related to student aversion.

Exhibit 2: Playworks' Potential Influence on Absenteeism



Although Playworks may directly affect some factors that cause students to miss school related to aversion, the program does not expect to influence parental discretion or other attendance barriers. It is not well known which reasons for missing school account for the largest proportion of absences, with some research suggesting that discretionary absences and attendance barriers may play a large role. For example, a recent study found that the top three cited reasons for student absences in the Sacramento City Unified School District were student physical health, parent/caregiver discretion, and transportation (Erbstein, 2014). Less frequently mentioned were students' mental health, relationships with adults and peers, and safety concerns.²

Finally, it is well documented that grade-level attendance patterns reflect that kindergarten and high school students exhibit the highest levels of chronic absenteeism, both in the two school districts represented in our study and nationally (Brown & Jackson, 2014; California School Boards Association, 2012; Romero & Lee, 2007). The Playworks program serves elementary school students—mostly encompassing the grades level with the lowest absenteeism rates (i.e., grades 1-5). Thus, we hypothesize that Playworks may increase student attendance through improved school climate, although we may expect the magnitude of any increases in attendance to be small.

² A study of preschool attendance in Chicago corroborates the notion that student physical health accounts for a large portion of student absences (Ehrlich et al., 2014).

PLAYWORKS AND STUDENT ATTENDANCE

Student Attendance Patterns and Characteristics in Playworks and non-Playworks Schools

This section provides an initial look at the characteristics of students in Playworks and non-Playworks schools, and their attendance patterns. For this analysis we have grouped schools that participated in Playworks at some point in time into three distinct statuses:

1. “Pre-Playworks” if a school has not yet participated but does in a future year (e.g., a school that begins participating in Playworks in 2012-13 is a Pre-Playworks school in 2011-12),
2. “Playworks” if the school is participating in Playworks that year, and
3. “Post-Playworks” if the school is not participating in Playworks that year but has participated in a prior year.³

All other SFUSD and OUSD elementary and K-8 schools that never participate in Playworks are categorized as “Never Playworks.” See Appendix A for a detailed description of how these categories were determined.

Exhibit 3 presents information about student characteristics by school Playworks status. Note that, consistent with Playworks’ mission of serving low income schools, schools that participate in Playworks at some time have much higher levels of students attending schools with high FRPL participation and lower levels of parent education compared to schools that never participate in Playworks. There also are considerable demographic differences in school population between schools that participate in Playworks at some time and those that never participate. In particular, “Never Playworks” schools generally enroll higher proportions of White students and lower proportions of Hispanic and Black students. Further, our analysis indicates that approximately two-thirds of all low-income schools in SFUSD and OUSD during the analysis period had participated in Playworks at some point within the past decade. Among the 55 schools that participated in Playworks during the 4 year analysis period (2010-2013), the average participation was 2.5 years. Nineteen (35%) of schools participated in all 4 years and 16 (29%) participated for just one year.

³ Note that a given school’s status may change from year to year. For example, a school that had Playworks in only one year (2011-12) would be considered Pre-Playworks in 2010-11 and Post-Playworks in 2012-13.

Exhibit 3: Characteristics of Students in Pre-Playworks, Playworks, Post-Playworks, and All Other Elementary Schools, OUSD and SFUSD, 2010-2013

Playworks Status	Schools that ever participate in Playworks			All Other Elementary
	Pre-Playworks	Playworks	Post-Playworks	Never Playworks
<i>Gender</i>				
Female	49.0	48.8	47.1	49.1
Male	51.0	51.2	52.9	50.9
<i>Ethnicity</i>				
Asian or Pacific Islander	35.8	24.1	20.5	36.7
Black	21.4	16.8	28.9	13.8
Hispanic	27.2	47.0	34.8	18.8
Other	8.1	5.4	3.9	8.2
White	7.5	6.7	11.8	22.5
<i>Parent Education</i>				
At least a Bachelor's Degree	18.6	14.0	17.9	36.7
High school graduate or some college	42.4	32.3	29.8	28.5
Not a high school graduate	12.3	15.8	13.3	7.3
Decline to state	26.7	37.9	39.0	27.6
<i>Student Services</i>				
English Learner	36.9	46.4	35.6	28.4
Special Education	7.9	9.6	10.1	8.7
School FRPL Participation	87.6	91.0	82.1	43.8
Number of Schools	12	55	43	61
Number of Students*	8,400	50,135	39,214	79,479

Source: Gardner Center tabulations of 2009-10 through 2012-13 OUSD & SFUSD administrative data. School-level FRPL participation in SFUSD was provided by SFUSD; school-level FRPL participation in OUSD was obtained from California Department of Education, Dataquest (<http://dq.cde.ca.gov/dataquest>). Schools' participation in Playworks provided by Playworks.

Notes: Demographic information is based on 177,228 student observations in grades K-5 at elementary and K-8 schools in SFUSD & OUSD where students were enrolled at the same school all year. Attendance information excludes 2,490 instances of missing student attendance information. In this table, Asian or Pacific Islander students include those who identified as Filipino.

