Relationships Matter:
Linking Teacher Support to Student Engagement and Achievement

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An emerging consensus exists in the school reform litera-ture about what conditions contribute to student success.[1-4] Conditions include high standards for academic learning and conduct, meaningful and engaging pedagogy and curriculum, professional learning communities among staff, and personalized learning environments. Schools providing such supports are more likely to have students who are engaged in and connected to school.

Professionals and parents readily understand the need for high standards and quality curriculum and pedagogy in school. Similarly, the concept of teachers working together as professionals to ensure student success is not an issue. But the urgency to provide a personalized learning environ-ment for students – especially with schools struggling to provide textbooks to all students, hot meals, security, and janitorial services – is not as great in many quarters. While parents would prefer their children experience a caring school environment, does such an environment influence student academic performance? Research suggests it does. For students to take advantage of high expectations and more advanced curricula, they need support from the people with whom they interact in school.[5,6]

Experience of Support from Teachers

First, students need to feel teachers are involved with them – that adults in school know and care about them. Students also need to feel they can make important deci-sions for themselves, and the work they are assigned has relevance to their present or future lives. Some researchers refer to this as autonomy support.[7-9] Finally, while youth desire respect and the opportunity to make decisions, they also need a clear sense of structure within which to make those decisions. Young people need to know what adults expect regarding conduct, that consistent and predictable consequences result from not meeting those expectations, and that the expectations are fair.

Studies show students with caring and supportive inter-personal relationships in school report more positive acade-mic attitudes and values, and more satisfaction with school.[10-13] These students also are more engaged academi-cally.[7,9,12,14-16]

Engagement in School

Engaging students in their own learning has challenged educators for decades. Studies show students become more disengaged from school as they progress from elementary to middle to high school.[14,17] By high school as many as 40% to 60% of students become chronically disengaged from school – urban, suburban, and rural – not counting those who already dropped out.[18,19] There is general agree-ment that engagement in learning is as important for success in school as it is elusive in the vast majority of traditional, bureaucratic school structures. As a result, researchers have studied and measured the construct of engagement in many different ways. In a review of theoreti-cal perspectives on engagement, Marks[14 (pp154-155)] conceptual-ized engagement as "a psychological process, specifically, the attention, interest, investment, and effort students expend in the work of learning." She also offered defini-tions of other researchers including: "students' involvement with school, [a sense of belonging and an acceptance of the goals of schooling]";[20,21] their "psychological investment in and effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote"[22] and students' "interest" and "emotional involvement" with school, including their "motivation to learn."[14,19]

Connell and colleagues also explored the causes and consequences of engagement.[8,23-25] They defined and measured two forms of engagement: ongoing engagement, and reaction to challenge. Ongoing engagement aligns closely with other definitions of engagement and refers to student behavior, emotions, and thought processes during the school day. Behavioral engagement includes time students spent on work, intensity of concentration and effort, tendency to stay on task, and propensity to initiate action when given the opportunity. Emotional components of engagement include heightened levels of positive emotion during the completion of an activity, demonstrated by enthusiasm, optimism, curiosity, and interest. Cognitive components of engagement include students' understanding of why they are doing what they're doing and it's impor-tance.

Reaction to challenge, a less-frequently used component of engagement, refers to students' coping strategies for dealing with a challenge, particularly whether they engage or withdraw when faced with perceived failure in school. Students who perceive the situation as challenging actively persist in the face of failure through the use of effort, strate-gic thinking, problem- solving, information-seeking, and experimentation. An optimistic attitude and attempts to plan and prevent problems from occurring in the future accom-pany such behaviors. Conversely, students threatened by a situation tend to react to a perceived failure by escaping the situation mentally or physically, and by avoiding or delay-ing the activity as long as possible when encountered in the future. Negative emotions such as anger, blame, denial, anxiety, and hopelessness accompany these behaviors.[7,23,24,26]

Engagement and Academic Success

Regardless of the definition, research links higher levels of engagement in school with improved performance. Researchers have found student engagement a robust predictor of student achievement and behavior in school, regardless of socioeconomic status.[7,16,20,21,27-34] Students engaged in school are more likely to earn higher grades[35,36]

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and test scores,[36-39] and have lower drop-out rates.[40,41] In contrast, students with low levels of engagement are at risk for a variety of long-term adverse consequences, including disruptive behavior in class, absenteeism, and dropping out of school.[19,20,42]

Examining Links Between Teacher Support, Engagement, and Academic Success

This study was guided by a reduced version of the Self-System Process Model developed by Connell[7] (Figure 1). The motivational model explains linkages among individual's experience of the social context, their self-system processes, their patterns of action, and actual outcomes of performance. Research testing linkages in the model used complex statistical strategies such as path analyses to support hypothesized relationships between teacher support and engagement, and between engagement and achievement.[29,40] This study tested linkages in the model, and examined two additional research questions: 1) What threshold levels on teacher support and engagement are critical to later academic success? 2) How much difference does achieving the threshold levels contribute to the likelihood of school success or difficulty?

In addition, the study examined initial data from a broader sample of students in elementary, middle, and high school in an urban school district implementing the First Things First school-reform framework.[43] First Things First seeks to achieve three goals: 1) improve relationships between students and adults; 2) improve teaching and learning; and 3) reallocate resources to achieve goals one and two. First Things First provides an opportunity to study interventions geared explicitly toward improving levels of teacher support and the effects on student engagement and performance.

METHOD

Data

Longitudinal data sets collected by the Institute for Research and Reform in Education to validate the Research Assessment Package for Schools (RAPS)[44-48] were used. RAPS measures components of the self-system process model by surveying students (RAPS-S), teachers (RAPS-T), and parents (RAPS-P). School records (RAPS-R) and quality of school reform implementation (RAPS-CF) also are assessed as part of the RAPS measures. Data in this paper were derived from RAPS-R, RAPS-S, and RAPS-T. The student survey has two versions: one for elementary-level students, and one for secondary-level students. Versions were validated separately using age-appropriate youth.

