IES Institute of Education Sciences

APPENDIXES
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Regional Educational Laboratory Midwest
At American Institutes for Research

Participation in a Professional Development Program on Culturally Responsive Practices in Wisconsin

See https://go.usa.gov/x7NQU for the full report.

Appendix A. Overview of the Building Culturally Responsive Systems professional development program on culturally responsive practices

In 2009 Andreal Davis developed a professional development program on culturally responsive practices called "7 Experiences" for the Madison Metropolitan School District. Its goal was to build educators' skills in implementing culturally responsive practices in their classrooms. The program was initially offered to four schools in the district (Davis & Lehman, 2013). In 2013/14 the Wisconsin Response to Intervention Center, which assists Wisconsin schools with building capacity and adopting and implementing high-quality education practices, started offering the program statewide. In addition, the Wisconsin Response to Intervention Center changed the name of the program to Building Culturally Responsive Systems, encouraged schools to complete the program, and recommended that schools implement culturally responsive practices within their multi-tiered systems of supports. Although the program has been offered statewide for six years, little research has been conducted on its reach across the state or its relationship to student or school outcomes.

The statewide program is a series of five in-person sessions designed for school and district teams. It is intended to help educators understand the policies and practices related to inequitable student outcomes and develop their ability to "create an inclusive learning environment and develop practices, strategies, and curriculum that include and honor the life experiences and cultures of their students" (Wisconsin Response to Intervention Center, 2019). The program achieves this goal by developing cultural competence, exploring power and privilege, and examining subtleties of culture and diversity. Sessions include guided self-reflection, discussion of examples of culturally responsive practices (for example, incorporating literacy books that match students' demographic characteristics, using call-and-response techniques, and administering learning environment surveys), and discussions on how to use data to understand and address specific equity issues.

The five sessions run from 8:30 a.m. to 5:30 p.m. each day. The program is offered in four locations across the state. For example, in the 2017/18 school year the program was offered in Eau Claire, Madison, Oshkosh, and Tomah. The dates for each session are spread across the school year. For example, at the Madison location, sessions were held on November 7, November 8, April 17, April 18, and May 15. The program costs $325 per participant, but the cost is waived for districts with disproportionate representation of racial/ethnic minority groups in special education (Wisconsin Response to Intervention Center, 2019).

References

Davis, A., & Lehman, B. (2013). *Defining the cultural practices that are relevant: 7 experiences professional development model: Steps toward breathing new life into our instructional practices* [PowerPoint slides]. Retrieved October 2, 2018, from https://www.wisconsinrticenter.org/videos-2/culturally-responsive-7-experiences.html.

Wisconsin Response to Intervention Center. (2019, November). *Building culturally responsive systems.* Retrieved November 22, 2019, from https://www.wisconsinrticenter.org/event/building-culturally-responsive-systems-2-3/2019-11-12/.

Appendix B. Methods

This appendix includes detailed information about the data used for this report as well as the methods used to complete the analyses.

Data sources

The study used data provided by the Wisconsin Response to Intervention Center and the Wisconsin Department of Public Instruction as well as publicly available data from the U.S. Department of Education's Common Core of Data (table B1).

Research question 1. To address research question 1 on participation in the Building Culturally Responsive Systems professional development program, the study team used data from the Wisconsin Response to Intervention Center on the dates during which teachers and administrators from each school participated in the program.

Research question 2. To address research question 2 on the differences in characteristics of schools that participated in the program and of schools that did not participate, the study team used the same data on participation from the Wisconsin Response to Intervention Center that were used to address research question 1 as well as data on school characteristics from the Wisconsin Department of Public Instruction and the U.S. Department of Education's Common Core of Data.

The data from the Wisconsin Department of Public Instruction included school enrollment, percentage of students by race/ethnicity (American Indian, Asian, Black, Hispanic, Pacific Islander, two or more races/ethnicities, unknown race/ethnicity, and White), percentage of students eligible for the national school lunch program, and the district in which each school was located.

The data from the U.S. Department of Education included school Title I status, number of teachers, teacher-to-student ratio, locale (city, suburb, town, or rural), and grade span.

Research question 3. To address research question 3 on school implementation of culturally responsive practices in reading instruction and math instruction within their multi-tiered systems of supports (MTSS), the study team used data from the School-Wide Implementation Review surveys administered by the Wisconsin Response to Intervention Center. Schools responded to 10 items on two surveys on school practices within MTSS, one on practices in reading instruction and one on practices in math instruction. Responses were on a five-point scale: not in place, purpose building, infrastructure, initial implementation, and full implementation. The Wisconsin Response to Intervention Center converted the responses to a numerical scale of 0–4.

Data for addressing research question 4. To address research question 4 on the relationship between program participation school-level academic and behavior outcomes, the study team used the same data on participation from the Wisconsin Response to Intervention Center that were used to address research question 1 as well as data on school-level academic and behavior measures (mean scale scores on English language arts and math tests; closing gaps scores for English language arts, math, and high school graduation rate;[1] attendance rate; suspension rate; and expulsion rate) from the Wisconsin Department of Public Instruction.

For students in elementary and middle school, the study included mean scale scores from the Wisconsin Knowledge and Concepts Exam (administered in 2013/14 and years prior), the Badger Exam (administered in 2014/15), and the Forward Exam (administered in 2015/16–2018/19). For students in high school, the study included scores from ACT assessments. The Wisconsin Department of Public Instruction standardized test scores by test, grade, and school to allow for easy comparisons.

[1] Closing gaps scores for high school graduation rate were excluded from the analysis due to a high level of missing data.

The closing gaps score measure a school's progress toward closing achievement gaps between target groups (racial/ethnic minority students, students with disabilities, students with limited English proficiency, and students who are economically disadvantaged) and comparison groups (White students, students without disabilities, students classified as fully English proficient, and students who are not economically disadvantaged). Scores are calculated on a scale from 1 to 100 as part of the school's annual report card. Higher scores indicate that the gap between groups is narrowing, and lower scores indicate that the gap is widening. Scores increase when the performance of students in target groups increases but the performance of students in comparison groups remains the same as well as when the performance of students in target groups remains the same but the performance of students in comparison groups declines.

