Closing the Achievement Gap Within Reading and Mathematics Classrooms by Fostering Hispanic Students' Educational Resilience

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Abstract—While many studies have conducted the achievement gap between groups of students in school districts, few studies have utilized resilience research to investigate achievement gaps within classrooms. This paper aims to summarize and discuss some recent studies Waxman, Padrón, and their colleagues conducted, in which they examined learning environment differences between resilient and nonresilient students in reading and mathematics classrooms. The classes consist of predominantly Hispanic elementary school students from low-income families. These studies all incorporated learning environment questionnaires and systematic observation methods. Significant differences were found between resilient and nonresilient students on their classroom learning environments and classroom behaviors. The observation results indicate that the amount and quality of teacher and student academic interaction are two of the most influential variables that promote student outcomes. This paper concludes by suggesting the following teacher practices to promote resiliency in schools: (a) using feedback from classroom observation and learning environment measures, (b) employing explicit teaching practices; and (c) understanding students on a social and personal level.

Keywords—achievement gap, classroom learning environments, educational resilience, systematic classroom observation

I. INTRODUCTION

ONE of our greatest educational challenges is reducing the achievement gap between successful and of our greatest educational challenges is reducing the achievement gap between successful and less-successful students. The achievement gap is usually discussed in terms of dramatic differences in graduation rates and the academic achievement between white and minority students such as Hispanics [1].

Research in this area typically looks at school districts and/or schools that do better than others in reducing the gaps between groups of students. There are fewer research studies, however, that focus on achievement gaps *within* schools and classrooms. These "within" school educational disparities often are greater than the differences between schools or school differences [1]. Research in this area often is called "resilience research." This is research that focuses on why some students do well in school and why they are successful, while similar students from the same schools and classrooms and from similar disadvantaged circumstances are not successful in school [2]-[4]. Resilience research has predominantly focused on students' development and examining students who developed competencies despite exposure to at-risk environments. The resilience framework emphasizes predictors of academic success rather than on academic failure, and it generally examines protective factors that reduce negative possibilities or increase positive possibilities [5]. Although there is a growing body of research trying to address the issues of why some students from at-risk home and school environments have been successful in school, many of these studies have focused on developmental and environmental issues [6] and have not examined important classroom processes such as the classroom learning environment and instructional practices that have been found to influence significantly students' cognitive and affective outcomes.

In order to close the achievement gaps and achieve academic equity that provides all students with equal opportunity to educational resources and opportunities to learn, changes must be made within classrooms so that all learners, regardless of gender, ethnicity, socio-economic status, or language will be successful. These issues of equity in academic achievement are directly related to the study of resilience [7]. The "at-risk" populations of students who are studied in terms of resilience are also the group of students who often face barriers in having opportunities to learn in school [8].

The purpose of the present article is to summarize some recent studies we conducted in which we examined classroom and instructional learning environment differences between resilient, average, and nonresilient students in reading and mathematics classrooms consisting of predominantly Hispanic

elementary school students. This research is important for several reasons. First, the concept of resilience is a recent development and there are not a large number of studies in the area, especially with Hispanic students. Secondly, research investigating classroom learning environments that promote equity is quite small and needs to be expanded. Thirdly, the present study summarizes studies that include both students' perceptions of their learning environment and systematic classroom observations of individual students. Classroom observation methods can answer important questions regarding whether some students are treated differently in the classroom and possibly explaining why some students learn more than others [9].

Student perceptions of the learning environment also are essential for understanding the opportunities for learning that are provided to each student in class [10]. This learning environment paradigm assumes that better understanding and improvement of teaching and learning can emerge by examining the ways that the classroom instruction and the learning environment are viewed or interpreted by the students themselves, because students ultimately respond to what they perceive is important [10]. The combination of both survey and observational data used in these studies offers insight into the resilience phenomenon and furthers our understanding of achievement gap issues within classrooms.

II. CLASSROOM LEARNING ENVIRONMENTS

The socio-psychological environment or classroom learning environment has been extensively researched in the past three decades. Contemporary classroom environment research begun by Walberg in the late 1960s and continued by Fraser since the early 1980s has shown the importance of looking at students' perceptions of their learning environments. This line of research has generally emphasized: (a) the development, reliability, and validity of learning environment measures, (b) the impact of students' perceptions of such measures on cognitive, behavioral, and affective outcomes, (c) the extent to which teacher, school, or contextual factors affect learning environment measures, and (d) how these measures can be improved by changing classroom environments in desired directions.