Sample

Student records and survey data were obtained from studies conducted in six elementary schools within one urban school district for the elementary-level analyses, and from studies conducted in three middle schools within one urban school district for the secondary-level analyses. Data for records and surveys (student and teacher versions) were obtained for years 1990-1995. Measures of teacher support and engagement (from the perspective of teachers and students) were obtained simultaneously at the beginning of each spring semester using the RAPS-S and RAPS-T. Records data was obtained at the conclusion of the year in which surveys were administered. If students completed the survey more than once, the most recent available assessment and records data was used for these analyses. Table 1 contains general characteristics of the samples.

Figure 1
The Reduced Self-System Process Model (adapted from Connell[7])
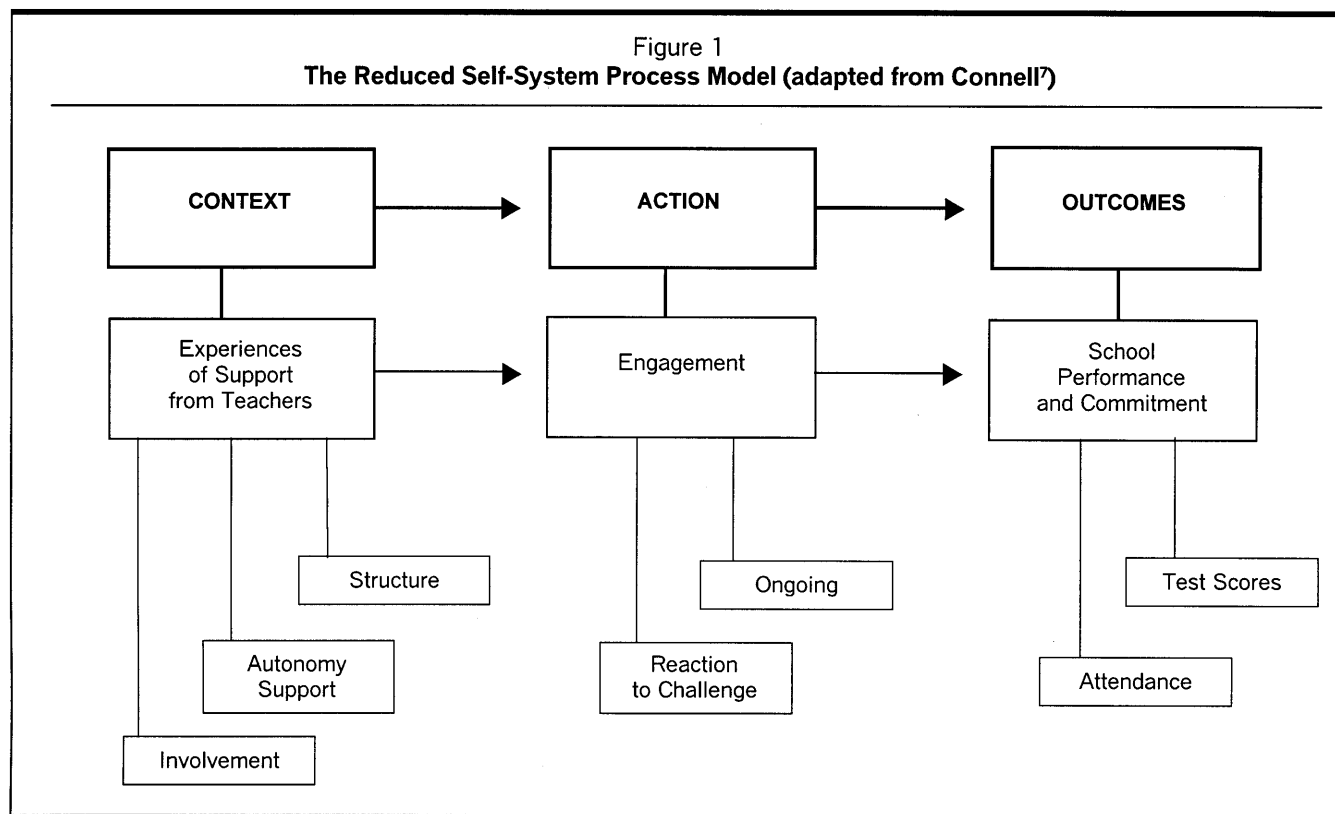
Measures

Academic Achievement and Behavior. The Student Performance and Commitment Index (SPCI) assessed student achievement and behavior. The Institute for Research and Reform in Education (IRRE) developed the SPCI in response to school districts' need for a simple, compelling, and scientifically credible means to track student performance and behavior across elementary, middle, and high school. After extensive analyses on a range of student outcome variables available from student records – including suspension, grades, nationally normed test scores, attendance, and student age and grade level – multiple discriminant function analyses indicated an index combining reading and/or math test scores and attendance represented the best predictor of whether a student would remain in or leave school after age 16. Technical reports detailing development of the SPCI are available from the IRRE. Optimal levels on the SPCI represent a combination of students showing up regularly at school and doing well in reading or math. Risk levels represent those missing school regularly and/or doing poorly in reading or math.

Engagement. Researchers measured engagement from the perspective of students (RAPS-S) and teachers (RAPS-T). Items on both surveys were answered on a four-point, Likert-type scale, from 1 - "not at all true" to 4 - "very true," with the exception of one item answered on a scale of 1 - "not at all important" to 4 - "very important."

Student Reports of Engagement. As measured by the RAPS-S, engagement includes two components of student adjustment in school: Ongoing Engagement and Reaction to Challenge. Across the two components, there are 13 items at the elementary level (α 71), and 11 items at the secondary level ($\alpha = .77$).

Ongoing engagement includes the extent to which students exert effort on schoolwork, pay attention in class, prepare for class, and believe doing well in school is personally important. RAPS-S includes six items at the elementary level, and five items at the secondary level tapping ongoing engagement.

Reaction to Challenge includes different ways students may cope with, or react to, negative school-related events in several ways. Students may blame negative events on teachers or others (Projection). Students may downplay the importance of negative events (Denial). Students may perseverate on events and worry about them without taking action to ensure such events do not re-occur (Anxiety Amplification). Finally, students may examine their behavior and attempt to change to prevent similar negative events from re-occurring (Positive Coping). Of the four reactions to challenge, items were selected that best related to positive or negative outcomes for students. With elementary students, only negative coping strategies were predictive of later outcomes. To ensure the survey was not construed as too negative, several positively worded items were added to the survey but were not included when analyzing the data. To tap into differing reactions, RAPS-S included seven items at the elementary level, and six items at the secondary level.