Table B1. Summary of data used to answer research questions

Data element	Years of data used in analysis	Source
Research question 1. What percentage of schools participated in the program?		
Dates during which teachers and administrators from each school participated in the professional development program on culturally responsive practices	2013/14–2018/19	Wisconsin Response to Intervention Center (obtained through a data request)
Research question 2. How are the characteristics of the schools that participated in the program different from the characteristics of the schools that did not participate?[a]		
School enrollment	2012/13–2017/18	Wisconsin Department of Public Instruction (obtained through a data request)
School-level racial/ethnic makeup (American Indian, Asian, Black, Hispanic, Pacific Islander, two or more races/ethnicities, unknown race/ethnicity, and White)	2012/13–2017/18	
School-level percentage of students eligible for the national school lunch program	2012/13–2017/18	
School district in which schools were located	2014/15–2017/18	
Title I status	2012/13–2016/17	U.S. Department of Education's (2018) Common Core of Data
Number of teachers	2012/13–2016/17	
Teacher-to-student ratio	2012/13–2016/17	
School locale	2012/13–2016/17	
School grade span	2012/13–2016/17	
Research question 3. What percentage of schools that participated in the program and what percentage of schools that did not participate reported implementing culturally responsive practices within their MTSS?		
Responses to survey on implementation of culturally responsive practices in reading instruction	2013/14–2018/19	Wisconsin Response to Intervention Center (obtained through a data request)
Responses to survey on implementation of culturally responsive practices in math instruction	2013/14–2018/19	
Research question 4. Is program participation related to school-level academic and behavior outcomes, after school characteristics and pre-program program academic and behavior measures are accounted for?		
Mean English language arts test scores	2012/13–2017/18	Wisconsin Department of Public Instruction (obtained through a data request)
Mean math test scores	2012/13–2017/18	
Closing gaps score for English language arts	2012/13–2017/18	
Closing gaps score for math	2012/13–2017/18	
Attendance rate	2012/13–2017/18	
Suspension rate	2012/13–2017/18	
Expulsion rate	2012/13–2017/18	

a. All data elements used to address research question 1 were also used to address research questions 2, 3, and 4.
Source: Authors' compilation.

Study sample

The analytic sample included 2,290 public schools in Wisconsin (1,297 elementary schools, 72 combined elementary/secondary schools, 390 middle schools, and 531 high schools).[2]

[2] The study used school-level data because student-level data were not available.

Data preparation

Data from the Wisconsin Response to Intervention Center were merged with data from the Wisconsin Department of Public Instruction using a school code variable in both datasets. All records were kept except for any duplicate rows. The study team requested National Center for Education Statistics school identification codes from the Wisconsin Department of Education and used them to merge data from the U.S. Department of Education's Common Core of Data with data from the Wisconsin Response to Intervention Center and the Wisconsin Department of Public Instruction. The study team dropped records that did not have the identification codes needed to merge the datasets. The study team also dropped 66 schools with only one or fewer teachers on average (including many nontraditional schools such as virtual schools and education centers) and 1 school with an average attendance rate of 0. The final data file had 2,290 school records.

Program participation. The study team conducted the following manipulations and calculations to prepare the data on program participation for analysis:

- A binary variable was created to indicate whether a school participated in the program based on the dates during which teachers or administrators from the school participated in the program. The study team assigned a code of 1 to schools from which teachers or administrators participated in at least one of the program's five sessions in any year and a code of 0 to schools from which no teachers or administrators participated in the program in any year.
- An additional variable was created to indicate the year in which a school sent teachers or administrators to the program. This variable was used in calculating pre-program scores and outcomes one year, two years, and three years after the program. Because schools participated in the program across multiple years, it was not possible to use a single year as the "pre-program" year for schools that did not participate. To establish a reference year for the calculation of pre-program values and post-program outcomes for schools that did not participate in the program, the study team randomly assigned these schools to a program year in percentages proportional to the percentages of schools that did participate in each year (table B2). The random assignment involved three steps: assigning a random number to schools that did not participate in the program, ordering those schools by that number, and distributing those schools across intervention years in the same proportions as schools that did participate.

Table B2. Number and percentage of schools that participated in the program by year, 2013/14–2018/19

Year	Number of schools that participated in the program	Percentage of schools that participated in the program
2013/14	24	25.0
2014/15	33	34.4
2015/16	11	11.5
2016/17	2	2.1
2017/18	22	22.9
2018/19	4	4.2

Source: Authors' analysis of data from the Wisconsin Response to Intervention Center and the Wisconsin Department of Public Instruction.

School-level characteristics. The study team conducted the following manipulations and calculations to prepare the data on school-level characteristics for analysis:

- School enrollment; the percentages of Black students, Hispanic students, and White students; the percentage of students who were eligible for the national school lunch program; the number of teachers; and the teacher-to-student ratio were each averaged across all years of data for each school.

- American Indian students, Asian students, Pacific Islander students, students who identify as two or more races/ethnicities, and students with unknown race/ethnicity were combined into a single category, students of other race/ethnicity, and the percentage of students in that category was averaged across all years of data for each school.
- Title I status was recoded as a binary variable based on the most recent Title I status was used for each school. The original Common Core of Data Title I status variable had six categories. The study team assigned a code of 1 to schools that were eligible for Title I Targeted Assistance and received the assistance, schools that were eligible for Title I Targeted Assistance and did not receive assistance, schools that were eligible for the Title I Schoolwide Program and received the program, and schools that were eligible for the Title I Schoolwide Program and did not receive the program. The study team assigned a code of 0 to schools that were not eligible for either Title I Targeted Assistance or Schoolwide Program.
- The study team used the most frequent urban-centric locale designation (city, suburb, town, or rural) across all years of the study for each school.
- A binary variable was created to indicate whether a school was located in one of the "Big Five" school districts (Milwaukee, Madison, Racine, Kenosha, and Green Bay). The "Big Five" school districts are the five largest districts in Wisconsin and serve the majority of Black students in the state. School codes that are assigned by the Wisconsin Department of Public Instruction were used to create the binary variable. The study team assigned a code of 1 to schools located in one of the "Big Five" districts and a code of 0 to schools located in other districts.