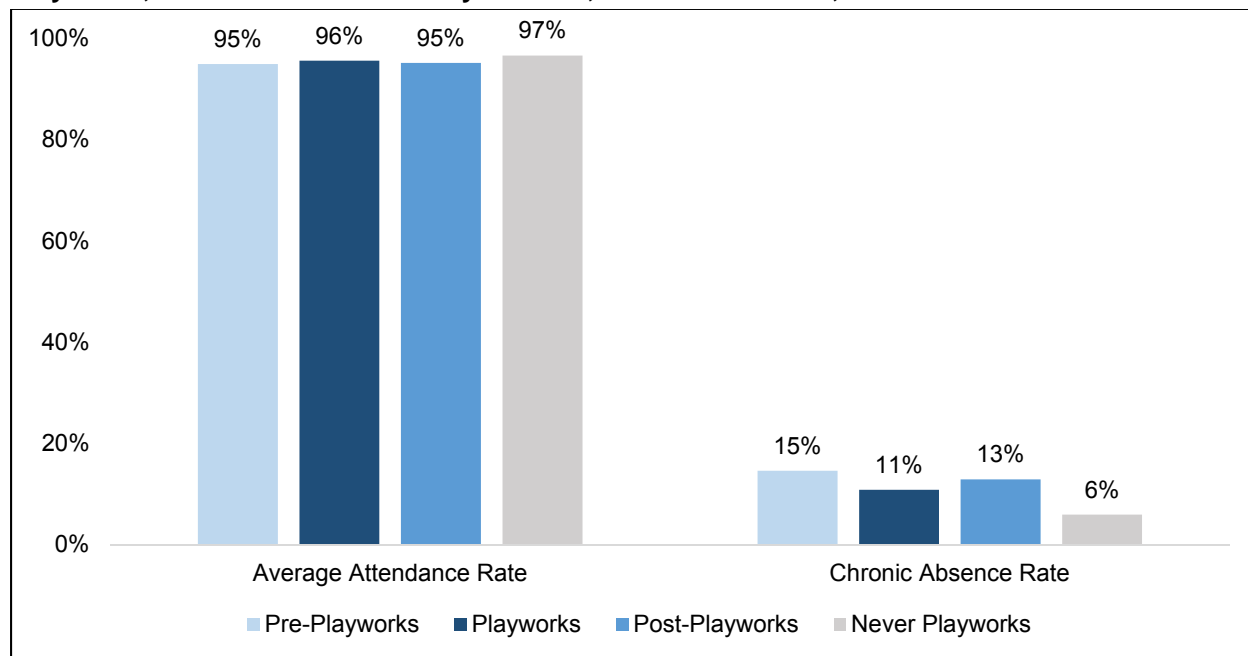
*The number of students is not unduplicated. For example, students who attend a school participating in Playworks for two years appear twice in the "Playworks" category.

Exhibit 4 presents both average attendance rates and chronic absence rates for schools that ever participate in Playworks as well as those that do not.⁴ Schools currently participating in Playworks have slightly higher attendance rates than schools that have not yet participated (96% versus 95%). Further, schools participating in Playworks demonstrate lower rates of chronic absence than schools that have not yet participated (11% versus 15%). Schools that have participated in Playworks in the past show higher attendance than Pre-Playworks schools but lower than schools currently participating in Playworks. These Post-Playworks schools also have lower chronic

⁴ Schools that did not participate in Playworks between 2002-03 and 2013-14.

absence rates than Pre-Playworks schools but higher than currently participating schools. Additionally, schools that never participate in Playworks have somewhat higher average attendance rates (97%) and considerably lower average rates of chronic absence (6%), suggesting that these schools may serve very different student populations.

Exhibit 4: Average Attendance Rate and Chronic Absence Rate in Pre-Playworks, Playworks, Post-Playworks, and All Other Elementary Schools, OUSD and SFUSD, 2010-2013



Source: Gardner Center tabulations of 2009-10 through 2012-13 OUSD & SFUSD administrative data. Schools' participation in Playworks provided by Playworks.

Notes: Based on 174,738 students in grades K-5 at elementary and K-8 schools in SFUSD & OUSD who were enrolled at the same school all year and who had attendance information.

It is important to note that the averages presented here do not account for other factors that influence school attendance or differences between schools (such as low income status), and do not necessarily imply that Playworks caused this increase in school attendance. A host of factors can influence whether children begin to attend school regularly, including transportation improvements or school policies geared toward increasing attendance. Further analysis of this change in attendance is then warranted, in order to better understand the role played by the Playworks program itself in potentially increasing attendance. Results from these further analyses are presented in the sections that follow.

Key Takeaways

- Consistent with its mission to serve low-income students, schools that participate in Playworks at some time have much higher levels of students attending schools with high FRPL participation and lower levels of parent education compared to schools that never participate in Playworks.
- Approximately two-thirds of all low-income schools in SFUSD and OUSD during the analysis period had participated in Playworks at some point within the past decade.
- Schools implementing Playworks have slightly higher attendance rates (96%) than both schools that have yet to participate in the program (95%) and schools that participated in Playworks in the past (95%).
- Schools implementing Playworks have lower chronic absence rates (11%) than both schools that have yet to participate (15%) and schools that had Playworks in the past (13%).

Examining the Relationship between Playworks and Attendance

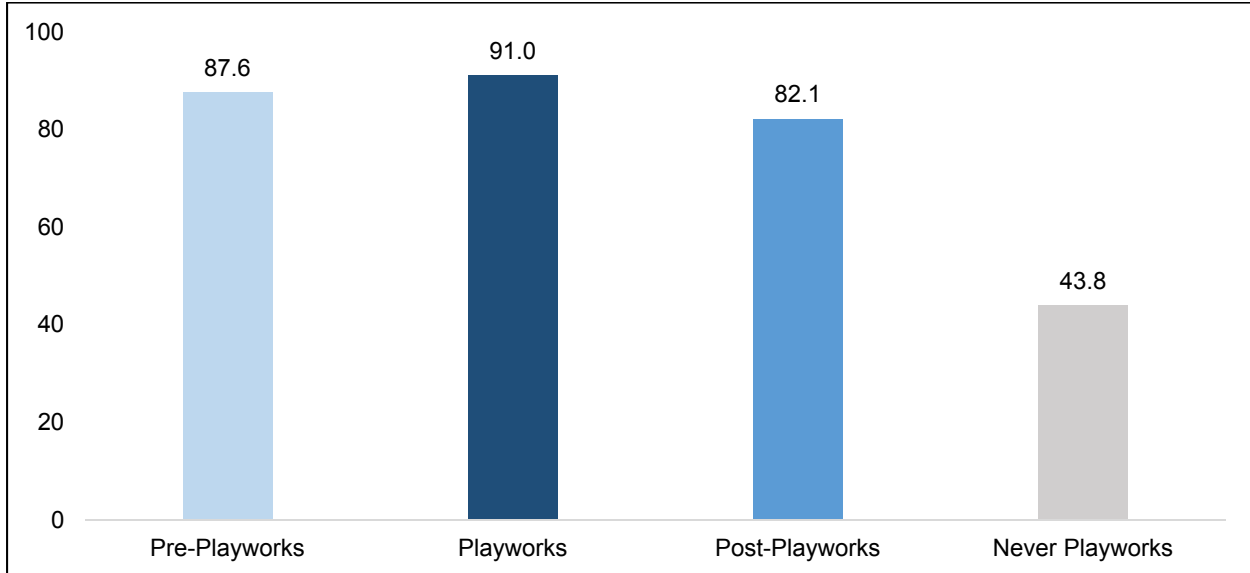
Estimating the relationship between Playworks and student attendance requires disentangling any effect of Playworks from the many other influences on student attendance over time. Our strategy involves identifying a comparison group of students in similar schools not currently participating in Playworks. We then conduct multivariate regression analyses estimating the relationship between Playworks and student attendance, aiming to control for differences between students in schools that participate in Playworks that year (i.e., the treatment group) and the comparison group of similar students who do not participate.⁵ For more detailed discussion of the research design see Appendix A.

