THE SCHOOL DISTRICT OF
PHILADELPHIA

The Relationship Between Teachers' Perceptions of School Climate and Teacher Retention, 2015-16 to 2017-18

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Introduction

This brief uses three years of school-level data to explore the relationship between teachers' perceptions of school climate and teacher retention. In our analysis, we tested the correlation between School Climate construct and sub-construct scores from the annual District-Wide Teacher survey and teacher retention rates.

Exploratory Questions

1. From 2015-2016 to 2017-2018, what is the relationship between teacher perceptions of school climate and teacher retention at the school?
2. Is there any difference in this relationship at elementary-middle school compared to high schools?
3. What are the relationships between each of the six School Climate sub-constructs measured on the teacher survey and teacher retention at the school level?

Data Sources

District-Wide Survey

The administration of the teacher District-Wide Survey (DWS) occurs in the spring of each school year.[1] The teacher survey includes questions aligned to five key topics or constructs, one of which is School Climate. The School Climate construct is further broken down into sub-constructs. This analysis uses the six DWS School Climate sub-constructs included consistently on the teacher survey from 2015-16 to 2017-18, as year-to-year changes result in the removal or addition of some questions (Table 1). Specifically, in these analyses we use responses to the questions that fall under the six School Climate sub-constructs to create the construct and sub-construct scores that we use as our measures of teacher perceptions of school climate (see Box 1).

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[1] DWS teacher response rates based on Qlik District-Wide Survey Response Rate Detail Sheet: 54% (2015-16), 57% (2016-17), 58% (2017-18).

Table 1. Definition of School Climate sub-constructs on the District-Wide Teacher Survey

Sub-Construct	Description	Number of Items
Student-centered learning	Teacher perceptions of student attentiveness and investment in their classes, as well as the level of support teachers provide to students	13
Respect	Teacher perceptions of the level of respect afforded to them by various stakeholders (i.e., students, principals, parents, other teachers, etc.)	9
Classroom-level challenges to student learning	Teacher perceptions of classroom-level factors that influence student learning (i.e., insufficient class time to cover the curriculum, student behavior, etc.)	7-8
School-level challenges to student learning	Teacher perceptions of school-level factors that influence student learning (i.e., principal or teacher turnover, school crime/safety, lack of high-quality professional development, etc.)	18-19
External challenges to student learning	Teacher perceptions of factors outside of school that influence student learning (i.e., frequent changes in District initiatives, neighborhood crime and safety, cultural differences between home and school, etc.)	5
School discipline	Teacher perceptions of student discipline policies and associated school resources (i.e., "my school's response to student misbehavior is trauma-informed," "my administration supports my decisions regarding school discipline," etc.)	7-10

Note: The number of items for certain sub-constructs may have a range of items because the number may vary from year to year. This is a result of questions being added to the sub-construct.

Box 1. How do we create District-Wide Survey construct and sub-construct scores?

Calculating construct and sub-construct scores helps us compare responses across different topics. To calculate the sub-construct scores, we first assign each possible response a numeric value, with the most positive response assigned the highest value and the least positive the lowest. Next, we add these values for all of the items in the sub-construct. Finally, the sum is divided by the total count of survey items comprising that sub-construct (excluding those with missing values). The construct score is calculated by averaging all the sub-construct scores.

Take, for example, the **External Challenges to Student Learning** sub-construct. For each of the five items of this sub-construct, there are four response options (*a great challenge*, *a slight challenge*, *a moderate challenge*, and *not a challenge*). Each response corresponds with a number from 0-3, with 0 being the most negative and 3 being the most positive (i.e., *a great challenge* = 0 and *not a challenge* = 3). To get the sub-construct score, we add up all the response values (each ranging from 0-3) and then divide by five (the total number of items). We repeat this process with each of the sub-constructs, so each sub-constrict has a score from 0-3. See below for an example on calculating the average for the External Challenges to Student Learning sub-construct:

	Item Q1	Item Q2	Item Q3	Item Q4	Item Q5
Survey Responses and Values	A great challenge = 0	A slight challenge = 2	Not a challenge = 3	A moderate challenge = 1	A moderate challenge = 1

External Challenges to Student Learning sub-construct average score: (0+2+3+1+1)/5 = 1.4

Teacher Retention

Teacher retention data are calculated based on the number of teachers retained from October 1 of one school year to October 1 of the next school year. To calculate the within-school retention rate, we counted the number of teachers who taught in the same school from one October to the next, then divided that number by the total number of teachers. For each year over the past three years, the school-level retention rate across the District has been around 80%.[2] In other words, about eight in ten District teachers who taught in a Philadelphia school returned to teach at the same school the following year.