Implementation of culturally responsive practices in reading and math instruction within MTSS. The study team conducted the following manipulations and calculations to prepare the data on implementation of culturally responsive practices for analysis:

- To ensure the 10 items were reliable, the study team conducted a series of internal consistency checks. The 10 items had a Cronbach's alpha of .95 for reading and .96 for math. Because of the high internal consistency of the 10 items, the study team used the 10 items in determining whether schools were implementing culturally responsive practices.
- Binary variables were created to indicate whether a school implemented culturally responsive practices in reading instruction and in math instruction. The variables were based on the mean score for the 10 survey items across all years. The study team assigned a code of 1 to schools with a mean score of 3 or higher and a code of 0 to schools with a mean score of less than 3. A threshold of 3 was chosen because it indicated that a school was implementing some culturally responsive practices.

School-level academic and behavior measures. The study team conducted the following manipulations and calculations to prepare the data on school-level outcomes for analysis:

- For each outcome the average of all values prior to the year in which a school participated in the program was used as the pre-program academic and behavior measures. For example, if a school participated in the program in 2017/18, the mean attendance rate from 2012/13 to 2016/17 was used as the pre-program attendance score.
- Values for each outcome one year, two years, and three years after participation were calculated. For example, for a school that participated in the program in 2012/13, the one-year post-program attendance rate was from 2013/14, the two-year post-program attendance rate was from 2014/15, and the three-year post-program attendance rate was from 2015/16. If data were not available for one year, two years, or three years after participation, the data were considered missing.

- *Attendance rate.* The average pre-program attendance rate and the average attendance rate one year, two years, and three years after participation were calculated for each school.
- *Mean English language arts and math test scores*. The average pre-program English language arts and math standardized test *z* scores and the average English language arts and math standardized test *z* scores one year, two years, and three years after participation were calculated for each school.
- *Closing gaps scores for English language arts and math*. Average pre-program closing gaps scores for English language arts and math and the average closing gaps scores one year, two years, and three years after participation were calculated for each school. Closing gaps scores for graduation rate were excluded from the analysis due to a high level of missing data (see next section).
- *Suspension rate*. The average pre-program suspension rate and the average suspension rate one year, two years, and three years after participation were calculated for each school.
- *Expulsion rate*. The average pre-program expulsion rate and the average expulsion rate one year, two years, and three years after participation were calculated for each school.

Missing data

Because the rate of missing data was low for the majority of the variables (under 7.2 percent; table B3), the study team used listwise deletion to handle missing data.[3] However, several variables had high levels of missing data, which affected the analysis for research question 4. Specifically, implementation of culturally responsive practices was removed from the regression analysis and included only in the descriptive analysis, and closing gaps scores for graduation rate were removed from both the descriptive analysis and the regression analysis.

[3] Using listwise deletion, a school was excluded from analyses if it was missing a value for a variable used in analysis.

Table B3. Number of valid cases and percentage of missing cases for each variable

Variable	Number of valid cases	Percentage of missing cases
Program participation		
Participation in the professional development program on culturally responsive practices	2,290	0.0
Implementation of culturally responsive practices		
In reading instruction[a]	866	62.2
In math instruction[a]	596	74.0
School characteristics		
Average school enrollment	2,287	1.3
Percentage of White students	2,287	1.3
Percentage of Black students	2,287	1.3
Percentage of students of "other race/ethnicity"	2,287	1.3
Percentage of Hispanic students	2,287	1.3
Percentage students eligible for the national school lunch program	2,287	1.3
Title I status	1,616	5.3
Number of teachers	2,246	1.9
Teacher-to-student ratio	2,246	1.9
School locale	2,277	0.6
School grade span	2,290	0.0
School-level outcomes		
Mean English language arts test scores	2,125	7.2
Mean math test scores	2,125	7.2
Closing gaps score for English language arts	1,784	22.1
Closing gaps score for math	1,784	22.1
Closing gaps score for graduation rate[b]	262	56.6
Attendance rate	2,287	1.3
Suspension rate	2,287	1.3
Expulsion rate	2,287	1.3

a. Removed from the regression analysis because of the high level of missing data. A nonresponse analysis indicated that whether a school was missing data on this variable was meaningfully related to school characteristics. Therefore, any findings related to this variable cannot be generalized to the population of schools in Wisconsin.
b. Excluded from all analyses because of the high level of missing data.
Source: Authors' analysis of data from the Wisconsin Response to Intervention Center, the Wisconsin Department of Public Instruction, and the U.S. Department of Education's Common Core of Data.

Analysis

To address research question 1, the study team used the data on dates of school participation to calculate the number and percentage of schools that participated in the program.

To address research question 2, the study team compared the average school-level characteristics of schools that participated in the program and of schools that did not participate in the program. Group differences of 5 percentage points or more were considered meaningful.

To address research question 3, the study team used the data from the School-wide Implementation Review surveys to calculate the number and percentage of schools that reported implementing culturally responsive practices within their MTSS by whether they had participated in the program.

To answer research question 4, the study team conducted two sets of analyses. First, the study team compared average school-level academic and behavior outcomes for schools that participated in the program and schools that did not participate. Second, the study team used a series of regression models to examine the relationship between program participation and those outcomes. The regression models used the average school characteristics of all schools; participation in the program during any year; and school outcomes (all continuous outcomes) for one year, two years, and three years after the program. Because these analyses used the population of schools in Wisconsin, the study team did not conduct tests for statistical significance. To identify meaningful differences, the study team calculated effect sizes and reported standardized coefficients. Effect sizes and standardized coefficients with an absolute value greater than .15 were considered meaningful.

Reference

U.S. Department of Education, National Center for Education Statistics. (2018). *Common Core of Data. The Local Education Agency (School District) Universe Survey, 2013/14–2016/17*. Retrieved January 14, 2020, from https://nces.ed.gov/ccd/pubagency.asp.