In identifying a comparison group we note that, consistent with Playworks' mission of serving schools with a large percentage of low-income students, schools that never participate in Playworks differ considerably from those that do. For instance, as we show in Exhibit 5, compared to schools that participate in Playworks from 2009-10 to 2012-13, schools that never participate have lower percentages of students participating in FRPL (43.8% versus 87.1%) and, as illustrated earlier in Exhibit 4, chronically absent students (6% versus 11%). Therefore, these schools that never participate in Playworks would not be an appropriate comparison group for this analysis. Instead, to construct a comparison group of non-participating students who we would expect to be most similar to those that are participating in Playworks, we identify students in schools that are not currently participating in Playworks but did participate at some other time.⁶

⁵ Regression models account for the nesting of students within in schools by including school fixed effects and robust standard errors clustered at the school level.

⁶ Note that, as described in greater detail in the appendix, the comparison group does include some schools

Exhibit 5: Average School FRPL Rate in Pre-Playworks, Playworks, Post-Playworks, and All Other Elementary Schools, OUSD and SFUSD, 2010-2013



Source: Gardner Center tabulations of 2009-10 through 2012-13 OUSD & SFUSD data. School-level FRPL participation in SFUSD was provided by SFUSD; school-level FRPL participation in OUSD was obtained from California Department of Education, Dataquest (<http://dq.cde.ca.gov/dataquest>). Schools' participation in Playworks provided by Playworks.

Notes: FRPL percentage is weighted on 177,228 students in grades K-5 at elementary and K-8 schools in SFUSD & OUSD who were enrolled at the same school all year.

This analysis examining the relationship between Playworks and student attendance includes a total of total of 49,208 student observations in first through fifth grades (28,919 treatment and 20,289 comparison group) and 100 school observations (47 treatment and 53 comparison, respectively). Of these, 24,107 students were from SFUSD and 25,101 were from OUSD. Exhibit 6 describes the students in the treatment and comparison groups for this analysis. Note that, while not identical, these groups look much more similar to each other than they do to students from schools that never participated in Playworks, as displayed in Exhibit 3 above. To the extent possible, regression analyses control for some of these remaining observable differences. Further, and importantly, all schools in both the treatment and comparison groups do participate in Playworks at some time, suggesting that they are similar with regard to the factors that influence participation in the program.

Exhibit 6: Characteristics of Students in Treatment and Comparison Groups, OUSD and SFUSD, 2011-2013

	Comparison		Treatment	
	%	N	%	N
<i>Gender</i>				
Female	47.1	9,565	49.1	14,205
Male	52.9	10,724	50.9	14,714
<i>Ethnicity*</i>				
Asian or Pacific Islander	25.7	5,144	25.8	7,397
Black	27.9	5,590	15.8	4,526
Hispanic	30.4	6,083	47.1	13,527
Other	4.3	856	5.1	1,477
White	11.8	2,359	6.2	1,778
<i>Parent Education**</i>				
At least a Bachelor's Degree	19.6	3,868	15.3	4,302
High school graduate or some college	33.5	6,610	34.0	9,532
Not a high school graduate	13.1	2,585	16.7	4,676
Decline to state	33.7	6,646	34.1	9,558
<i>Student Services</i>				
English Learner	36.9	7,480	50.1	14,477
Special Education	10.4	2,118	10.5	3,023
School FRPL Participation	82.3	16,701	92.2	26,675
Total***		20,289		28,919

Source: Gardner Center tabulations of 2010-11 through 2012-13 OUSD & SFUSD administrative data. School-level FRPL participation in SFUSD was provided by SFUSD; school-level FRPL participation in OUSD was obtained from California Department of Education, Dataquest (<http://dq.cde.ca.gov/dataquest>). Schools' participation in Playworks provided by Playworks.

Notes: Includes students in grades K-5 at elementary and K-8 schools in SFUSD & OUSD in 2011-2013 who were enrolled at the same school all year and who had attendance information. In this table, Asian or Pacific Islander students include those who identified as Filipino.

*There were 257 instances of missing Ethnicity information in the control category and 214 instances in the treatment category.

**There were 580 instances of missing Parent Education information in the control category and 851 instances in the treatment category.

***The number of students is not unduplicated. For example, students who attend a school participating in Playworks for two years appear twice in the Treatment category – one instance for each participating school year.

Results: The Relationship between Playworks and Student Attendance

Regression analyses suggest that there is a small statistically significant relationship between participating in Playworks and student attendance rates. (See Appendix B for tables presenting regression results.) Overall, we find that participation in Playworks is associated with a 0.2% increase in student attendance, for example increasing a student's attendance rate from 95.5% to 95.7% per year. An increase of 0.2% is equivalent to approximately one-third of a school day per student per year if we assume a 6-hour school day and a 180 day school year. Aggregated

to a school of 450 students, a 0.2% increase would represent more than 150 additional days of attendance among all students during the school year.

Results by student prior attendance

Importantly, although reducing absenteeism is a key priority, the vast majority of elementary school students have relatively high attendance. For these students, there is very little room for improvement in attendance, and as such we would not expect Playworks to increase their attendance significantly.⁷ Therefore we conducted additional analyses in which we excluded students who had very high attendance rates in the year prior to participating in Playworks. Analyses that examined the relationship between Playworks and school attendance only for students with attendance below 95% in the prior school year indicate a similar statistically significant increase in attendance of 0.3% ($p=0.051$) per student per year. Analyses that examined the relationship between Playworks and school attendance only for students who were chronically absent in the prior school year (i.e., attendance of 90% or less) indicate a slightly larger increase of 0.4% that is marginally statistically significant ($p=0.098$).⁸

Results by student characteristics

It is possible that the relationship between participating in Playworks and student attendance could vary based on the characteristics of the students themselves. For instance, it may be that as students get older, they have more input into whether or not they go to school. To examine this, we looked at the relationship between Playworks for students in grades 1 and 2 and students in grades 3 through 5. For both groups, we find the same statistically significant 0.2% increase, suggesting that there is no difference by grade level.