Teacher Reports of Student Engagement. Teachers completed the RAPS-T for each student in their classroom. Three items at the elementary and secondary levels ($\alpha = .81$ and .87, respectively) measured the extent to which

Table 1
Characteristics of the Sample

	Elementary	Secondary
Sample Size		
Total number of students in sample	1,846	2,430
Number of students with self-report data (RAPS-S)	1,846	2,430
Number of students with elementary school administrative records data for elementary sample or middle school administrative records data for secondary sample (RAPS-R)	1,600	1,661
Number of students with teacher-report data (RAPS-T)	1,750	1,347
Demographic Characteristics		
Age Range	7 through 13*	10 through 15**
Grades	3rd through 5th	6th through 8th
Ethnicity	81% African American	44% African American
	9% Euro American	39% Euro American
	10% Hispanic	16% Hispanic
		1% Other
Gender	51% Male	49% Male
	49% Female	51% Female
SES (Based on eligibility for free or reduced-price school lunches)	85% Eligible	58% Eligible

* For the elementary sample, approximately 3% were age 7, 21% age 8; 30% age 9, 30% age 10, 14% age 11, and 2% age 12. A single student was age 13.
** For the middle school sample, approximately 3% were age 10, 16% age 11, 28% age 12, 36% age 13, 16% age 14, and 1% age 15.

students are attentive, come to class prepared, and do more than required. Items responses on a four-point, Likert-type scale ranged from 1 - "not at all true" to 4 - "very true."

Experiences of Teacher Support. Experiences of Teacher Support included 10 items at the elementary level (α =.80) and 14 items at the secondary level (α = .82) that examined the extent to which students feel that adult(s): 1) are involved with them (eg, My teacher cares about how I do in school; My teacher likes the other kids in my class better than me); 2) provide support for autonomy (eg, My teacher doesn't explain why we have to learn certain things in school; My teacher thinks what I say is important.); and 3) provide structure (My teacher is fair with me; My teacher's expectations of me are way off base).

Analysis Strategy

This study identified threshold levels on two components of the self-system processes model – experiences of support from teachers and student engagement, then estimated how much difference achieving these threshold levels make in the likelihood of success or difficulty on student achievement and performance outcomes later (ie, effect on SPCI).

Identifying Thresholds. Unlike traditional methods, threshold analysis shifts the focus from means (group averages) to knowing where individuals fall in relation to a standard. Threshold levels identify youth doing well (optimal levels), and those not doing well (risk levels). Optimal levels on model components describe the "tipping point" or threshold at which a student's chances for success on later components increase most significantly. Risk levels on components in the model identify the threshold at which a student's chances for difficulties on later components in the model increase most significantly.

By framing the results in terms of thresholds, school stakeholders and policymakers can set targets for how many more students they are expecting to meet or exceed optimal levels on particular outcomes because of an intervention and how many fewer students will be at risk levels on these outcomes. For instance, a school may try to raise the percentage of students who report high levels of teacher support by 20% and reduce the percentage who report low levels by 20% within two years of implementing school reform strategies designed to create a more personalized learning environment.

Identifying Resources and Liabilities. Gambone et al[49] expanded the threshold analytical strategy by creating a technique for answering the question: How much difference does it make that students hit these thresholds or tipping points? To describe the positive or negative influence of earlier outcomes on later outcomes in their Community Action for Youth Framework, Gambone and colleagues examined earlier outcomes as resources or liabilities for later outcomes. According to Gambone et al, "resources are early experiences and outcomes that improve the chances adolescents will get into optimal levels on later outcomes; or that keep adolescents out of risk on later outcomes."[49] For example, good attendance and high test scores increases the likelihood a student will graduate from high school and go to college or reduces the risk the student will later be unemployed. "Liabilities refer to experiences or outcomes that contribute to youth getting into risk levels on later outcomes; or that keep adolescents out of optimal levels on later outcomes.[49]" For example, poor attendance and low test scores increases the likelihood that students will drop out of high school or decreases the likelihood they will graduate from college. A detailed description of the threshold method is described at: www.ydsi.org/ydsi/publications/index.html. By applying this method of analysis, researchers can: 1) reconfirm that teacher support matters – it predicts student engagement, and academic performance and commitment; 2) find out how it matters (as a resource when students have it and as a liability when they do not); 3) identify levels of support that matter most (at least in this diverse sample of students); and 4) estimate how much those levels of support matter to students' future engagement and success in school.

RESULTS

In this paper, optimal and risk thresholds for the Student Performance and Commitment Index (SPCI) and engagement are reported, and then data on how much engagement matters for later success in school are presented. Thresholds associated with teacher support also are presented with estimates of how much teacher support matters for engagement in school.

Thresholds for Student Achievement and Behavior

Optimal and risk thresholds were identified for the SPCI for elementary and middle school students (Table 2). Not all youth fit in one of the two categories; some students fall between. This paper reports only those students who fall at

Table 2
Thresholds for Student Performance and Commitment Index (SPCI)

	Elementary - SPCI	Secondary - SPCI
Optimal	▪ Attendance rate 97% or higher; AND ▪ One or both of the following: ▪ Reading percentile score 70% or higher; or ▪ Math percentile score of 80% or higher	▪ Attendance rate 93% or higher; AND ▪ One or both of the following: ▪ Reading percentile score of 70% or higher; or ▪ Math percentile score of 65% or higher
Risk	▪ Attendance rate below 89%; OR ▪ Reading percentile score below 35%; OR ▪ Both	▪ Attendance rate below 79%; OR ▪ Reading percentile score below 25%; OR ▪ Both

or above the threshold represented by the optimal level and below the threshold represented by the risk level.

Once thresholds were established, the next step was to analyze the data to determine what proportion of students fell into optimal and risk levels on the SPCI. While nearly one-half (44%) of urban elementary students and approximately one-third (30%) of the more diverse sample of middle school students were at risk on attendance and/or test scores, only 16% of elementary and middle school students attained successful levels on both outcomes.