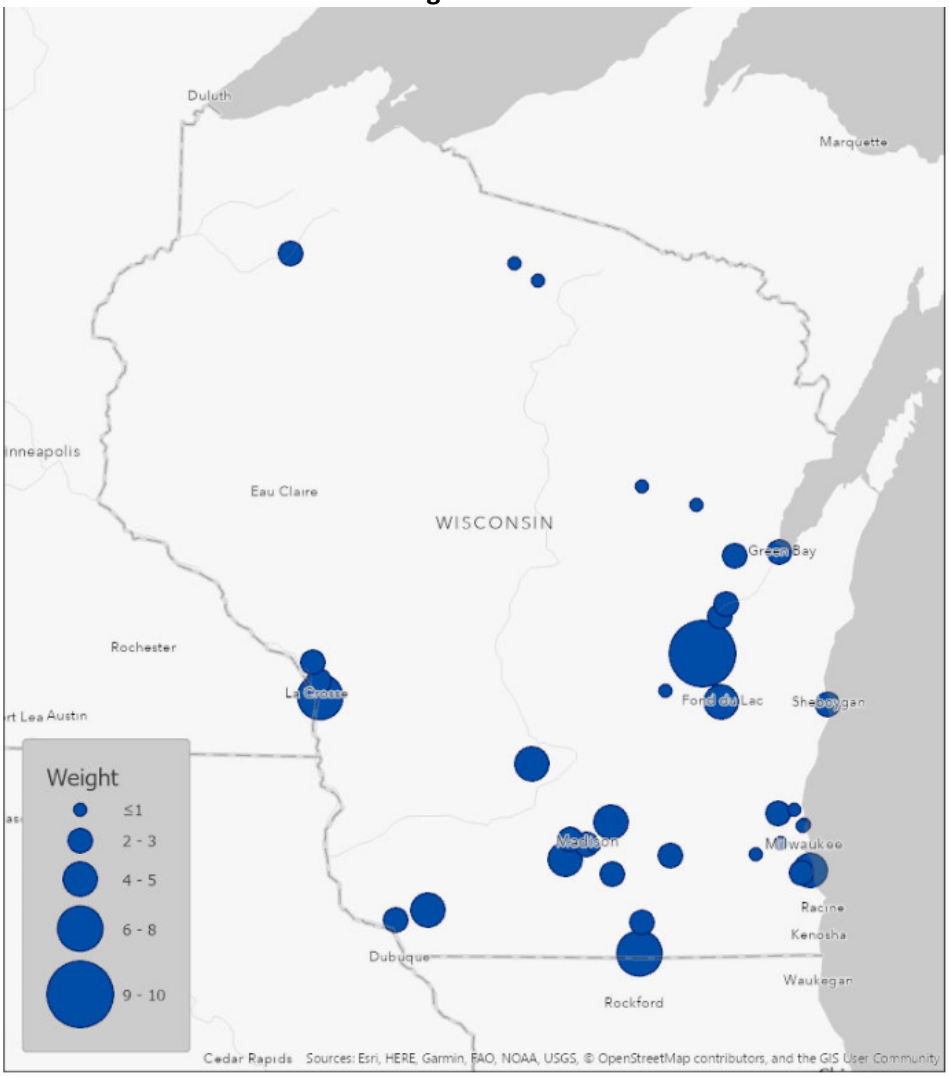
Appendix C. Supporting analyses

This appendix presents additional findings for research question 2 on differences in the characteristics of schools that participated in the Building Culturally Responsive Systems professional development program and of schools that did not participate and for research question 4 on the relationship between program participation and school outcomes.

Comparing school characteristics

The analysis for research question 2 included a breakdown of the locations across the state for schools that participated in the program (map C1) as well as school characteristics by school grade span (elementary school, elementary/secondary school, middle school, and high school; table C1). Only 6 of the 96 schools that participated in the program were located in one of the "Big Five" school districts, which serve the majority of Black students in the state. Of those six schools, four were elementary schools and two were middle schools. Schools that participated in the program were more often located in cities and suburbs than schools that did not participate. Of schools that participated in the program, 42 percent were located in cities, and 30 percent were located in suburbs. Of schools that participated in the program, middle schools were more likely to be located in cities than in other areas, and high schools were more likely to be located in suburbs than in other areas. Of schools that did not participate in the program, middle schools and high schools were more likely to be located in rural areas than in other areas. Of schools that did not participate in the program, elementary/secondary schools had the highest percentage of Black students (36 percent). No elementary/secondary schools participated in the program.

Map C1. Schools that participated in the Building Culturally Responsive Systems professional development program in Wisconsin were clustered around the big cities across the state



Note: The sample consisted of the 96 schools that participated in the program. Larger circles indicate that more schools in a school district participated.
Source: Authors' analysis of data from the Wisconsin Response to Intervention Center.

Table C1. Characteristics of Wisconsin schools, by participation in the professional development program on culturally responsive practices and school grade span, 2013/14–2018/19

	Schools that participated in the program				Schools that did not participate in the program				
Characteristic	Overall (*n* = 96)	Elementary schools (*n* = 56)	Middle schools (*n* = 20)	High schools (*n* = 20)	Overall (*n* = 2,194)	Elementary schools (*n* = 1,241)	Elementary/ secondary schools (*n* = 72)	Middle schools (*n* = 370)	High schools (*n* = 511)
Average school enrollment	582.3	384.2	616.4	1103.2	378.4	341.6	292.5	390.4	471.3
Average number of teachers	41.4	29.2	45.7	71.2	25.3	22.7	18.2	27.3	31.0
Average teacher-to-student ratio	1 to 14	1 to 13	1 to 13	1 to 15	1 to 17	1 to 18	1 to 19	1 to 14	1 to 16
Eligible for Title I funds (percent)	76	88	70	50	71	75	61	76	56
Located in a "Big Five" school district[a] (percent)	6	7	10	0	14	17	53	7	11
Average demographic makeup (percent of students)									
Black	8	9	7	6	9	10	36	5	8
Hispanic	12	13	13	8	10	11	8	9	8
Other race/ethnicity[b]	13	15	12	10	7	8	8	7	6
White	67	63	68	76	73	71	48	80	78
Eligible for the national school lunch program	46	51	48	32	43	45	58	39	39
Locale (percent of schools)									
City	42	41	60	25	25	28	54	16	20
Suburb	30	30	20	40	20	23	10	20	15
Town	15	13	10	25	19	18	10	24	18
Rural	14	16	10	10	36	31	25	40	46

Note: The analytic sample consisted of 2,290 elementary, middle, and high schools.

a. The "Big Five" school districts are the five largest school districts in Wisconsin. These districts also serve the majority of Black students in the state.

b. Includes American Indian students, Asian students, Pacific Islander students, students who identify as two or more races/ethnicities, and students with unknown race/ethnicity.