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[2] Data are from the Qlik Teacher Retention Overview Sheet, accessed January 2020.

Study Sample

To ensure that the findings from our analyses are valid and representative of schools across SDP, we used specific criteria to determine the teachers and schools that were included in the study sample. If an individual teacher did not meet the teacher-level criteria, they were excluded from the school-level responses and response rate, and if a school did not meet the school-level criteria, they were excluded from the analyses for that year.

> **Box 2. What is a "satisficer"?**
>
> A satisficer is a survey-taker who provides the same response option, e.g. "Strongly Disagree," on at least 12 survey questions in a row. The removal of "satisficers" is based on the theory that, given the interspersion of reverse-coded items throughout the school climate survey, teachers would be highly unlikely to choose the same response option if they were answering honestly. By removing satisficers, we reduce threats to the validity of survey responses and increase the accuracy of statistical estimates.

Teacher-level criteria:
1. Teachers who responded to the survey must have completed at least two thirds of the School Climate construct survey items; AND
2. Teachers must not have been identified as satisficers, meaning they provided the same response option on at least 12 questions in a row (see Box 2). Excluding satisficers reduces threats to the validity of survey responses and increases the accuracy of statistical estimates.[3]

School-level criteria:
1. Schools must have at least 25% or higher teacher response rate on the DWS teacher survey in each of the three school years we examined (2015-16 to 2017-18); AND
2. Schools must have at least 25% of their teachers retained from one year to the next.[4]

For the three years included in our analysis, 191-192 schools met the school-level criteria (Table 2).

Table 2. Number of schools included in the study sample by year

Year	Number of schools that met the study criteria
2015-16	191
2016-17	191
2017-18	192

Source: Qlik District-Wide Survey Response Rate Detail Sheet and Teacher Retention Detail Sheet

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[3] Barge, S., & Gehlbach, H. (2012). Using the theory of satisficing to evaluate the quality of survey data. Research in Higher Education, 53(2), 182-200. Hamby, T., & Taylor, W. (2016). Survey satisficing inflates reliability and validity measures: An experimental comparison of college and Amazon Mechanical Turk samples. Educational and Psychological Measurement, 76(6), 912-932.

[4] We selected this criterion of 25% to account for outliers, or schools where there may have been an unusual policy change or other rare circumstances that resulted in low levels of teacher retention.

Findings

1. From 2015-16 to 2017-18, what was the relationship between teacher perceptions of school climate and teacher retention at the school?

   a. **There was a positive correlational relationship between teachers' perceptions of school climate and the percentage of teachers retained within a school.** In other words, schools where teachers had more positive perceptions of their school climate were also schools with higher rates of teacher retention.

   b. **This trend held true across all three years.** In each year (2015-16, 2016-17 and 2017-18), schools where teachers held a more positive view of the school climate retained a higher percentage of teachers compared to schools where teachers held less positive perceptions (Table 3, first row). Across the three years, the correlations were in the medium-large range and statistically significant, meaning the relationship was not likely due to chance.

2. Was there any difference in this relationship at elementary-middle schools compared to high schools?

   a. Overall, and for elementary-middle and high schools separately, the values of Pearson's *r* were highest in 2017-18; this means that **the correlational relationship in 2017-18 was slightly higher than in other years.** (Scatter plots to help visualize these relationships are in Appendix A.)

   b. Among the different school types, the correlation was the highest for elementary-middle schools in each of the three years,[5] **suggesting that there was a stronger relationship between teacher perceptions of school climate and teacher retention in elementary-middle schools than in high schools** (Table 3, second and third rows). Further investigation is needed to determine why.