Thresholds on Engagement

/Student Reports of Student Engagement. To determine thresholds on student perceptions of engagement, researchers needed to identify the level of engagement that differentiated between students likely to have success on the SPCI (attendance and test scores) and those who would not. This was defined as optimal level of engagement. In contrast, risk level of engagement was determined by identifying the level of engagement that most dramatically differentiated between students most likely to do poorly on test scores or have poor attendance rates and those who do not. Thresholds were based on the four-point answer scale for RAPS-S constructs (1 - "not at all true," 2 - "not very true," 3 - "sort of true," and 4 - "very true"). A mean score of 3.75 or higher on engagement items indicated elementary and middle school students reached an optimal level. Thus, a student must report "very true" to almost all engagement scale items (eg, I try hard, pay attention, come prepared, try to figure out what to do when something bad happens, etc.). For the risk level, elementary students needed a mean score less than 3.25, while middle school students needed a mean score less than 3.00, or regularly reporting the engagement indicators were, at best, only sort of true.

Approximately one-third of elementary (35%) and middle school (31%) students attained risk levels on engagement, indicating disengagement from school. A similar proportion of elementary students (27%) reached optimal levels while far fewer middle school students did (14%). These findings are consistent with the literature indicating a high proportion of students are not engaged in school and that some students become disengaged as they progress from elementary to middle to high school.

Teacher Reports of Student Engagement. To create an optimal threshold for teacher reports of student engagement, a cut point was identified where the sharpest increase in the probability of student success on the SPCI (attendance and test scores) occurred. To create a risk threshold, a cut point was identified where the most dramatic increase in the probability of students having poor test scores or poor attendance occurred. Thresholds were based on a four-point, response scale for the RAPS-T (1 - "not at all true," 2 -" not very true," 3 - "sort of true," and 4 - "very true"). For the optimal level, teachers needed to report elementary and middle school students recorded a mean score of 3.6 or higher on engagement items. Thus, teachers needed to indicate students were consistently tuned in, prepared for class, and doing more than necessary. For the risk level, teachers needed to report elementary students recorded a mean score less than 2.6 and middle school students as less than 2.3. Thus, teachers needed to indicate students almost always were not tuned in, prepared, or trying.

When using teacher reports of student engagement, approximately one-fifth of elementary (22%) and middle school (19%) students were in optimal categories. For risk categories, 40% of elementary students and 17% of the middle school students demonstrated behaviors indicative of disengagement. Far fewer middle school students were disengaged from school according to teachers than according to students. This variation may be due to a difference in the measurement tool – teachers report observed behaviors while students report both behaviors and emotions – and warrants further examination in future studies.

How Much Does Engagement Matter to Student Achievement and Behavior?

Estimating how and how much high and low levels of engagement affect student performance and attendance was then examined. According to Gambone et al,[49(p24)] an outcome can act as a resource for later success in two ways: "it can either increase student's chances of reaching optimal levels on later outcomes or it can decrease his or her chances of being at risk on those outcomes….As a liability…it can either increase a student's chances of being at risk on later outcomes or can decrease his chances of being at optimal on those outcomes." Resources and liabilities for elementary and middle school students are presented.

High Engagement as a Resource and Low Engagement as a Liability for the Academic Performance and Attendance of Elementary Students. On the SPCI, 16% of elementary students were at optimal levels, and 44% were at risk levels. Elementary students reporting high levels of engagement were 44% more likely to do well and 23% less likely to do poorly on the performance and attendance index, with 23% of high-engagement students at optimal levels on the SPCI and 34% at risk levels. In contrast, students with low levels of self-reported engagement were 30% more likely to do poorly on the SPCI – an increase from 44% to 57% of students – and were 44% less likely to be at optimal levels (from 16% down to 9%) (Figure 2).

Elementary students reported by teachers as highly engaged were more than twice as likely to do well on the performance and attendance index, and 39% less likely to do poorly on the index than students not rated as highly engaged; with 34% of engaged elementary students were at optimal levels on the SPCI, and 27% were at risk levels.

In contrast, elementary students reported by teachers as showing low levels of engagement were 39% more likely to do poorly on the SPCI – an increase from 44% to 61% of students. These students also were 56% less likely to demonstrate high levels of attendance and academic performance, a decrease from 16% to 7% (Figure 3).

High Engagement as a Resource and Low Engagement as a Liability for the Academic Performance and Attendance of Middle School Students. A similar pattern was evident for middle school students. Overall, 16% of middle school students reached optimal levels, and 30% were at risk levels on the SPCI.

Middle school students with high levels of engagement were 75% more likely to do well on the attendance and achievement index, and 23% less likely to do poorly on the index, with 28% of high-engagement students doing well and 23% doing poorly on the SPCI. In contrast, middle school students with low levels of self-reported engagement were 27% more likely to do poorly, an increase in the

percentage of students experiencing risk levels from 30% to 38%. These students also were 37% less likely to do well on the SPCI, a decrease in the percentage of students experiencing optimal levels from 16% to 10% of the sample (Figure 4).

Middle school students with high levels of teacher-reported engagement in school were more than twice as likely to do well on the attendance and achievement index, and were 67% less likely to do poorly on the SPCI. More than 36% of highly engaged middle school students did well on the SPCI, and only 10% were at risk levels. Middle school students whose teachers reported they were disaffected were 83% more likely to do poorly on the SPCI – an increase from 30% to 55%. They also were 81% less likely to show high levels of attendance and academic performance, a decrease from 16% to 3% of the sample at optimal levels (Figure 5).