The most common issue of past classroom environment research has been encapsulated by the investigation of relationships between students' cognitive and affective learning outcomes and their perceptions of the classroom environment [11]-[13]. From a theoretical perspective, classroom learning environment research emphasizes the student-mediating or student cognition paradigm which maintains that how students perceive and react to their learning tasks and classroom instruction may be more important in terms of influencing student outcomes than the observed quality of teaching behaviors [14]-[16]. This paradigm assumes that: (a) the classroom environment experienced by the student may be quite different from the observed or intended instruction [16], [17], and (b) teaching and learning can be improved by examining the ways that classroom instruction and the learning environment are

viewed or interpreted by the students themselves since students ultimately respond to what they perceive is important [18], [19]. Students are considered to be the experts of their own views and experiences of school [20], and their perceptions of the learning environment are also essential for understanding the opportunities for learning that are provided to each student in class [21].

Students' perceptions of their instructional and classroom learning environments have been found to explain a significant amount of variance for both students' cognitive and affective outcomes [22]-[24]. Generally, the results of these studies and related reviews of research have found that variables such as cohesiveness, task orientation, rule clarity, student satisfaction, and teacher support are positively related to students' gain in academic achievement. The findings also suggest that effective school and classroom interventions should focus on improving the classroom learning environment that is perceived by students [25], [26].

In recent years, the classroom learning environment paradigm has expanded its use of research methods from primarily using traditional surveys and questionnaires to incorporating more mixed methods. The use of mixed method studies allows researchers to better understand what is actually occurring in the classroom. One complementary method that has been recently used with learning environment research is systematic classroom observation. By combining classroom observations with survey data, a more comprehensive assessment of the entire classroom environment can be made. In addition to understanding students' perceptions of their classroom learning environment, systematic classroom observations attempt to quantify specified behaviors and processes that occur during school while teachers are engaged in teaching [27]. The following section describes the use of systematic classroom observations.

III. SYSTEMATIC CLASSROOM OBSERVATION

Systematic classroom observation is a quantitative method of measuring classroom behaviors from direct observations that specifies either the events or behaviors that are to be observed and how they are to be recorded [27]. Generally, the data collected from this procedure focuses on the frequency with which specific behaviors or types of behavior occurred in the classroom and the amount of time they occurred. There are several elements that are common to most observational systems: (a) a purpose for the observation, (b) the operational definitions of all the observed behaviors, (c) the training procedures for observers, (d) a specific observational focus, (e) a setting, (f) a unit of time, (g) an observation schedule, (h) a method to record the data, and (i) a method to process and analyze data [28].

While there are several types of observational procedures or techniques that have been used to examine effective teaching (e.g., charts, rating scales, checklists, and narrative descriptions), the most widely used procedure or research method has been systematic classroom observation based on interactive coding systems. These interactive coding systems

allow the observer to record nearly everything that students and teachers do during a given time interval [28]. These interaction systems are very objective and typically do not require the observer to make any high inferences or judgments about the behaviors they observe in the classroom. In other words, these low-inference observational systems provide specific and easy identifiable behaviors that observers can easily code [29].

Some of the major strengths of using classroom observation methods are that they: (a) permit researchers to study the processes of education in naturalistic settings, (b) provide more detailed and precise evidence than other data sources, and (c) can be used to stimulate change and verify that the change occurred [30]. The descriptions of instructional events that are provided by this method have also been found to lead to improved understanding of better models for improving teaching [27], [31].

A final strength of this research method is that the findings from these observational studies have provided a coherent, well-substantiated knowledge base about effective instruction [31], [32]. Many of the reviews and summaries of the classroom observation research have consistently found that a number of classroom behaviors significantly relate to students' academic achievement [33]-[35]. In other words, research using classroom observation has provided us with a substantial knowledge base that has helped us understand effective teaching.

The next section describes how the use of learning environment measures and systematic classroom observation can be used to focus on resilient and nonresilient students.