Source: Authors' analysis of data from the Wisconsin Response to Intervention Center, the Wisconsin Department of Public Instruction, and the U.S. Department of Education Common Core of Data.

Comparing average school outcomes

To answer research question 4, the study team compared average academic and behavior measures before and after program participation (English language arts test scores, math test scores, closing gaps scores for English language arts, closing gaps scores for math, attendance rate, suspension rate, and expulsion rate) for schools that participated in the program and schools that did not participate.

Overall, there were few meaningful differences in academic and behavior measures before and after program participation between schools that participated in the program and schools that did not participate. There were no meaningful differences in English language arts test scores (table C2) or math test scores (table C3) between schools that participated in the program and schools that did not participate. Schools that participated in the program had lower closing gaps scores for English language arts[4] three years after participation compared with schools that did not participate in the program (29.1 versus 32.4; table C4), and schools that participated in the program had lower closing gaps scores for math one year after participation (29.0 versus 31.2), two years after participation (29.0 compared with 31.6), and three years after participation (28.5 versus 32.1; table C5). Although the differences in closing gaps scores were meaningful, they were substantively small. With one exception, there were no meaningful differences in behavior outcomes, including attendance rate (table C6), suspension rate (table C7), and expulsion rate (table C8). The exception was that schools that participated in the program had higher suspension rates one year later (see table C7). For example, schools that participated in the program had a suspension rate of 4 percent one year after participation compared with 3 percent in schools that did not participate. These results are based on a small number of schools that participated in the program; therefore, the results may not be representative of all schools in Wisconsin.

Table C2. Mean differences in English language arts test scores before participation and one year, two years, and three years after participation for schools that participated in the professional development program on culturally responsive practices in Wisconsin and for schools that did not participate, 2013/14–2018/19

Time period and program participation status	Number of schools	English language arts *z* score	Standard deviation	Effect size
Before participation				
Participated in program	69	–0.074	0.27	.06
Did not participate in program	1,476	–0.047	0.44	
One year after participation				
Participated in program	87	–0.095	0.35	.12
Did not participate in program	1,862	–0.040	0.46	
Two years after participation				
Participated in program	66	–0.028	0.37	.00
Did not participate in program	1,431	–0.027	0.46	
Three years after participation				
Participated in program	64	–0.079	0.37	.10
Did not participate in program	1,372	–0.029	0.47	

Note: The effect size is Hedges' *g*, which is a measure of how much one group differs from another group. The number of schools in each group is different because schools participated in different years. Schools that participated in the first year 2013/14 did not have any pre-participation data and were therefore dropped from the analysis. There is a similar problem for the post-participation data. Schools that participated in 2016/17–2018/19 did not have outcome data for all three years after participation and were therefore dropped from the analysis for which data were not available. Other variations in the number of schools each year are related to levels of missing data on the outcome variable.
Source: Authors' analysis of data from the Wisconsin Response to Intervention Center and the Wisconsin Department of Public Instruction.

[4] The closing gaps score is a continuous variable on a scale from 1 to 100. A higher score means that the gap between target groups and comparison groups is narrowing.

Table C3. Mean differences in math test scores before participation and one year, two years, and three years after participation for schools that participated in the professional development program on culturally responsive practices in Wisconsin and for schools that did not participate, 2013/14–2018/19

Time period and program participation status	Number of schools	Math *z* score	Standard deviation	Effect size
Before participation				
Participated in program	69	–0.045	0.31	–.06
Did not participate in program	1,476	–0.072	0.46	
One year after participation				
Participated in program	87	–0.076	0.37	.04
Did not participate in program	1,862	–0.055	0.49	
Two years after participation				
Participated in program	66	–0.020	0.41	–.04
Did not participate in program	1,431	–0.039	0.48	
Three years after participation				
Participated in program	64	–0.040	0.39	.00
Did not participate in program	1,373	–0.039	0.49	

Note: The effect size is Hedges' *g*, which is a measure of how much one group differs from another group. The number of schools in each group is different because schools participated in different years. Schools that participated in the first year 2013/14 did not have any pre-participation data and were therefore dropped from the analysis. There is a similar problem for the post-participation data. Schools that participated in 2016/17–2018/19 did not have outcome data for all three years after participation and were therefore dropped from the analysis for which data were not available. Other variations in the number of schools each year are related to levels of missing data on the outcome variable.
Source: Authors' analysis of data from the Wisconsin Response to Intervention Center and the Wisconsin Department of Public Instruction.

Table C4. Mean differences in closing gaps score for English language arts before participation and one year, two years, and three years after participation for schools that participated in the professional development program on culturally responsive practices in Wisconsin and for schools that did not participate, 2013/14–2018/19

Time period and program participation status	Number of schools	Closing gaps score for English language arts	Standard deviation	Effect size
Before participation				
Participated in program	68	31.14	9.16	.04
Did not participate in program	1,190	31.43	7.98	
One year after participation				
Participated in program	55	31.45	9.42	.10
Did not participate in program	973	32.40	9.48	
Two years after participation				
Participated in program	44	30.74	12.65	.15
Did not participate in program	760	32.42	11.05	
Three years after participation				
Participated in program	64	29.09	12.37	.30
Did not participate in program	1,126	32.44	11.06	

Note: The effect size is Hedges' *g*, which is a measure of how much one group differs from another group. The number of schools in each group is different because schools participated in different years. Schools that participated in the first year 2013/14 did not have any pre-participation data and were therefore dropped from the analysis. There is a similar problem for the post-participation data. Schools that participated in 2016/17–2018/19 did not have outcome data for all three years after participation and were therefore dropped from the analysis for which data were not available. Other variations in the number of schools each year are related to levels of missing data on the outcome variable.
Source: Authors' analysis of data from the Wisconsin Response to Intervention Center and the Wisconsin Department of Public Instruction.