Table 3. School-level correlation between teachers' perceptions of overall school climate and teacher retention rate within school (2015-16 to 2017-18)

Retention Measure	Teacher Climate 2015-16	Teacher Climate 2016-17	Teacher Climate 2017-18
Teacher retention within school: Overall	0.52*** (n=191)	0.49*** (n=191)	0.58*** (n=192)
Teacher retention within school: Elementary-Middle Schools	0.57*** (n=143)	0.51*** (n=142)	0.61*** (n=144)
Teacher retention within school: High Schools	0.43** (n=48)	0.43** (n=49)	0.52*** (n=48)

* *p*-value<0.05; ** *p*-value <0.01; *** *p*-value <0.001[6]

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[5] Elementary-middle schools serve grades K-8 and high schools serve grades 9-12.

[6] In Tables 3-4, we use *p*-values to indicate the strength of the correlational relationship. *P*-values help determine the significance of the results. A smaller *p*-value indicates a stronger evidence that the relationship is not due to chance.

Note: n indicates the number of schools included in each comparison.

3. What were the relationships between each of the six School Climate sub-constructs measured on the teacher survey and teacher retention at the school level?

   a. Further analysis tested the correlations of each of the six School Climate sub-constructs and teacher retention. Findings show that the **"School-level Challenges to Student Learning" sub-construct had the strongest positive relationship with the school-level rate of teacher retention in each of the three years we examined** (2015-16 to 2017-18, as shown in Table 4). The "Respect" sub-construct had the weakest positive relationship, although it was still statistically significant in each of the three years (2015-16 to 2017-18, as shown in Table 4). One possible explanation for these patterns is that the questions in the "School-level Challenges to Student Learning" sub-construct are specifically about school-based issues and characteristics. In contrast, the "Respect" sub-construct includes questions about both school-based and District-based relationships. The fact that we looked at school-level retention and not retention within the District overall could partially explain these findings. See Appendix B for a list of all questions in each of the sub-constructs.

Table 4. 2015-16 School-level correlation with six sub-constructs of school climate and teacher retention rate

Teacher retention within school	Student-Centered Learning	Respect	Classroom-level Challenges to Student Learning	School-level Challenges to Student Learning	External-level Challenges to Student Learning	School Discipline
2015-16	0.49*** (n=191)	0.33*** (n=191)	0.41*** (n=191)	**0.53*** (n=191)**	0.44*** (n=191)	0.38*** (n=191)
2016-17	0.42*** (n=191)	0.29*** (n=191)	0.43*** (n=191)	**0.52*** (n=191)**	0.41*** (n=191)	0.32*** (n=191)
2017-18	0.46*** (n=192)	0.38*** (n=192)	0.50*** (n=192)	**0.62*** (n=192)**	0.52*** (n=192)	0.39*** (n=192)

* p-value<0.05; ** p-value <0.01; *** p-value <0.001

Note: n indicates the number of schools included in the analysis (see methods section above for more details). School-level Challenges to Student Learning sub-construct is bolded to show that this sub-construct has the strongest positive relationship with the school-level rate of teacher retention.

Conclusion

These insights suggest that schools that foster a positive climate for teachers were more likely to retain their teachers and therefore experience less teacher turnover. In particular, schools where teachers reported experiencing fewer school-level challenges also saw higher teacher retention rates. For more information on the District-Wide Teacher Survey results, please visit www.philasd.org/dws.