IV. EDUCATIONAL RESILIENCE

Compared to risk research aiming at identifying student vulnerability, resilience research focuses on identifying students' resiliency attitude with protective factors [36]. The "at-risk" populations of students who are studied in terms of resilience often are the group of students who face the most severe barriers for becoming successful in schools. Minority students living in poverty are exposed to more adverse circumstances and have fewer resilience-promoting conditions than white students from similar conditions [37].

The nature of resilience is shaped by the interaction between the personal assets and the external environments of the individuals [38]. Educational resilience should not be viewed as a fixed attribute of some students, but rather as alterable processes or mechanisms that can be developed and fostered in the classroom environment. Benard [39], for example, maintains that there are four attributes or personal characteristics that can be altered or developed for children to become resilient: (a) social competence like responsiveness, (b) problem-solving skills, (c) autonomy, and (d) a sense of purpose. McMillan and Reed [40] also describe four factors that appear to be related to resiliency: (a) individual attributes, (b) positive use of time, (c) family, and (d) school.

Borman and Overman [37] found that all low socioeconomic status students who achieved resilient mathematics outcomes shared the common components of higher engagement in academic activities, an internal locus of control, math competency, and higher self-esteem. These mirror the psychological perceptions that students obtain from the environment; however, these perceptions can be altered so students may learn in the context of a school environment that is focused and perceived by students as a supportive environment for their development. Educators can create a classroom environment that facilitates educational success. They also can foster educational resilience through their classroom activities. Protective factors in the child, family, school, and community can be brought into the classroom as part of the contextual and connected classroom practices that make education meaningful for all students. Wayman [41] explored the educational resiliency factors by classifying them into personal factors and environment factors. Personal factors are identified as internal attributes such as enthusiasm and commitment to the work, self-esteem, educational desire, and motivation that students use to shield negative conditions. Environment factors are associated with external influences that foster students' resilience such as positive family relationships, teacher and peer support

School environments may provide both protective factors that diminish school failure and risk factors that lead to even greater failure for students [42]. Cefai [42] found that protective and supportive classrooms generated the following key factors for promoting resilience in the classroom: (a) sense of classroom belonging and connectedness, (b) inclusion, (c) active engagement and collaboration in learning, (d) positive beliefs and expectations, and (e) recognition. Gordon and Mejia [3] suggest the following four alternatives to increase resiliency on the social level: (a) more equitable access to human resource capital, (b) more universal access to appropriate and adequate learning opportunity, (c) more supportive communities and homes for academic learning, and (d) the development of active learning-related attitudes and behaviors on the part of high-achieving students from underrepresented minority groups.

The positive impact of an adult supporting a child has been found to have a significant role in promoting educational resilience. The adult, often a teacher, can be a "significant other" who acts as a mentor and a role model [3]. Teachers can play an important role in serving as an external support and protective mechanism that can help students cope with stress [43]. Supportive teachers can create a learning environment for students at-risk of academic failure to enhance learning outcomes [44]. Pierce [45], for example, found that when teachers provide a positive classroom environment, students respond in a meaningful way, enhancing motivation and increasing achievement outcomes as a natural by-product. In terms of resiliency-building classroom, Henderson and Milstein [36] asserted that teachers should (a) increase bonds with students, (b) set clear standards, (c) teach life skills such as decision-making, (d) offer caring and support, (e) set and communicate high expectations for students, and (f) provide opportunities for

meaningful involvement and contribution. In addition, Morrison and Allen [46] suggest that teachers should find ways to capitalize on students' interests and abilities as well as offer culturally-relevant activities. Furthermore, they maintain that teachers should provide opportunities to develop an individual's internal assets such as intrinsic motivation and incorporate social and emotional components into curriculum. These key components of supportive teaching are key components of effective teaching as well. This is because in order to appropriately assist student effective teacher focus on creating a classroom community, contextualizing instruction and connecting their instructional practices in meaningful and supportive ways that engage students in their classroom activities.

V. SUMMARY OF RECENT RESILIENCY RESEARCH FOCUSING ON CLASSROOM LEARNING ENVIRONMENTS

In a series of studies conducted by two U.S. Department of Education National Research Centers (Center for Education in the Inner Cities and Center for Research on Education, Diversity and Excellence), Waxman, Padrón, and their colleagues examined learning environment differences between resilient and nonresilient elementary school students from several urban school districts serving culturally and linguistically diverse students from low socioeconomic circumstances. These studies conducted between 1996-2006 all incorporated learning environment questionnaires and systematic classroom observation methods. The following sections highlight these mixed methods resilience studies.