This analysis offers evidence of the relationship between student engagement and academic performance. However, teacher reports of student engagement are stronger predic-tors of student academic success than student reports (Table 3).
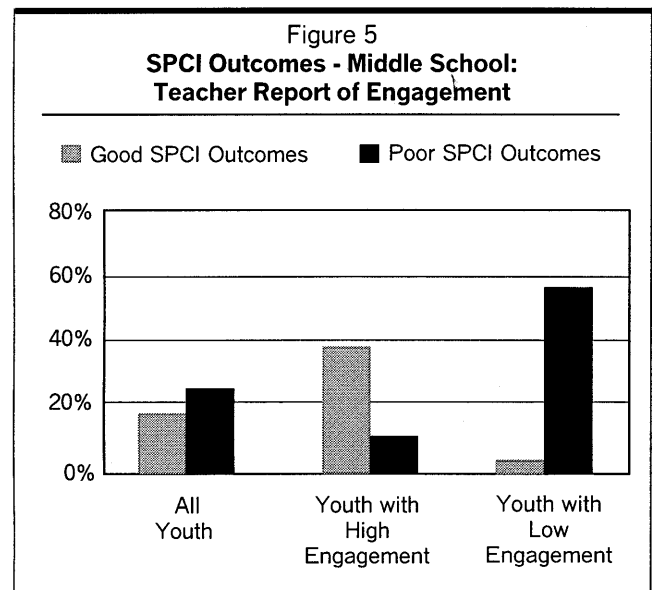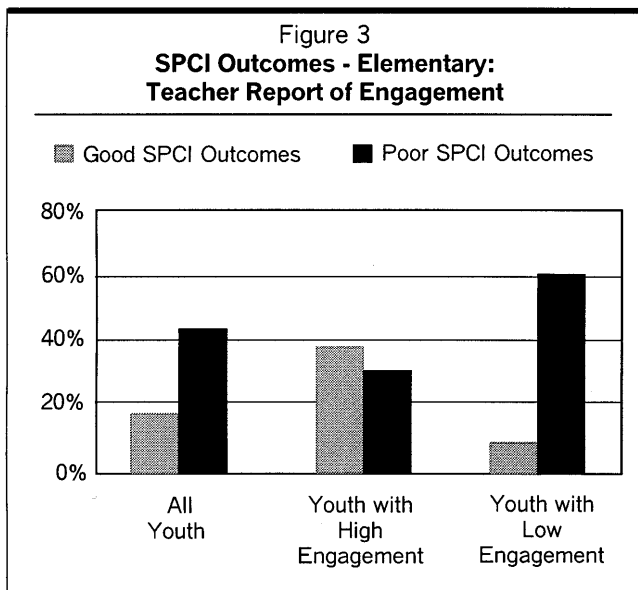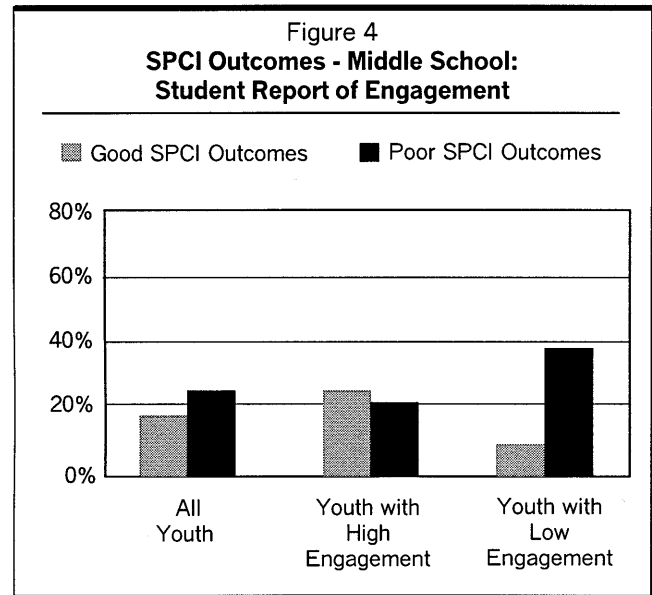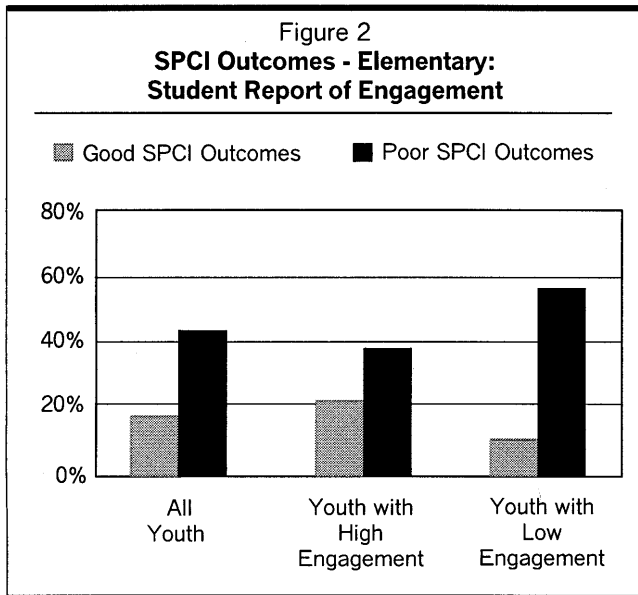
Thresholds for Teacher Support

Knowing engagement is associated strongly with student attendance and academic performance, both as a resource (high engagement) and a liability (low engagement), how much is engagement affected by teacher support?

To establish thresholds for teacher support, researchers identified cut points on the teacher support measure where the most significant increase in prediction of student engagement occurred. Cut points at the high end of teacher support – optimal levels – occur where the likelihood of high engagement increases and the chance of disaffection decreases most dramatically. Cut points at the low end of teacher support – risk levels – occur where the chances of high engagement decrease and low engagement increase most sharply. Thresholds were based on a four-point answer scale for RAPS-S survey items (1 - "not at all true," 2 - "not very true," 3 - "sort of true," and 4 - "very true").