It also is plausible that the relationship between Playworks and attendance varies by gender. For instance, Playworks activities may change the school environment and experience more for girls than for boys (or vice-versa), as was found by other research to be the case in girls' physical activity. Our analyses indicate that the statistically significant 0.2% increase in attendance holds both for girls and boys.

We also examined effect by students' race/ethnicity, as other research has shown that absenteeism is disproportionately concentrated among students of color (Romero & Lee, 2007). For Asian and Hispanic students, Playworks contributed to the same statistically significant increase in attendance of 0.2% per year; for Black students the increase in attendance was slightly higher (0.4%, or approximately two-thirds of a school day per student per year). For White, Filipino, and students of other ethnicities, there was no statistically significant increase in attendance associated with the Playworks program.

⁷ This is sometimes referred to as a "ceiling effect."

⁸ Although this strategy focuses on the pool of students who could realistically increase their attendance, the tradeoff is a drastic reduction in sample size, which in turn reduces statistical power and the likelihood of finding a significant effect.

Results by school characteristics

We also examined whether the relationship between Playworks and attendance varies based on characteristics of the school. We do find a statistically significant increase in attendance of 0.3% per student per year when we look only at very high poverty schools (schools with 75% or more students participating in FRPL). Finally, we examined whether the relationship between Playworks and attendance is different in Oakland schools versus San Francisco schools. We do find a slightly larger statistically significant increase in attendance in Oakland of 0.3% per year. When looking at San Francisco only, the relationship between Playworks and attendance is not statistically significant.

Results by years of participation

The analyses presented thus far consider only whether a student was in a school participating in Playworks that year, and did not take into account whether or not the student had participated in Playworks in prior years as well. Therefore, we conducted analyses that take into account whether a student participated in Playworks for multiple years. This analysis of Playworks “dosage” reveals that there does not appear to be any meaningful difference in the relationship between Playworks and attendance for those participating in the program for one year versus two or more years.

Key takeaways

- Participation in Playworks is associated with a very small increase in school attendance, equivalent to about one-third of a day per student per year on average. Aggregated to a school of 450 students, this 0.2% increase represents more than 150 additional days of attendance among all students during the school year.
- Playworks is associated with slightly larger increases in attendance, equivalent to about two-thirds of a day per student per year on average, for students who were chronically absent in the prior school year.
- The relationship between Playworks and school attendance does not appear to vary for girls versus boys or for younger versus older students (grades 1-2 versus grades 3-5).
- The relationship between Playworks and school attendance does appear to vary slightly based on student ethnicity, with Asian, Black, and Hispanic students seeing increases in attendance. There were no statistically significant increases for White, Filipino, and students of other ethnicities who make up a smaller proportion of the study sample.
- Overall the relationship between Playworks and attendance does not appear to vary based on the number of years of participation.

DISCUSSION AND IMPLICATIONS

This study indicates that there is a very small positive relationship between Playworks and student attendance. To put this finding in context, the average attendance rate increase of 0.2% is equivalent to about one-third of a day per student per year for students participating in Playworks. Aggregated to a school of 450 students, this 0.2% increase represents more than 150 additional days of attendance among all students during the school year. The relationship between Playworks and attendance is slightly stronger for students who had been chronically absent in the prior year, and may have had more room for improvement in attendance. Even so, we cannot conclude that the increases in attendance found by the regression analysis were definitively caused by Playworks. This study cannot account for all factors influencing school attendance, for example, there could be differences between schools participating in Playworks and comparison group schools, such as attendance monitoring or parent engagement, that we were not able to control for in our analyses. Further, note that as described in greater detail in Appendix A, although students in the comparison group for this analysis did not participate in Playworks, some attended schools that had participated in Playworks during prior years. Thus, if Playworks has a lasting effect on school practices even after the program is no longer in the school, our estimates of the relationship between Playworks and school attendance may be considered conservative and the magnitude of the relationship could possibly be somewhat larger.

It may not be surprising that any relationship between Playworks and school attendance found from this regression analysis would be quite small for a variety of reasons. First, most elementary school students have high attendance rates, with average attendance rates of 95% for the students in this study, leaving little room for improvement for the majority of students. Second, there are many factors related to school absenteeism that would reasonably fall outside the influence of Playworks. For example, we would not expect Playworks to affect barriers to attendance such as transportation or medical issues, nor would we expect Playworks to significantly change parental decisions about whether to send their children to school. On the other hand, improvements in school climate in Playworks schools may lead children to want to come to school more, which could increase attendance. However, in elementary school especially, parents rather than children often play the largest role in attendance decisions. Despite these limitations there does appear to be a very small positive relationship between participating in Playworks and school attendance.

More importantly, Playworks does not explicitly aim to influence student attendance or bill itself as an attendance intervention. Rather, the program focuses directly on youth development outcomes and improving opportunities for physical activity. As noted above, prior research finds that, in line with its goals and activities, Playworks increases physical activity for students and improves school climate. This current study in no way diminishes these benefits of Playworks. In fact, this study implies that beyond supporting a positive school climate and promoting physical activity, schools that implement Playworks may see small improvements in attendance as well.

In the analyses conducted for this study, by far the strongest predictor of a student's attendance

in a given year is their attendance rate in the prior school year, indicating that students' attendance patterns persist year after year. This implies that attendance problems are likely a result of larger ongoing issues and contextual factors in a child's life, messaging about the importance of school attendance, or entrenched habits. This may point to the need for attendance supports in multiple areas (school, classroom, at home, in the community) to address attendance issues within these different domains.