A. Waxman, Huang, and Wang [47]

Waxman, Huang, and Wang [47] focused on resilient and nonresilient students from four elementary schools from a large urban school district located in a major metropolitan city in the south central region of the United States. Two fourth- and two fifth-grade classrooms were randomly selected from each of these four inner-city schools. Near the middle of the school year, teachers were asked to identify their population of students at risk (e.g., students from families of low socioeconomic status, living with a single parent, relative, or guardian). From this pool of at-risk students, teachers were told to select up to three "resilient" (i.e., high achieving on both standardized achievement tests and daily school work, very motivated, and excellent attendance) and three "nonresilient" students (i.e., low achieving on both standardized achievement tests and daily school work, not motivated, and poor attendance) in their class. Each of these resilient and nonresilient students: (a) completed learning environment and motivation surveys, and (b) was observed using a shadowing observation technique.

Shortened versions of three student self-report survey instruments were used in the study: (a) the Multidimensional Motivation Instrument (MMI) [48], (b) the Classroom Environment Scale (CES) [49], and (c) the Instructional Learning Environment Questionnaire (ILEQ) [50]. All of the instruments were modified to a "personal form" of the instrument in the present study which elicits an individual

students' responses to his/her role in the class rather than a student's perception of the class as a whole [51]. The instruments also were modified to specifically focus on students' perceptions of their content area classes (i.e., mathematics or reading) rather than on their general impressions of school as a whole. Shortened forms of all the instruments were used in this study because the school district only allowed us about 40 minutes to complete the three surveys.

The shadowing observations consisted of narrative descriptions of: (a) the physical environment of the classroom, (b) teachers' instructional approaches, behaviors, and attitudes toward students, and (c) students' observed attitudes, actions, mannerisms, and interactions. The shadowing observations were recorded on laptop computers that were programmed to provide observers with specific time prompts that told them exactly when they were to record the information (i.e., narrative comments) about each student. A sample of "average" students from each classroom also was included in the study.

Overall, resilient students perceived their classrooms much more favorably than nonresilient students. Resilient students had higher academic self-concept and aspirations than nonresilient students. They also perceived their teachers as having higher expectations for them and providing them with more feedback and appropriate pacing than nonresilient students. Furthermore, resilient students reported that they were more involved and satisfied in their classrooms than nonresilient students. They also perceived more task orientation and order and organization than nonresilient students. For the most part, average students' perceptions were generally similar to resilient students.

There were several prevalent themes and issues that emerged from the shadowing data. First, several important factors distinguished resilient from nonresilient students. Resilient students appeared to be persistent, attentive, demonstrated leadership skills, worked well with other students, frequently volunteered answers, and were often engaged in their school work. Resilient students were generally more enthusiastic, energetic, and better behaved than nonresilient students. Resilient students received more teacher attention and praise than nonresilient students did. On the other hand, nonresilient students often appeared to be shy or timid, frequently tired, not attentive to the teacher, or bored. They were not as engaged in the activities of the class as resilient students and appeared to get started on their work more slowly. Furthermore, many nonresilient students appeared anxious, restless, easily distracted, and sometimes resistant to doing their work. A few of the nonresilient students were disruptive in the classroom, either disturbing other classmates by talking to them or making a loud enough commotion at their desks that the teacher needed to reprimand them. It should be mentioned, however, that there was much more variation (i.e., less homogeneity) among the behaviors of nonresilient students than resilient students.

While the primary focus of the shadowing data was on resilient and nonresilient students, the instructional contexts

that were prevalent in these classrooms also were observed. The findings revealed that the overall instruction in these inner-city elementary schools was whole-class instruction with students working in teacher-assigned activities and generally in a passive manner (i.e., watching or listening). There was very little small group work observed in any of the classrooms, and when it did occur, it would typically be one student working with another student. Teachers were observed keeping students on task most of the time, focusing on the task, communicating the tasks procedures, and checking students' work. They also spent more time explaining than questioning, cueing, or prompting students. Teachers were not frequently observed encouraging extended student responses or encouraging students to help themselves or help each other. Generally, there was little engagement in the classroom and the intellectual level of the curriculum was low-level, with very few authentic activities occurring. Very little of the content was related to students' interests or the world outside school. The predominant culture of classrooms observed was related to "getting work done," rather than an emphasis on authentic learning situations.