Table C5. Mean differences in closing gaps scores for math before participation and one year, two years, and three years after participation for schools that participated in the professional development program on culturally responsive practices in Wisconsin and for schools that did not participate, 2013/14–2018/19

Time period and program participation status	Number of schools	Closing gaps score for math	Standard deviation	Effect size
Before participation				
Participated in program	68	29.45	8.54	.13
Did not participate in program	1,189	30.41	7.62	
One year after participation				
Participated in program	55	29.01	10.24	.31
Did not participate in program	973	31.91	9.37	
Two years after participation				
Participated in program	44	28.98	10.99	.25
Did not participate in program	760	31.57	10.49	
Three years after participation				
Participated in program	64	28.54	10.00	.34
Did not participate in program	1,126	32.06	10.46	

Note: The effect size is Hedges' *g*, which is a measure of how much one group differs from another group. The number of schools in each group is different because schools participated in different years. Schools that participated in the first year 2013/14 did not have any pre-participation data and were therefore dropped from the analysis. There is a similar problem for the post-participation data. Schools that participated in 2016/17–2018/19 did not have outcome data for all three years after participation and were therefore dropped from the analysis for which data were not available. Other variations in the number of schools each year are related to levels of missing data on the outcome variable.
Source: Authors' analysis of data from the Wisconsin Response to Intervention Center and the Wisconsin Department of Public Instruction.

Table C6. Mean differences in attendance rates before participation and one year, two years, and three years after participation for schools that participated in the professional development program on culturally responsive practices in Wisconsin and for schools that did not participate, 2013/14–2018/19

Time period and program participation status	Number of schools	Attendance rate	Standard deviation	Effect size
Before participation				
Participated in program	72	.953	0.01	–.15
Did not participate in program	1,597	.948	0.04	
One year after participation				
Participated in program	92	.949	0.02	–.07
Did not participate in program	2,003	.946	0.05	
Two years after participation				
Participated in program	70	.951	0.02	–.09
Did not participate in program	1,529	.947	0.06	
Three years after participation				
Participated in program	68	.947	0.02	–.04
Did not participate in program	1,469	.945	0.05	

Note: The effect size is Hedges' *g*, which is a measure of how much one group differs from another group. The number of schools in each group is different because schools participated in different years. Schools that participated in the first year 2013/14 did not have any pre-participation data and were therefore dropped from the analysis. There is a similar problem for the post-participation data. Schools that participated in 2016/17–2018/19 did not have outcome data for all three years after participation and were therefore dropped from the analysis for which data were not available. Other variations in the number of schools each year are related to levels of missing data on the outcome variable.
Source: Authors' analysis of data from the Wisconsin Response to Intervention Center and the Wisconsin Department of Public Instruction.

Table C7. Mean differences in suspension rates before participation and one year, two years, and three years after participation for schools that participated in the professional development program on culturally responsive practices in Wisconsin and for schools that did not participate, 2013/14–2018/19

Time period and program participation status	Number of schools	Suspension rate	Standard deviation	Effect size
Before participation				
Participated in program	72	0.039	0.04	–.13
Did not participate in program	1,597	0.032	0.06	
One year after participation				
Participated in program	92	0.039	0.04	–.19
Did not participate in program	2,007	0.029	0.05	
Two years after participation				
Participated in program	70	0.035	0.03	–.14
Did not participate in program	1,553	0.028	0.05	
Three years after participation				
Participated in program	68	0.035	0.03	–.12
Did not participate in program	1,469	0.028	0.05	

Note: The effect size is Hedges' *g*, which is a measure of how much one group differs from another group. The number of schools in each group is different because schools participated in different years. Schools that participated in the first year 2013/14 did not have any pre-participation data and were therefore dropped from the analysis. There is a similar problem for the post-participation data. Schools that participated in 2016/17–2018/19 did not have outcome data for all three years after participation and were therefore dropped from the analysis for which data were not available. Other variations in the number of schools each year are related to levels of missing data on the outcome variable.
Source: Authors' analysis of data from the Wisconsin Response to Intervention Center and the Wisconsin Department of Public Instruction.

Table C8. Mean differences in expulsion rates before participation and one year, two years, and three years after participation for schools that participated in the professional development program on culturally responsive practices in Wisconsin and for schools that did not participate, 2013/14–2018/19

Time period and program participation status	Number of schools	Expulsion rate	Standard deviation	Effect size
Before participation				
Participated in program	72	0.0005	0.00	.01
Did not participate in program	1,597	0.0005	0.00	
One year after participation				
Participated in program	92	0.0003	0.00	.05
Did not participate in program	2,007	0.0006	0.01	
Two years after participation				
Participated in program	70	0.0002	0.00	.06
Did not participate in program	1,533	0.0003	0.00	
Three years after participation				
Participated in program	68	0.0003	0.00	.01
Did not participate in program	1,469	0.0004	0.00	

Note: The effect size is Hedges' *g*, which is a measure of how much one group differs from another group. The number of schools in each group is different because schools participated in different years. Schools that participated in the first year 2013/14 did not have any pre-participation data and were therefore dropped from the analysis. There is a similar problem for the post-participation data. Schools that participated in 2016/17–2018/19 did not have outcome data for all three years after participation and were therefore dropped from the analysis for which data were not available. Other variations in the number of schools each year are related to levels of missing data on the outcome variable.
Source: Authors' analysis of data from the Wisconsin Response to Intervention Center and the Wisconsin Department of Public Instruction.

Regression results

The study team examined whether program participation was meaningfully related to school-level outcomes one year, two years, and three years later, after school characteristics and pre-program academic and behavior measures were accounted for.

Although program participation and school outcomes were not meaningfully related, some meaningful differences were found between school-level characteristics and school outcomes.

Several variables predicted closing gaps scores for English language arts (table C9). Schools with more students had lower closing gaps scores for English language arts three years after participation (but not one year or two years after participation). Schools with more teachers had lower closing gaps scores in English language arts two year after participation (but not one year or three years after participation). Schools with higher percentages of Black students had lower closing gaps scores for English language arts one year, two years, and three years after participation. Schools with higher percentages of White students had lower closing gaps scores for English language arts scores one year, two years, and three years after participation. Schools with higher closing gaps scores in English language arts before participation had higher closing gaps scores one year, two years, and three years after participation.