CONCLUSION

Consistent with its mission to serve low-income students, Playworks has implemented its programming in the majority of low-income elementary schools in Oakland and San Francisco, and schools that participate in Playworks have much higher proportions of low-income students than schools that never participate. This analysis finds that participation in Playworks is associated with a very small increase in school attendance, equivalent to about one-third of a day per student per year on average. Aggregated to a school of 450 students, this 0.2% increase represents more than 150 additional days of attendance among all students during the school year. Increases are slightly larger for students who had been chronically absent in the prior year. On the one hand, such a small relationship between Playworks and school attendance may not be surprising given that Playworks does not explicitly aim to increase school attendance patterns. On the other hand, this analysis suggests that, beyond expected increases in physical activity and improvements in school climate documented in prior research, schools participating in Playworks may experience very small improvements in attendance as well.

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APPENDIX A: RESEARCH METHODOLOGY

Data

This analysis utilizes longitudinal student-level attendance and demographic data from both San Francisco Unified School District (SFUSD) and Oakland Unified School District (OUSD) for the 2009-10 to 2012-13 school years matched to school-level data indicating whether or not a school participated in Playworks in a given year.⁹ Demographic variables include student race/ethnicity, gender, grade, special education status (SPED), English language learner status (ELL), and parent education. Free and reduced price lunch (FRPL) eligibility was available at the school-level only (i.e., the percentage of students in the school FRPL eligible); student-level FRPL participation was not provided. We use data for the number of school days attended and enrolled to calculate both an individual student attendance rate (defined as the number of days attended divided by the number of days enrolled) and a variable indicating whether they were chronically absent (defined as an attendance rate of 90% or less). Importantly, the longitudinal nature of data allows us to include school attendance in the prior school year as a strong control variable.

Analyses focus on students in grades 1-5. Note that the sample does not include students in kindergarten as these students do not have information for the attendance in the prior school year variable which is necessary for the regression analyses. Further, we include only students who had been enrolled in school for at least 45 days during the school year, and who had attended only one district school during the school year, as students not meeting these criteria would have had minimal exposure to Playworks.

Comparison Group

A comparison group provides an approximation of expected student attendance patterns, had their school not participated in the Playworks program, and helps control for some of the other factors influencing attendance (e.g., local or state policies, trends over time). In identifying a comparison group we note that, consistent with Playworks' mission of serving schools with a large percentage of low-income students, schools that never participate in Playworks differ considerably from those that do. Therefore, schools that never participate in Playworks would not be an appropriate comparison group for this analysis. Instead, to construct a comparison group of non-participating students who we would expect to be most similar to those that are participating in Playworks, we identify students in schools that are not currently participating in Playworks but do participate at some other time.

In the comparison group we include students in schools that participated in Playworks in future years (i.e., students in a school that begin participating in Playworks in 2011-12, are included in the comparison group in 2010-11). We also include students who had never participated in

⁹ Note that although student-level data from SFUSD is available beginning in 2002-03, student-level data for OUSD is available only beginning in 2009-10.

Playworks themselves, but who attend schools that had participated in Playworks in prior years (going back to 2002-03). We exclude from the comparison group any students who had received Playworks in a prior year, so as not to diminish the estimated effect of Playworks if there are any lasting effects of the program in years after participation. Further, remaining differences between the treatment and comparison groups are accounted for, at least in part, through control variables as described below.

Note that report Exhibit 3 does indicate that comparison schools have somewhat lower levels of poverty and slightly higher levels of parent education. One possible explanation for this may be that as schools have decreasing levels of poverty they may transition out of participating in Playworks and into the comparison group. Note that if anything, this may decrease the likelihood of finding a positive relationship between Playworks on attendance if we believe higher poverty and lower parental education to be correlated with lower attendance.

Finally, even though the specific students in the comparison group did not ever receive Playworks, the approach described above could underestimate any effect of Playworks if there is a lasting change in school practice related to recess activities. Therefore, we also conduct additional analyses using a comparison group including only students in schools that had not yet participated in Playworks. However, given available data, with this approach we are able to estimate the relationship between Playworks and attendance only for students participating in the 2010-11 school year. This is the case for two reasons. First, although we have four years of data, the first year of data (2009-10) is used to derive student prior attendance, a key control variable. Second, in 2011-12 and 2012-13, the size of the comparison group is greatly reduced as most “Pre-Playworks” schools begin participation in Playworks. Thus, this alternative approach necessarily decreases the sample size dramatically, and with it reduces statistical power and the likelihood of finding a significant relationship. These analyses, presented in Appendix Exhibit B4 yield small positive coefficients for the relationship between Playworks and school attendance that are not statistically significant.

Regression Strategy

Full regression models include a strong set of control variables including student race/ethnicity, gender, grade, SPED, and ELL status. Models also include students’ attendance rate in the prior year—note this is an important variable which helps control for any possible differences between the treatment and comparison groups prior to participating in Playworks. These can be considered growth models which estimate the change in attendance for students participating in Playworks. Models also include the percentage of students participating in FRPL at a particular school, a district indicator variable (SFUSD or OUSD), and a year indicator variable. Finally, full models include school fixed effects to account for time invariant unobservable school characteristics. All models include robust standard errors clustered at the school level.

Baseline model

Our baseline model examining the relationship between participation in PW that year and attendance is estimated using equation (1):

$$(1)Y_{ist} = \beta_0 + \beta_1PW_{it} + \beta_2ST_{it} + \beta_3LAGAT_{it} + \beta_4SCFRPL_{st} + \beta_5YR_t + \beta_6SF_s + \delta_s + \mu_i$$

Y is the attendance rate for student i. PW takes a value of 1 if the student participated in Playworks that year. ST is a vector of student characteristics, including gender, race/ethnicity, limited English proficiency, special education status, and grade. LAGAT is the student's attendance rate in the prior school year, SCFRPL is the percent of students eligible for FRPL in a student's school. We also include year indicators for each year, with 2010-11 as the excluded reference group. SF is an indicator variable of which district the school belongs (with OUSD the excluded reference group), δ is the school fixed effect, and μ is the error term. β_1 is the primary coefficient of interest, representing the relationship between Playworks and student attendance.

Dosage

Although equation (1) provides an estimate of the relationship between PW participation and student attendance, it does not take into account the number of years a student has participated in the program. We examine the relationship between the number of years of Playworks participation and school attendance, using equation (2):

$$(2)Y_{ist} = \beta_0 + \beta_1PW1_{it} + \beta_2PW2_{it} + \beta_3ST_{it} + \beta_4LAGAT_{it} + \beta_5SCFRPL_{st} + \beta_6YR_t + \beta_7SF_s + \delta_s + \mu_i$$

PW1 takes a value of 1 when a student is in the first year of PW participation, and PW2 takes a value of 1 when a student has participated in PW for two or more years. The omitted reference group is students who never participate in Playworks. All other terms are defined as in equation (1) above.