Another important finding from this study was that in the few classrooms where a great deal of student-teacher interactions occurred, it was much more difficult to ascertain differences between resilient and nonresilient students. The direct instructional approach that predominated in both reading and mathematics classrooms appeared to be much more suited to resilient students, who were motivated, attentive, volunteered answers, and received more teacher attention and praise than nonresilient students, who appeared bored, reluctant to answer questions, and at times reluctant to work during the direct instructional approach. Overall, the qualitative findings indicated that resilient students were much more successful in classrooms employing direct instruction than nonresilient students were. Although there were great observable differences in the academic behaviors of these two groups of students, no remediation, adaptive, or enrichment activities were observed in any classrooms. For the most part, teachers did not treat individual students differently; they focused on the whole class and directed instructional activities toward everyone at the same time.

B. Padrón, Waxman, and Huang [52]

Padrón, Waxman, and Huang [52] compared the classroom instruction and learning environment of about 250 resilient, average, and nonresilient students in fourth- and fifth-grade classrooms from three elementary schools located in a major metropolitan area in the south central region of the United States. Students in three schools were predominately Hispanic (>75%) and most of them (> 90%) received free or reduced-cost lunches. Near the middle of the school year, teachers were asked to identify their population of students at risk (e.g., students from families of low socioeconomic status, living with a single parent, relative, or guardian). Students identified as "gifted or talented" or "special education" were excluded from the population in order to avoid potential effects related to ability differences. From this pool of at-risk students, teachers were then told to select up to three "resilient" (i.e.,

high achieving on both standardized achievement tests and daily school work, very motivated, and excellent attendance) and three "nonresilient" students (i.e., low achieving on both standardized achievement tests and daily school work, not motivated, and poor attendance) in their class.

The My Class Inventory (MCI) [53]-[55] was used to collect data on students' perceptions of their classroom learning environment near the end of the school year. The inventory is a 30-item self-report questionnaire read to students in Spanish or English by researchers. Students circle either "Yes" or "No" in response to statements about their reading class. The inventory contains five scales that assess students' perceptions in the following areas: (a) Satisfaction, (b) Friction, (c) Competition, (d) Difficulty, and (e) Cohesion.

The observation instrument used in this study was the Classroom Observation Schedule (COS) [56]. It is designed to systematically obtain information on students' classroom behaviors. It documents observed student behaviors in the context of ongoing classroom instructional-learning processes. The COS was modified to include a Language Used section for the present study since many of the students' primary language was Spanish. Individual students are observed with reference to (a) their interactions with the teacher or other students, (b) the selection of activity, (c) the type of activity they are working on, (d) the setting in which the observed behavior occurs, (e) their classroom manner, and (f) the language used. Each student is observed for ten 30-second intervals during each class period. Near the end of the school year, all the fourth- and fifth-grade students completed the MCI and trained observers also used the COS to systematically observe the resilient and nonresilient students identified by teachers during regular reading and/or language classes.

The *ANOVA* results reveal that there were significant differences among resilient, average, and nonresilient students on two scales, Satisfaction and Difficulty. The Duncan post hoc results indicate that the resilient student group scored significantly higher on Satisfaction than nonresilient group, and that there was no significant difference between resilient and average student groups or between average and nonresilient student groups on Satisfaction. Nonresilient students scored significantly higher on Difficulty than average and resilient students. Average students also scored significantly higher than resilient students on the Difficulty scale. There were no significant differences among the three student groups on the Friction, Competition, and Cohesion scales.

The results from the COS revealed that students spent over 65% of their time doing independent work (no interaction). They spent more time interacting with other students (14%) than with teachers (8%) for instructional purposes. Classroom activities were assigned by teachers over 95% of the time. The most frequently observed activity types included working on written assignments, watching or listening, instructional discussion, and reading. Students were never observed working with technology, such as computers, calculators, or viewing video or slides. The predominant classroom setting

was the whole class setting, which was observed over 75% of the time. The time-on-task varied greatly between resilient (85%) and nonresilient students (61%), as did the time being off task. Nearly 90% of the time, students were observed using English and they were observed using Spanish about 7% of time.