A few variables also predicted closing gaps scores in math (table C10). Schools with more students had lower closing gaps scores in math one year and three years after participation (but not two years after participation). Schools with more teachers had lower closing gaps scores in math arts two year after participation. Schools with higher closing gaps scores in math before participation had higher closing gaps scores one year, two years, and three years after participation.

Schools with higher percentages of students eligible for the national school lunch program had lower English language arts test scores three years after participation, and schools with higher pre-program English language arts and math scores had higher test scores one year, two years, and three years after participation (tables C11 and C12).

Only two variables were meaningfully related to attendance rates (table C13). Schools with higher attendance rates before participation had higher attendance rates one year, two years, and three years after participation, and schools with higher percentages of Black students had lower attendance rates three years after participation (but not one year or two years after participation).

Average school enrollment, average number of teachers, and pre-program suspension rates were the only variables that predicted suspension rates (table C14). Schools with more students had higher suspension rates three years after participation (but not one year or two years after participation). Schools with more teachers had lower suspension rates three years after participation (but not one year or two years after participation). Schools with higher suspension rates before participation had higher suspension rates one year, two years, and three years after participation.

The characteristics that predicted expulsion rates were the number of teachers, pre-program expulsion rates, and the percentage of students eligible for the national school lunch program (table C15). Schools with more teachers had lower expulsion rates one year after participation (but not two years or three years after participation). Schools with higher percentages of students eligible for the national school lunch program had higher expulsion rates one year after participation (but not two years or three years after participation). Schools with higher expulsion rates before participation had higher expulsion rates two years and three years after participation.

Table C9. The relationship between participation in the professional development program on culturally responsive practices in Wisconsin and closing gaps scores for English language arts one year, two years, and three years later, 2013/14–2018/19

	Closing gaps scores for English language arts one year after participation (*n* = 587)		Closing gaps scores for English language arts two years after participation (*n* = 752)		Closing gaps scores for English language arts three years after participation (*n* = 705)	
Characteristic	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient
Average school enrollment	–0.01	–.15	–0.00	–.08	–0.01	–.20
Number of teachers	–0.03	–.06	–0.14	–.25	–0.07	–.12
Teacher-to-student ratio	0.02	.01	0.08	.04	0.08	.02
Eligible for Title I funds	1.10	–.05	1.92	.07	2.67	.11
Percentage of Black students	–9.92	–.18	–13.50	–.24	–12.63	–.22
Percentage of White students	–9.15	–.23	–9.66	–.23	–13.03	–.31
Percentage of students eligible for the national school lunch program	–6.60	–.14	–5.68	–.11	–7.18	–.14
Pre-program closing gaps scores for English language arts	0.73	.57	0.49	.34	0.48	.31
Program participation	0.57	.01	–0.10	–.00	–1.67	–.04

Note: Standardized coefficients were calculated by dividing the standard deviation of the predictor by the standard deviation of the outcome variable and multiplying that number by the regression coefficient. Effect sizes and standardized coefficients with an absolute value greater than .15 were considered meaningful.

Source: Authors' analysis of data from the Wisconsin Response to Intervention Center, the Wisconsin Department of Public Instruction, and the U.S. Department of Education's Common Core of Data.

Table C10. The relationship between participation in the professional development program on culturally responsive practices in Wisconsin and closing gaps scores for math one year, two years, and three years later, 2013/14–2018/19

	Closing gaps scores for math one year after participation (*n* = 587)		Closing gaps scores for math two years after participation (*n* = 752)		Closing gaps scores for math three years after participation (*n* = 705)	
Characteristic	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient
Average school enrollment	–0.01	–.30	–0.00	–.05	–0.01	–.30
Number of teachers	0.06	.11	–0.12	–.23	–0.01	–.00
Teacher-to-student ratio	0.10	.07	0.03	.02	0.13	.03
Eligible for Title I funds	0.39	–.02	1.03	.04	1.58	.07
Percentage of Black students	–3.61	–.07	–1.75	–.03	–2.23	–.04
Percentage of White students	–3.81	–.10	–.86	–.02	–5.83	–.15
Percentage of students eligible for the national school lunch program	–4.09	–.09	–4.65	–.10	–6.28	–.14
Pre-program closing gaps scores for math	0.57	.46	0.44	.32	0.41	.31
Program participation	–2.27	–.05	–0.75	–.02	–1.56	–.04

Note: Standardized coefficients were calculated by dividing the standard deviation of the predictor by the standard deviation of the outcome variable and multiplying that number by the regression coefficient. Effect sizes and standardized coefficients with an absolute value greater than .15 were considered meaningful.

Source: Authors' analysis of data from the Wisconsin Response to Intervention Center, the Wisconsin Department of Public Instruction, and the U.S. Department of Education's Common Core of Data.

Table C11. The relationship between participation in the professional development program on culturally responsive practices in Wisconsin and English language arts test scores one year, two years, and three years later, 2013/14–2018/19

	English language arts test scores one year after participation (*n* = 1,389)		English language arts test scores two years after participation (*n* = 948)		English language arts test scores three years after participation (*n* = 886)	
Characteristic	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient
Average school enrollment	0.00	.06	0.00	.12	–0.00	–.11
Number of teachers	–0.00	–.08	–0.00	–.15	–0.00	–.06
Teacher-to-student ratio	0.00	.01	0.00	–.02	–0.00	–.07
Eligible for Title I funds	–0.01	–.00	–0.02	–.02	–0.00	–.00
Percentage of Black students	–0.08	–.03	–0.27	–.11	–0.30	–.14
Percentage of White students	–0.02	–.01	–0.01	–.01	–0.77	–.04
Percentage of students eligible for the national school lunch program	–0.23	–.11	–0.12	–.06	–0.40	–.17
Pre-program English language arts test scores	0.89	.79	0.88	.76	0.81	.68
Program participation	–0.01	–.01	.00	.00	–0.04	–.02

Note: Standardized coefficients were calculated by dividing the standard deviation of the predictor variable by the standard deviation of the outcome variable and multiplying that number by the regression coefficient. Effect sizes and standardized coefficients with an absolute value greater than .15 were considered meaningful.

Source: Authors' analysis of data from the Wisconsin Response to Intervention Center, the Wisconsin Department of Public Instruction, and the U.S. Department of Education's Common Core of Data.