APPENDIX B: TABLES OF REGRESSION COEFFICIENTS

Exhibit B1: Predictors of Student Attendance Rates during Playworks Participation

Variable	All Students		Students with Less than 95% Attendance in the Prior Year		Students with 90% or Less Attendance in the Prior Year	
	β	SE	β	SE	β	SE
Intercept	0.385***	0.011	0.416***	0.018	0.446***	0.030
Playworks Participation	0.002**	0.001	0.003*	0.001	0.004*	0.002
SFUSD	-0.004***	0.001	-0.004***	0.001	-0.003	0.003
Attendance Rate Last Year	0.607***	0.011	0.578***	0.018	0.534***	0.030
Female	0.001*	0.000	0.002*	0.001	0.000	0.002
Asian or Pacific Islander	0.009***	0.001	0.009***	0.002	0.019***	0.006
Filipino	0.006***	0.001	0.009***	0.002	0.021***	0.007
Black	-0.004***	0.001	-0.005**	0.002	0.005	0.006
Hispanic	0.002**	0.001	0.001	0.002	0.008	0.006
Other	0.003**	0.001	0.001	0.003	0.013*	0.007
Unknown Parent Education	0.000	0.000	-0.001	0.001	0.000	0.003
Not a High School Graduate	-0.001	0.001	-0.004***	0.001	-0.007**	0.003
Some College	-0.001*	0.001	-0.001	0.001	-0.001	0.003
College Graduate	0.002***	0.001	0.005***	0.001	0.003	0.003
Postgraduate	0.002**	0.001	0.004	0.002	0.004	0.010
First Grade	-0.001	0.001	0.000	0.001	0.004	0.003
Second Grade	-0.001	0.001	-0.001	0.001	0.001	0.003
Third Grade	-0.002***	0.001	-0.004**	0.002	-0.001	0.004
Fourth Grade	0.000	0.001	-0.001	0.002	0.001	0.004
English Learner	0.004***	0.000	0.009***	0.001	0.015***	0.002
Special Education	-0.004***	0.001	-0.003**	0.001	-0.002	0.003
School Year 2012	0.002**	0.001	0.002*	0.001	0.002	0.003
School Year 2013	-0.004***	0.001	-0.007***	0.002	-0.008***	0.003
School FRPL Rate	0.000***	0.000	0.000***	0.000	0.000***	0.000

Source: Gardner Center analysis of 2010-11 through 2012-13 OUSD & SFUSD administrative data. School-level FRPL participation in SFUSD was provided by SFUSD; school-level FRPL participation in OUSD was obtained from California Department of Education, Dataquest (<http://dq.cde.ca.gov/dataquest>). Schools' participation in Playworks provided by Playworks.

Notes: (1) * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

(2) Reference categories for categorical variables include Whites, having parents who are high school graduates, fifth graders, and being in the 2010-11 school year.

(3) Models include school fixed effects and robust standard errors clustered at the school level.

Exhibit B2: Predictors of Student Attendance Rates during Playworks Participation by Subgroup

Variable	Early (1 st or 2 nd) Grade Students		Later (3 rd , 4 th , or 5 th) Grade Students		Female		Male	
	β	SE	β	SE	β	SE	β	SE
Intercept	0.412***	0.012	0.359***	0.014	0.383***	0.012	0.387***	0.014
Playworks Participation	0.002*	0.001	0.002***	0.001	0.002**	0.001	0.002**	0.001
SFUSD	-0.004***	0.001	-0.004***	0.001	-0.004***	0.001	-0.004***	0.001
Attendance Rate Last year	0.580***	0.012	0.630***	0.014	0.611***	0.013	0.604***	0.015
Female	0.000	0.000	0.001	0.001				
Asian or Pacific Islander	0.005***	0.001	0.010***	0.001	0.009***	0.001	0.009***	0.001
Filipino	0.004***	0.001	0.008***	0.001	0.008***	0.001	0.005***	0.001
Black	-0.005***	0.002	-0.002*	0.001	-0.003***	0.001	-0.005***	0.001
Hispanic	-0.001	0.001	0.003***	0.001	0.002*	0.001	0.002	0.001
Other	0.002	0.001	0.003**	0.001	0.003***	0.001	0.002	0.002
Unknown Parent Education	-0.001	0.001	0.000	0.001	0.000	0.001	0.000	0.001
Not a High School Graduate	-0.001	0.001	-0.001	0.001	-0.002**	0.001	0.000	0.001
Some College	0.000	0.001	-0.001*	0.001	-0.002***	0.001	0.000	0.001
College Graduate	0.002***	0.001	0.002**	0.001	0.001	0.001	0.002***	0.001
Postgraduate	0.003**	0.001	0.001*	0.001	0.002***	0.001	0.001	0.001
First Grade					-0.002**	0.001	0.000	0.001
Second Grade	0.000	0.001			-0.002**	0.001	0.000	0.001
Third Grade					-0.003***	0.001	-0.001	0.001
Fourth Grade			0.001**	0.001	-0.001	0.001	0.000	0.001
Fifth Grade			0.002**	0.001				
English Learner	0.009***	0.001	0.003***	0.000	0.004***	0.001	0.005***	0.001
Special Education	-0.001	0.001	-0.004***	0.001	-0.004***	0.001	-0.004***	0.001
School Year 2012	0.004***	0.001	0.000	0.001	0.002***	0.001	0.001	0.001
School Year 2013	-0.004***	0.001	-0.004***	0.001	-0.004***	0.001	-0.004***	0.001
School FRPL Rate	0.000***	0.000	0.000***	0.000	0.000***	0.000	0.000***	0.000

Source: Gardner Center analysis of 2010-11 through 2012-13 OUSD & SFUSD administrative data. School-level FRPL participation in SFUSD was provided by SFUSD; school-level FRPL participation in OUSD was obtained from California Department of Education, Dataquest (<http://dq.cde.ca.gov/dataquest>). Schools' participation in Playworks provided by Playworks.