Optimal level of teacher support was identified as an

Figure 2
SPCI Outcomes - Elementary:
Student Report of Engagement

Figure 4
SPCI Outcomes - Middle School:
Student Report of Engagement

Figure 3
SPCI Outcomes - Elementary:
Teacher Report of Engagement

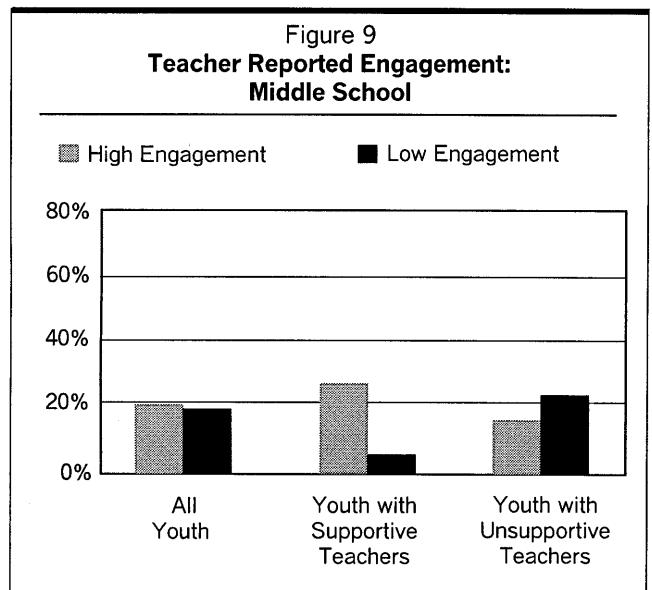Figure 5
SPCI Outcomes - Middle School:
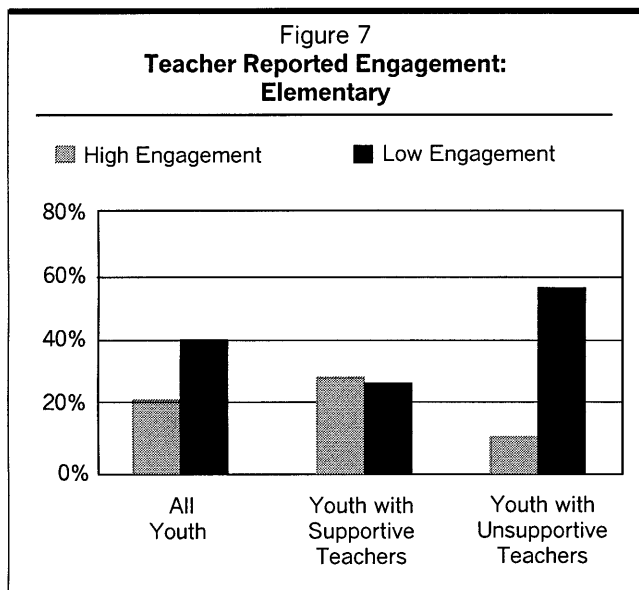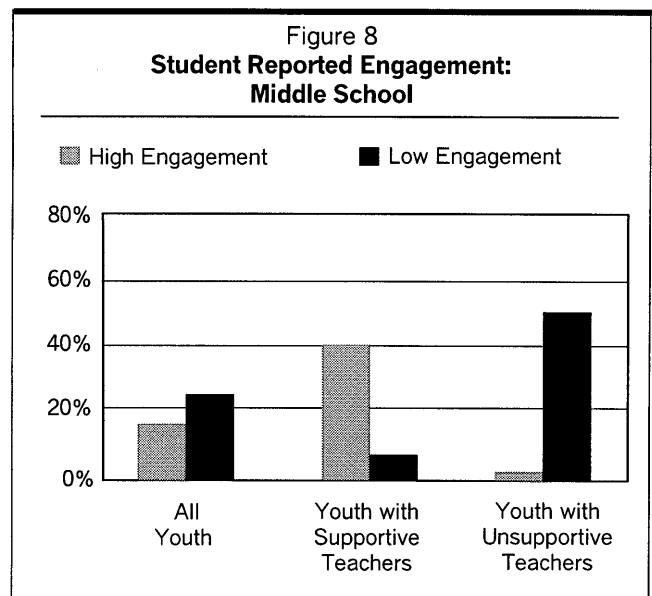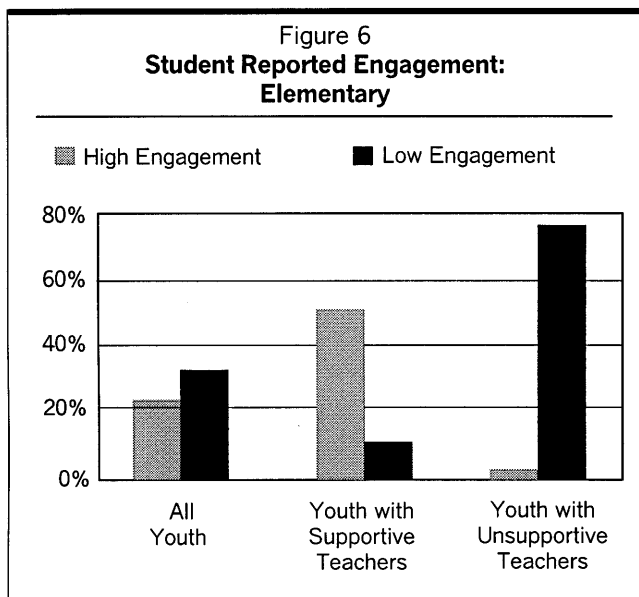Teacher Report of Engagement

average of 3.50 or higher on teacher support items, a level indicating the student answered "sort of true" and "very true" in almost equal proportions to the items (eg, my teacher likes me, listens to me, cares about how I do, is fair, explains the rules, has high expectations for me, etc.). Thresholds were the same for elementary and secondary students. Risk level of support for elementary students was defined as an average of 2.50 for the same items, indicating a student is equally likely to respond "not very true" or "not at all true" to items as they are to respond "very true" and "sort of true;" whereas the risk level of support was slightly higher for middle school students at a mean of 2.75 across support items.

For elementary school students, 34% reported optimal levels of teacher support; 22% were in the risk category. Of middle school students, 16% were in the optimal range and 39% were in the risk category. As expected, more elementary students reported experiencing supportive teachers than middle school students.

High Levels of Teacher Support as a Resource and

Low Levels as a Liability for Engagement of Elementary Students. Approximately one-quarter (27%) of elementary students were at optimal levels of self-reported engagement, and one-third were at risk levels (35%). Elementary students experiencing high levels of teacher support were 89% more likely to feel engaged and 69% less likely to feel disaffected according to self-reports, with 51% of supported students optimally engaged, and 11% at risk levels of engagement. However, elementary students experiencing low levels of teacher support were twice as likely to feel disengaged from school – an increase from 35% to 73% of these students reporting risk levels of engagement. Unsupported students also were 93% less likely to feel engaged in school, a decrease in optimal levels from 27% to 2% (Figure 6).

For teacher-reported engagement, 22% of elementary students were at optimal levels, and 40% were at risk levels. However, elementary students reporting high levels of teacher support were 41% more likely to be identified as optimally engaged by teachers (from 22% to 31%), and

Figure 6
**Student Reported Engagement:
Elementary**

Figure 8
**Student Reported Engagement:
Middle School**

Figure 7
**Teacher Reported Engagement:
Elementary**

Figure 9
**Teacher Reported Engagement:
Middle School**

27% less likely to appear disengaged (from 40% to 29%).