Appendix A. Scatter Plots

The scatter plots below plot the correlations shown in Table 3 above. They help visualize the relationships by showing how positive increases occur with both variables; in other words, as one variable increases, so does the other.
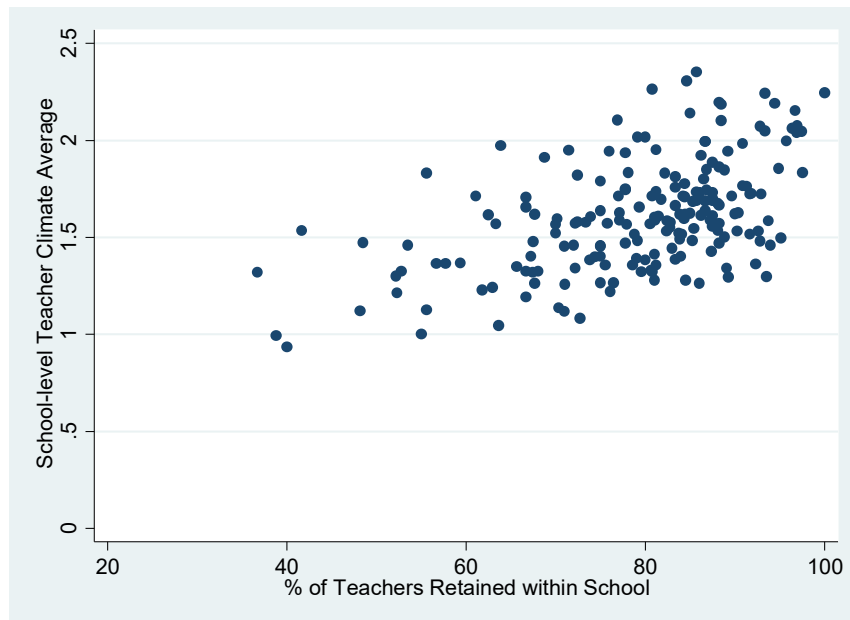
Figure 1. A scatter plot of the relationship between school-level teacher school climate averages and the percentage of teachers retained within school in 2015-16 (Table 3 Row 1, 1st correlation: 0.52***).

Figure 2. A scatter plot of the relationship between school-level teacher school climate averages and the percentage of teachers retained within school in 2016-17 (Table 3 Row 1, 2nd correlation: 0.49***).
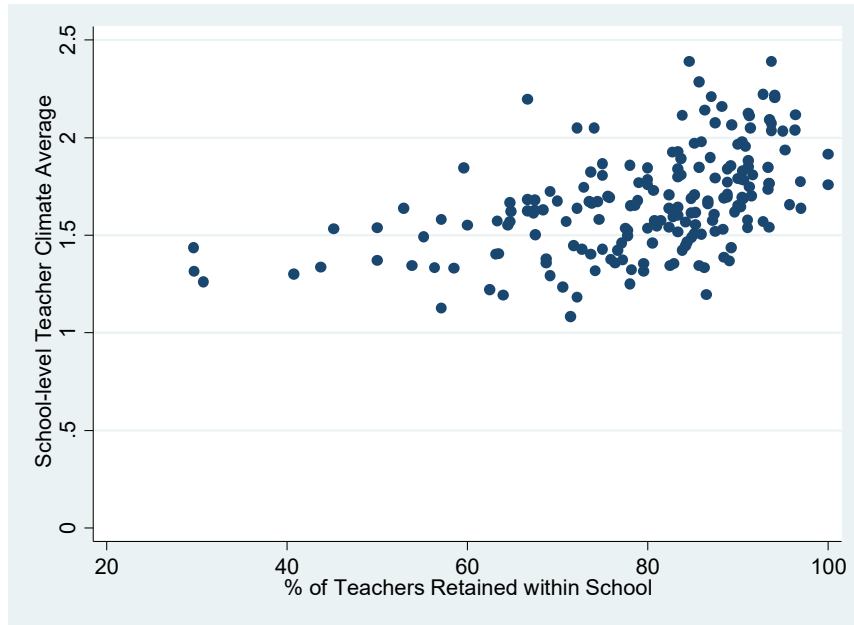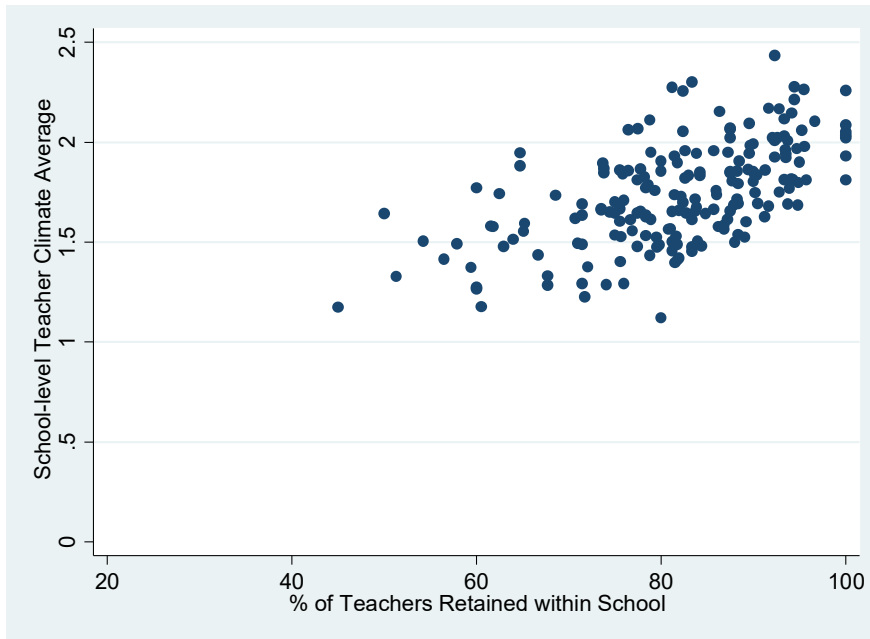