Notes: (1) *p<0.1; **p<0.05; ***p<0.01

(2) Reference categories for categorical variables include Whites, having parents who are high school graduates, fifth graders, and being in the 2010-11 school year.

(3) Models include school fixed effects and robust standard errors clustered at the school level.

Exhibit B2, cont'd: Predictors of Student Attendance Rates during Playworks Participation by Subgroup

Variable	School FRPL between 50% and 75%		School FRPL 75% or Higher		SFUSD		OUSD	
	β	SE	β	SE	β	SE	β	SE
Intercept	0.443***	0.019	0.380***	0.014	0.402***	0.015	0.370***	0.015
Playworks Participation	0.000	0.001	0.003***	0.001	0.001	0.001	0.003**	0.001
SFUSD	-0.006***	0.002	-0.003***	0.001				
Attendance Rate Last year	0.553***	0.019	0.622***	0.012	0.584***	0.015	0.624***	0.015
Female	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000
Asian or Pacific Islander	0.008***	0.002	0.010***	0.002	0.008***	0.001	0.010***	0.001
Filipino	0.004	0.003	0.007***	0.001	0.005***	0.001	0.006**	0.002
Black	-0.007***	0.002	-0.003*	0.002	-0.007***	0.001	-0.001	0.001
Hispanic	0.000	0.002	0.003**	0.002	-0.002*	0.001	0.006***	0.001
Other	0.001	0.001	0.004*	0.002	0.001	0.001	0.004*	0.002
Unknown Parent Education	0.002	0.001	-0.001	0.000	-0.001	0.001	0.000	0.001
Not a High School Graduate	0.002	0.001	-0.001**	0.001	-0.001*	0.001	0.000	0.001
Some College	0.000	0.001	-0.002**	0.001	-0.001	0.001	-0.001	0.001
College Graduate	0.003*	0.001	0.002**	0.001	0.001	0.001	0.004***	0.001
Postgraduate	0.004**	0.002	0.003**	0.001	0.001	0.001	0.002**	0.001
First Grade	-0.002	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001
Second Grade	-0.001	0.002	-0.002**	0.001	-0.001	0.001	-0.001	0.001
Third Grade	-0.001	0.001	-0.002***	0.001	-0.002*	0.001	-0.002**	0.001
Fourth Grade	0.000	0.001	-0.001	0.001	-0.001	0.001	0.000	0.001
English Learner	0.006***	0.001	0.004***	0.001	0.005***	0.001	0.003***	0.001
Special Education	-0.004***	0.001	-0.004***	0.001	-0.003***	0.001	-0.003***	0.001
School Year 2012	0.004***	0.001	0.002*	0.001	0.004***	0.001	0.000	0.001
School Year 2013	-0.004**	0.002	-0.004***	0.001	-0.004***	0.001	-0.004***	0.001
School FRPL Rate	0.000*	0.000	0.000***	0.000	0.000***	0.000	0.000***	0.000

Source: Gardner Center analysis of 2010-11 through 2012-13 OUSD & SFUSD administrative data. School-level FRPL participation in SFUSD was provided by SFUSD; school-level FRPL participation in OUSD was obtained from California Department of Education, Dataquest (<http://dq.cde.ca.gov/dataquest>). Schools' participation in Playworks provided by Playworks.

Notes: (1) *p<0.1; **p<0.05; ***p<0.01

(2) Reference categories for categorical variables include Whites, having parents who are high school graduates, fifth graders, and being in the 2010-11 school year.

(3) Models include school fixed effects and robust standard errors clustered at the school level.

Exhibit B2, cont'd: Predictors of Student Attendance Rates during Playworks Participation by Subgroup

Variable	Asian or Pacific Islander		Black		Filipino		Hispanic	
	β	SE	β	SE	β	SE	β	SE
Intercept	0.426***	0.019	0.381***	0.016	0.462***	0.031	0.386***	0.016
Playworks Participation	0.002*	0.001	0.004**	0.001	0.001	0.002	0.002*	0.001
SFUSD	-0.001	0.001	-0.005***	0.002	0.000	0.003	-0.005***	0.001
Attendance Rate Last Year	0.573***	0.020	0.611***	0.015	0.528***	0.031	0.610***	0.016
Female	0.000	0.000	0.002	0.001	0.003***	0.001	0.000	0.000
Unknown Parent Education	-0.002**	0.001	0.000	0.001	-0.001	0.002	0.001	0.001
Not a High School Graduate	-0.001	0.001	-0.005*	0.003	-0.007	0.007	0.000	0.001
Some College	-0.001	0.001	0.000	0.002	-0.001	0.002	-0.002**	0.001
College Graduate	0.000	0.001	0.005***	0.002	0.002	0.002	0.000	0.001
Postgraduate	-0.003**	0.001	0.003	0.002	-0.001	0.003	0.001	0.001
First Grade	-0.003***	0.001	-0.001	0.002	-0.008***	0.002	0.000	0.001
Second Grade	-0.004***	0.001	-0.001	0.002	-0.002	0.002	-0.001	0.001
Third Grade	-0.003***	0.001	-0.002	0.001	-0.004*	0.002	-0.002**	0.001
Fourth Grade	-0.001	0.001	0.001	0.002	-0.005***	0.002	-0.001	0.001
English Learner	0.004***	0.001	0.015***	0.002	0.002	0.001	0.004***	0.001
Special Education	-0.006***	0.002	-0.001	0.001	-0.008**	0.004	-0.004***	0.001
School Year 2012	0.002**	0.001	0.002	0.002	0.002	0.002	0.001	0.001
School Year 2013	-0.002***	0.001	-0.004**	0.002	-0.004**	0.002	-0.005***	0.001
School FRPL Rate	0.000***	0.000	0.000***	0.000	0.000	0.000	0.000***	0.000

Source: Gardner Center analysis of 2010-11 through 2012-13 OUSD & SFUSD administrative data. School-level FRPL participation in SFUSD was provided by SFUSD; school-level FRPL participation in OUSD was obtained from California Department of Education, Dataquest (<http://dq.cde.ca.gov/dataquest>). Schools' participation in Playworks provided by Playworks.

Notes: (1) * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

(2) Reference categories for categorical variables include having parents who are high school graduates, fifth graders, and being in the 2010-11 school year.