Elementary students experiencing low levels of teacher support were 40% more likely to be perceived as disengaged by teachers, up to 56% of the low-support students. Students reporting less-supportive teachers were 45% less likely to show optimal levels of engagement in the classroom, a decrease in optimal levels from 22% to 12% of the sample (Figure 7).

High Levels of Teacher Support as a Resource and Low Levels as a Liability for Engagement of Middle School Students. Only 14% of middle school students in the sample reported optimal engagement while 31% reported disengagement. Middle school students with high levels of teacher support were almost three times more likely to have high levels of engagement, and 74% less likely to feel disengaged, with 40% of supported students optimally engaged and only 8% disengaged. Middle school youth reporting low levels of teacher support were 68%

more likely to be disengaged from school, an increase from 31% to 52% of the low- support students at risk levels on engagement. These youth also were 71% less likely to be engaged in school, a decrease in optimal levels from 14% to 4% of students (Figure 8).

Similarly, teachers reported that 19% of middle school students were at optimal levels, while 17% were at risk levels on engagement. Middle school students experiencing high levels of teacher support were 47% more likely to appear engaged to teachers (from 19% to 28%). Highly supported students also were 47% less likely to appear disengaged (from 17% to 9% of the sample).

Middle school students whose teachers were perceived as unsupportive were 35% more likely to appear disengaged in class according to teacher reports, an increase from 17% to 23%. These students were 32% less likely to have teachers describe them as highly engaged in class, a decrease from 19% to 13% (Figure 9).

Table 3
Engagement and School Success:
Percent Change in Optimal and Risk Levels of Student Performance and Commitment

		Student-Reported Engagement		Teacher-Reported Engagement	
		Increase Optimal	Decrease Risk	Increase Optimal	Decrease Risk
High	Elementary	44%	23%	112%	39%
Engagement	Middle	75%	23%	125%	67%

		Student-Reported Engagement		Teacher-Reported Engagement	
		Increase Risk	Decrease Optimal	Increase Risk	Decrease Optimal
Low	Elementary	30%	44%	39%	56%
Engagement	Middle	27%	37%	83%	81%

Table 4
Teacher Support and Engagement:
Percent Change in Optimal and Risk Levels of Student Engagement

		Student-Reported Engagement		Teacher-Reported Engagement	
		Increase Optimal	Decrease Risk	Increase Optimal	Decrease Risk
High	Elementary	89%	69%	41%	27%
Teacher Support	Middle	186%	74%	47%	47%

		Student-Reported Engagement		Teacher-Reported Engagement	
		Increase Risk	Decrease Optimal	Increase Risk	Decrease Optimal
Low	Elementary	109%	93%	40%	45%
Teacher Support	Middle	68%	71%	35%	32%

Student experiences of engagement were more strongly influenced by high levels of teacher support at middle school than at elementary school (Table 4). Middle school students with high levels of teacher support were 2 fi times more likely to report engagement. In contrast, lack of teacher support had the largest affect on elementary student experiences of engagement. The effect was evident but not as strong for middle school students. Finally, the relationship between teacher support and teacher reports of student engagement in class was not as strong as the relationship between teacher support and student reports of engagement.

DISCUSSION

Recent federal and state legislation created explicit expectations for student performance and consequences for schools, teachers, and students that fail to meet expectations. These policy changes have raised the bar for students and educators in America's public schools. Researchers will soon experience the ripple effect of this "high expectations, high stakes" environment. Demand for "evidence" about what has worked and what will work, particularly in schools with diverse student populations, will continue. To respond responsibly and in a timely manner, forms of evidence must be credible, usable, and compelling.

This paper does not report any ground-breaking empirical findings; others have demonstrated empirical evidence of links between teacher support, student engagement, and student academic success.[12,14-16,29,30,36,40]

Instead, this paper sought to present the results in ways viewed as more useful and compelling for school stakeholders and policymakers than previous findings. Methods used to establish thresholds on variables such as teacher support, engagement, and student performance and commitment provide program designers and investors information on how much of each variable is good enough and how little of each variable can do harm. By describing associations between teacher support and engagement as, for example, how much change there is in the likelihood of being highly engaged when you have highly supportive teachers, program designers and investors gain an idea of the payoff in student engagement associated with improving relationships between teachers and students.

Key Findings

These results indicate teacher support is important to student engagement in school as reported by students and teachers. Students who perceive teachers as creating a caring, well-structured learning environment in which expectations are high, clear, and fair are more likely to report engagement in school. In turn, high levels of engagement are associated with higher attendance and test scores – variables that strongly predict whether youth will successfully complete school and ultimately pursue post-secondary education and achieve economic self-sufficiency.[49] Links between teacher support, student engagement, and academic performance and commitment hold for both elementary and middle school students, providing further support for an indirect link between student experience of support and academic performance through student engagement.

In addition to these confirmatory findings, several patterns of results are noted. First, liabilities associated with low levels of teacher support were greater for elementary than middle school students. Elementary students reporting low levels of support were twice as likely as the average student to be disaffected; middle school students were 68% more likely to be disengaged when they report low levels of teacher support. In contrast, resources associated with high levels of support were greater for middle than elementary students. Middle school students were almost three times more likely to report engagement if they experienced highly supportive teachers; elementary students with supportive teachers were 89% more likely to report engagement in school than those with typical levels of support. Why this differential effect of support on engagement – with middle school students reaping more benefits from high levels of support and elementary students more adversely affected by low levels of support than their older peers? The fact that elementary students typically have one primary teacher from which to draw support could explain stronger negative effects of low teacher support in elementary school. Why middle school students appear to benefit more from high levels of support is unclear.

Second, elementary students in this sample with high levels of self-reported engagement were 44% more likely to achieve high levels of academic performance and commitment than average students; at middle school the increase is 75%. Measures of teacher-reported engagement demonstrated an even stronger association with later performance – with elementary and middle school students with high levels of teacher-reported engagement more than twice as likely to do well in school than average students. Disengagement, as reported by teachers and students, adversely affects student performance and commitment. Why were teacher reports of engagement more strongly predictive of student performance than student reports?