Figure 3. A scatter plot of the relationship between school-level teacher school climate averages and the percentage of teachers retained within school in 2017-18 (Table 3 Row 1, 3rd correlation: 0.58***).

Appendix B. Survey Questions included in each School Climate Sub-Construct

Sub-Construct	Items
Student-centered learning	How much do you agree with the following? • My school has clear strategies for improving instruction. • My school adheres to a no-excuses approach for student learning. • My school has a culture of using data to drive student-level interventions. • Many new programs come and go in my school. • There is consistency in curriculum, instruction, and learning materials among teachers in the same grade level at my school. • Curriculum, instruction, and learning materials are well coordinated across different grade levels at my school. • Teacher morale is high. • Teachers at my school have high expectations for students. • Teachers at my school support the idea that all students can learn. • Teachers feel responsible when students in my school fail academically. • Most of my colleagues share my beliefs and values about what the central mission of the school should be. • My school or District/CMO recognizes or rewards me based on my teaching and/or student achievement. • My school or District/CMO penalizes me based on my teaching and/or student achievement.
Respect	To what extent do you feel respected by: • The School Board • District/Charter Operator administrators • Your principal • Teachers in your school • Other school staff • Parents/guardians • Students How often are the following true about your classroom? • My students treat me with respect. • My students treat each other with respect.
Classroom-level challenges to student learning	To what extent do you consider each of the following to student learning? • Insufficient class time to cover all of the curriculum • Wide range of student abilities in class • Student behavior

	- Inadequate textbooks, materials, or other non-technological instructional resources - Lack of computers or other technological resources - Students report being hungry How often are the following true about your classroom? - My class is interrupted by announcements or messages from the office or colleagues: extent of challenge.
School-level challenges to student learning	To what extent do you consider each of the following to student learning? - Frequent changes in school priorities - Principal turnover - Teacher turnover - Shortage of highly qualified teachers - Teachers teaching a subject or grade outside of their certification - Lack of high-quality professional development opportunities for teachers - Shortage of instructional support staff (e.g. teacher aids and reading specialists) - Shortage of other support staff (e.g. nurses, counselors, and security) - Students transferring in or out of the school - Lack of teacher planning time built into the school day - Pressure to perform well on the state standardized tests - Lack of support for teaching special education students (i.e., students with IEPs) - Lack of support for teaching English Language Learners - Lack of school resources to provide the extra help for students who need it - School crime/safety - Problems with student transportation - Lack of computers or other technological resources - Bullying
External challenges to student learning	To what extent do you consider each of the following to student learning? - Frequent changes in district initiatives - Neighborhood crime/safety - Students have inadequate basic skills or prior preparation - Lack of support from parents and guardians - Cultural differences between home and school

School discipline	How much do you agree with the following? • My school consistently uses positive behavior supports to encourage responsible behavior. • My school does a good job of addressing disciplinary challenges proactively. • My school's response to student misbehavior is trauma-informed. • At my school, there is zero tolerance for behavioral infractions. • I know what is expected of me regarding student discipline. • I have been adequately trained to manage student behavior effectively. • My administration supports my decisions regarding school discipline. • My administration blames me when my students misbehave. • There are people in my school who are available to handle student discipline.