(3) Models include school fixed effects and robust standard errors clustered at the school level.

Exhibit B2, cont'd: Predictors of Student Attendance Rates during Playworks Participation by Subgroup

Variable	Other		White	
	β	SE	β	SE
Intercept	0.403***	0.034	0.342***	0.053
Playworks Participation	-0.001	0.002	0.001	0.002
SFUSD	-0.004	0.003	-0.002	0.001
Attendance Rate Last Year	0.586***	0.034	0.640***	0.052
Female	0.001	0.001	0.001	0.001
Unknown Parent Education	0.000	0.003	0.005	0.004
Not a High School Graduate	0.001	0.003	-0.004	0.008
Some College	-0.002	0.002	0.005	0.004
College Graduate	0.002	0.002	0.008**	0.003
Postgraduate	0.005**	0.002	0.007***	0.003
First Grade	0.001	0.002	0.004	0.003
Second Grade	0.000	0.002	0.004*	0.002
Third Grade	-0.002	0.002	0.000	0.003
Fourth Grade	0.000	0.002	0.004*	0.002
English Learner	0.007***	0.002	0.008***	0.002
Special Education	-0.001	0.003	-0.004	0.004
School Year 2012	0.006***	0.002	0.004***	0.001
School Year 2013	-0.005	0.003	-0.001	0.001
School FRPL Rate	0.000	0.000	0.000***	0.000

Source: Gardner Center analysis of 2010-11 through 2012-13 OUSD & SFUSD administrative data. School-level FRPL participation in SFUSD was provided by SFUSD; school-level FRPL participation in OUSD was obtained from California Department of Education, Dataquest (<http://dq.cde.ca.gov/dataquest>). Schools' participation in Playworks provided by Playworks.

Notes: (1) * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

(2) Reference categories for categorical variables include having parents who are high school graduates, fifth graders, and being in the 2010-11 school year.

(3) Models include school fixed effects and robust standard errors clustered at the school level.

Exhibit B3: Predictors of Student Attendance Rates by Years of Exposure to Playworks

Variable	All Students	
	β	SE
Intercept	0.385***	0.011
One Year of Playworks Participation	0.002	0.001
2 or More Years of Playworks Participation	0.002**	0.001
SFUSD	-0.004***	0.001
Attendance Rate Last year	0.607***	0.011
Female	0.001*	0.000
Asian or Pacific Islander	0.009***	0.001
Filipino	0.006***	0.001
Black	-0.004***	0.001
Hispanic	0.002**	0.001
Other	0.003**	0.001
Unknown Parent Education	0.000	0.000
Not a High School Graduate	-0.001	0.001
Some College	-0.001*	0.001
College Graduate	0.002***	0.001
Postgraduate	0.002**	0.001
First Grade	-0.001	0.001
Second Grade	-0.001	0.001
Third Grade	-0.002***	0.001
Fourth Grade	0.000	0.001
English Learner	0.004***	0.000
Special Education	-0.004***	0.001
School Year 2012	0.002**	0.001
School Year 2013	-0.004***	0.001
School FRPL Rate	0.000***	0.000

Source: Gardner Center analysis of 2010-11 through 2012-13 OUSD & SFUSD administrative data. School-level FRPL participation in SFUSD was provided by SFUSD; school-level FRPL participation in OUSD was obtained from California Department of Education, Dataquest (<http://dq.cde.ca.gov/dataquest>). Schools' participation in Playworks provided by Playworks.

Notes: (1) * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

(2) Reference categories for categorical variables include Whites, having parents who are high school graduates, fifth graders, and being in the 2010-11 school year.

(3) Models include school fixed effects and robust standard errors clustered at the school level.

Exhibit B4: Predictors of Student Attendance Rates during Playworks Participation, 2010-11 School Year

Variable	All Students		Students with Less than 95% Attendance in the Prior Year		Students with 90% or Less Attendance in the Prior Year	
	β	SE	β	SE	β	SE
Intercept	0.406***	0.017	0.437***	0.027	0.467***	0.042
Playworks Participation	0.000	0.002	0.001	0.003	0.004	0.005
SFUSD	-0.005***	0.002	-0.004	0.003	-0.001	0.006
Attendance Rate Last Year	0.587***	0.016	0.552***	0.024	0.500***	0.032
Female	0.001	0.001	0.002	0.002	0.000	0.004
Asian or Pacific Islander	0.010***	0.002	0.014**	0.006	0.036**	0.017
Filipino	0.010***	0.002	0.018***	0.006	0.046***	0.017
Black	-0.003	0.002	0.002	0.006	0.026	0.018
Hispanic	0.003	0.002	0.006	0.006	0.026	0.018
Other	0.003	0.002	0.004	0.005	0.029*	0.017
Unknown Parent Education	0.000	0.001	0.001	0.002	0.002	0.004
Not a High School Graduate	0.000	0.001	-0.001	0.003	-0.001	0.005
Some College	-0.001	0.001	-0.001	0.002	0.001	0.005
College Graduate	0.000	0.001	0.003	0.003	0.004	0.006
Postgraduate	0.004**	0.002	0.011**	0.005	0.023*	0.013
First Grade	-0.003***	0.001	-0.004**	0.002	-0.002	0.005
Second Grade	-0.003***	0.001	-0.005**	0.002	-0.005	0.005
Third Grade	-0.004***	0.001	-0.009***	0.003	-0.011**	0.006
Fourth Grade	-0.002*	0.001	-0.005**	0.002	-0.006	0.005
English Learner	0.005***	0.001	0.010***	0.002	0.015***	0.004
Special Education	-0.002**	0.001	0.000	0.002	0.002	0.004
School FRPL Rate	0.000**	0.000	0.000**	0.000	0.000*	0.000

Source: Gardner Center analysis of 2010-11 through 2012-13 OUSD & SFUSD administrative data. School-level FRPL participation in SFUSD was provided by SFUSD; school-level FRPL participation in OUSD was obtained from California Department of Education, Dataquest (<http://dq.cde.ca.gov/dataquest>). Schools' participation in Playworks provided by Playworks.

Notes: (1) * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

(2) Reference categories for categorical variables include Whites, having parents who are high school graduates, and fifth graders.

(3) Models include school fixed effects and robust standard errors clustered at the school level.