Teacher measures of student engagement focus on behaviors tied directly to performance such as paying attention, staying focused, doing more than required. Self-report measures include behavioral components of engagement but also emotional and cognitive aspects. The latter two components correlated less strongly with academic performance and attendance than the former. Thus, students can show up and do the work without being emotionally or cognitively engaged. While these three components of engagement correlated positively, they were not close to perfectly correlated.

Third, teacher support associated highly with student engagement; but the association was weakest when looking at teacher reports of student disaffection – indicating some disaffected students receive high levels of support. Teacher reports on student engagement also make it possible to explore bi-directional relations between engagement and student experiences of support.[7] In their self-system processes model, Connell and Wellborn[7] hypothesized teacher support was affected by student engagement as well as vice versa. Engaged students pay more attention, look more interested, are more persistent in the face of challenges than disengaged students, and probably receive, on average, more support from teachers by doing so. Some teachers might provide more support to disengaged students – with these teachers believing the students need more attention to become engaged.[7,9] Data presented are consistent with both hypotheses. Teasing apart these subtle bi-directional influences requires more sophisticated analy-

ses of longitudinal data on teacher support and student engagement.[9]

FIRST THINGS FIRST: AN EDUCATION REFORM INITIATIVE

These findings suggest that by creating more personalized educational environments – one indicator of which would be increased experience of teacher support by students – student engagement, and higher attendance and test scores should result. Ultimately, to discover if and how teacher supports affect engagement and student success in school, researchers need to try and change those supports and see if change in engagement and performance results. A comprehensive evaluation of First Things First – an intervention targeted in part at changing relationships between teachers and students – should provide such evidence. The First Things First evaluation final report will appear in 2004, but some trends exist in variables of interest following two years of district-wide implementation.

First Things First (FTF), an education reform initiative for schools and school districts developed by the Institute for Research and Reform in Education, seeks to raise student academic performance to levels required for post-secondary education and high-quality employment.[50] The Institute works with partners around three goals: 1) strengthening relationships among students, school staff, and families; 2) improving teaching and learning in every classroom every day; and 3) reallocating budget, staff, and time to achieve goals one and two. To meet these goals, FTF helps create personalized environments by restructuring schools into small learning communities (SLCs), and integrates high-quality, standards-based teaching and learning in the SLCs.

In addition to small learning communities where small groups of teachers and students stay together for all core courses during the day and for the entire time they are in the school (eg, all three years of middle school or all four years of high school), FTF uses several other strategies to create personalized environments. SLCs become the place where staff members take collective responsibility for every student's success as well as make key decisions about discipline, staffing, time use, and budgets.[43,51] Lee and Smith[52] found that in more personalized schools (eg, communal versus bureaucratic), the most potent predictor of student outcomes differences was teachers' collective responsibility for learning.[53] Collective responsibility promoted student engagement and learning.[53,54]

Another strategy for creating a caring environment for students is to provide them and their families with an advisor or advocate in the school. FTF developed the Family Advocate System with the goal of creating a bridge between the small learning community and families. Staff members in the SLCs become advocates for a small number of students and their families, stay with them the entire time they are in the school, and do whatever it takes to help those students succeed.[55,56]

Early Outcomes Associated with FTF

While conclusions about the extent to which implementation of these reform components led to changes in teacher support, student engagement, and student performance must wait until the independent evaluation is completed, four trends emerged during the course of the initiative.

Trend 1. Percentages of students reporting high levels of support – calculated in ways similar to those used in this paper – increased at elementary, middle, and high school levels.

Trend 2. Percentages of students reporting low levels of support – calculated in ways similar to those used in this paper – decreased at elementary, middle, and high school levels.

Trend 3. Attendance, persistence (students returning to school each year), and graduation rates improved in secondary schools.

Trend 4. System-wide improvement in academic performance was recorded the past two years. These preliminary results are consistent with the hypothesis that the First Things First intervention is affecting positive change in students experience of supports and, in turn, in their commitment to school and academic performance.

Interestingly, while teacher support and student commitment gradually improved during implementation of the First Things First initiative in this urban district, meaningful system-wide movement in standardized test scores did not emerge until after district-wide implementation of structural changes, specific instructional improvement strategies, and significant resource redirection to support the strategies. This suggests that personalizing the learning environment so students feel more supported by and connected to school is a necessary and foundational but not sufficient condition for academic improvement. The trend provides additional support for the conclusion reached by Lee and Smith[52] that either teacher support or a focus on learning and high expectations leads to improved levels of engagement and achievement; however, the combination of the two far exceeds the outcomes associated with either one individually.

Another interesting observation noted in this urban school district is that the initial changes in student engagement and achievement were decreases in the percentage of students at risk on these variables. Fewer elementary, middle, and high school students experienced low levels of engagement in the course of the initiative, with the largest movement out of the risk levels occurring in middle and high school students. Similarly, movement occurred at both ends of state assessment scores with students moving into optimal levels and out of risk levels, the largest change was initially decreases in percentage of elementary, middle, and high school students scoring at the lowest levels and only recently have dramatic improvements in percentages of students achieving proficient levels been recorded.

Finally, anecdotal information about the FTF Family Advocate System suggests schools that provide students and families an in-school advocate can make a difference. Students and parents participating in this system reported the relationship with the advocate made a difference to their, or their child's, success in school. In addition, parent involvement increased; after only one year of implementing the Family Advocate System, parent conference attendance rates increased, particularly at the secondary level.

CONCLUSION

Other comprehensive school reform models developed similar strategies for creating personalized environments for youth.[57-64] Comprehensive models involve several

components operating simultaneously to improve how schools function. Consensus exists among researchers, policymakers, and school stakeholders that for any reform initiative to affect student learning, it must address the complexities associated with schools. However, from a researcher's perspective, the problem with such complex initiatives is that it is difficult – if not impossible – to disentangle the effects of the different components of the initiatives. To date, comprehensive reform initiative evaluations have provided information about the relationship between quality of implementation and student outcomes. Future research in which different configurations of model components are present versus absent or being implemented well versus poorly might allow researchers to explore the pathways between specific strategies for changing the learning environment and the extent to which those changes influence teacher support, engagement, and ultimately, student performance. ■

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