Table C12. The relationship between participation in the professional development program on culturally responsive practices in Wisconsin and math test scores one year, two years, and three years later,2013/14–2018/19

	Math test scores one year after participation (*n* = 1,389)		Math test scores two years after participation (*n* = 948)		Math test scores three years after participation (*n* = 887)	
Characteristic	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient
Average school enrollment	0.00	.04	0.00	.10	–0.00	–.08
Number of teachers	–0.00	–.05	–0.00	–.12	0.00	–.05
Teacher-to-student ratio	0.00	.05	0.00	.01	0.01	.08
Eligible for Title I funds	–0.00	–.00	–0.02	–.02	0.00	.00
Percentage of Black students	–0.02	–.01	–0.16	–.06	–0.12	–.05
Percentage of White students	0.09	.05	0.15	.07	0.18	.10
Percentage of students eligible for the national school lunch program	–0.18	–.08	–0.19	–.09	–0.31	–.14
Pre-program math test scores	0.88	.80	0.79	.72	0.75	.80
Program participation	–0.02	–.01	0.02	.01	–0.00	–.00

Note: Standardized coefficients were calculated by dividing the standard deviation of the predictor variable by the standard deviation of the outcome variable and multiplying that number by the regression coefficient. Effect sizes and standardized coefficients with an absolute value greater than .15 were considered meaningful.

Source: Authors' analysis of data from the Wisconsin Response to Intervention Center, the Wisconsin Department of Public Instruction, and the U.S. Department of Education's Common Core of Data.

U.S. Department of Education's Common Core of Data.

Table C13. The relationship between participation in the professional development program on culturally responsive practices in Wisconsin and attendance rates one year, two years, and three years later, 2013/14–2018/19

	Attendance rates one year after participation (*n* = 1,494)		Attendance rates two years after participation (*n* = 1,016)		Attendance rates three years after participation (*n* = 951)	
Characteristic	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient
Average school enrollment	–0.00	–.07	0.00	.07	–0.00	–.12
Number of teachers	0.00	.06	–0.00	–.06	0.00	.04
Teacher-to-student ratio	–0.00	–.02	–0.00	–.03	–0.00	–.03
Eligible for Title I funds	–0.00	–.02	–0.00	.00	0.00	.04
Percentage of Black students	–0.02	–.09	–0.03	–.14	–0.04	–.19
Percentage of White students	–0.00	–.02	–0.01	–.05	0.00	.01
Percentage of students eligible for the national school lunch program	–0.02	–.09	–0.00	–.00	–0.01	–.06
Pre-program attendance rate	0.90	.68	1.00	.77	0.61	.39
Program participation	0.00	.00	0.00	.00	0.00	.01

Note: Standardized coefficients were calculated by dividing the standard deviation of the predictor variable by the standard deviation of the outcome variable and multiplying that number by the regression coefficient. Effect sizes and standardized coefficients with an absolute value greater than .15 were considered meaningful.

Source: Authors' analysis of data from the Wisconsin Response to Intervention Center, the Wisconsin Department of Public Instruction, and the U.S. Department of Education's Common Core of Data.

Table C14. The relationship between participation in the professional development program on culturally responsive practices in Wisconsin and suspension rates one year, two years, and three years later, 2013/14–2018/19

	Suspension rates one year after participation (*n* = 1,497)		Suspension rates two years after participation (*n* = 1,018)		Suspension rates three years after participation (*n* = 951)	
Characteristic	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient
Average school enrollment	0.00	.08	0.00	.12	0.00	.32
Number of teachers	–0.00	–.04	–0.00	–.06	–0.00	–.25
Teacher-to-student ratio	–0.00	–.03	–0.00	–.01	–0.00	–.00
Eligible for Title I funds	–0.00	–.00	0.00	.05	0.01	.05
Percentage of Black students	–0.00	–.01	0.04	.13	0.03	.13
Percentage of White students	–0.00	–.02	–0.00	–.01	–0.00	–.01
Percentage of students eligible for the national school lunch program	0.02	.07	0.01	.05	0.02	.10
Pre-program suspension rate	0.78	.80	0.63	.65	0.57	.61
Program participation	0.00	.01	0.00	.01	0.00	.01

Note: Standardized coefficients were calculated by dividing the standard deviation of the predictor variable by the standard deviation of the outcome variable and multiplying that number by the regression coefficient. Effect sizes and standardized coefficients with an absolute value greater than .15 were considered meaningful.

Source: Authors' analysis of data from the Wisconsin Response to Intervention Center, the Wisconsin Department of Public Instruction, and the U.S. Department of Education's Common Core of Data.

Table C15. The relationship between participation in the professional development program on culturally responsive practices in Wisconsin and expulsion rates one year, two years, and three years later, 2013/14–2018/19

	Expulsion rates one year after participation (*n* = 1,497)		Expulsion rates two years after participation (*n* = 1,018)		Expulsion rates three years after participation (*n* = 951)	
Characteristic	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient	Coefficient	Standardized coefficient
Average school enrollment	0.00	.00	–0.00	–.11	–0.00	–.04
Number of teachers	–0.00	–.21	0.00	.13	0.00	.04
Teacher-to-student ratio	–0.00	–.05	–0.00	–.02	–0.00	–.05
Eligible for Title I funds	–0.01	–.09	0.00	.02	–0.00	–.00
Percentage of Black students	–0.00	–.01	0.00	.05	0.00	.01
Percentage of White students	0.00	.13	–0.00	–.00	–0.00	–.07
Percentage of students eligible for the national school lunch program	0.00	.19	–0.00	–.01	0.00	.09
Pre-program expulsion rate	0.27	.07	0.35	.30	0.24	.20
Program participation	0.00	–.00	0.00	.02	–0.00	–.01

Note: Standardized coefficients were calculated by dividing the standard deviation of the variable by the standard deviation of the outcome variable and multiplying that number by the regression coefficient. Effect sizes and standardized coefficients with an absolute value greater than .15 were considered meaningful.

Source: Authors' analysis of data from the Wisconsin Response to Intervention Center, the Wisconsin Department of Public Instruction, and the U.S. Department of Education's Common Core of Data.