A *t-test for independent samples* was used to compare resilient and nonresilient students' classroom behaviors. The results reveal that resilient students were observed more frequently interacting with teachers for instructional purposes than nonresilient students, whereas nonresilient students were observed more frequently interacting with other students for social or personal purposes. Resilient students were observed watching or listening to teachers more frequently than nonresilient students, whereas nonresilient students were observed not attending to task significantly more often than resilient students. Resilient students were found to be on task significantly more often than nonresilient, whereas nonresilient students were found to be off task significantly more than resilient students. There was no significant difference in language used (i.e., English or Spanish) by resilient and nonresilient students.

C. Rivera and Waxman [57]

Rivera and Waxman [57] investigated the classroom learning environments of resilient, average, and nonresilient students in fourth- and fifth-grade reading classrooms consisting of 223 predominantly Hispanic students from one elementary school located in a major metropolitan area in the south central region of the United States. Most of the students come from socially- and economically-disadvantaged home environments and the academic achievement of students is lower than other students in the same school district and lower than the state average.

An adapted version of the MCI [53], [54] was used to collect data on students' perceptions of their classroom learning environment near the beginning of the school year. The inventory is a 50-item questionnaire read to students in Spanish or English by researchers. Students circle either "Yes" or "No" in response to statements about their reading class. The questionnaire contains eight scales that assess students' perceptions in the following areas: (a) Satisfaction, (b) Friction, (c) Competition, (d) Difficulty, (e) Cohesion, (f) Self-Esteem in Reading, (g) Teacher Support, and (h) Equity. The internal consistency reliability coefficients of the eight scales were found to range from .62 - .80, with an average of .70. The scale discriminant validity (i.e., the mean correlation coefficient of a scale with each of the other scales) ranged from .01 to .59 with an average of .22. The reliability and validity results suggest that the instrument had adequate internal consistency reliability and scale discriminant validity.

Overall, students were administered the MCI near the beginning of the school year. Also, the observation instrument used in this study was the Classroom Observation Schedule (COS) [58] which is the same instrument that was used in the Padrón, Waxman, and Huang [52] study previously described; therefore, the same previously described procedures were used for this study. The inter-observer agreement for the present study was found to be excellent, with an inter-observer reliability of .96 based upon a 15% of sample of students (n = 127) who were systematically observed in their classroom environment by two different observers.

The *ANOVA* results revealed a significant main effect for Difficulty and for the Reading Self-Esteem scale. Overall, nonresilient students reported having more difficulty in their class work than resilient students. Resilient and average students reported higher levels of reading self-esteem than nonresilient students.

The *ANOVA* results from the observation instrument revealed that nonresilient students were observed more frequently Not Attending to Task than resilient and average students. Nonresilient students were also observed more frequently distracted than resilient and average students. On the other hand, resilient student were observed on task more frequently than nonresilient students. The magnitude of these differences was both statistically and educationally significant. Resilient and average students, for example, were observed to be on task nearly 90% of the time, while nonresilient students were observed being on task only 67% of the time. In general, the classroom observations show that there was little interaction among peers or students and teacher. In other words, there were few teacher-student instructional interactions observed, and whole-class instruction predominated.

D. Chang and Waxman [59]

Chang and Waxman [59] identified the differences in perceptions of mathematics classroom learning environments among resilient, average, and nonresilient elementary students from three public elementary schools located in the vicinity of a major metropolitan city in the south central region of the United States. Teachers from the participating school were asked to identify approximately three resilient (i.e., high-achieving students on both standardized achievement tests and daily school work, very motivated, and excellent attendance) and approximately three nonresilient students (i.e., low-achieving students on both standardized achievement tests and daily school work, not motivated, with poor attendance) in their class. The remaining students were classified as average students.

The learning environment questionnaire contained 10 scales that assessed students' perceptions of their mathematics classrooms in the following areas: (a) cohesion, (b) competition, (c) difficulty, (d) satisfaction, (e) academic self-concept, (f) parent involvement, (g) student aspirations, (h) equity, (i) teacher support, and (j) academic efficacy. The questionnaire was adapted from the (a) My Class Inventory (MCI) [53], (b) Multidimensional Motivation Instrument (MMI) [48], (c) Instructional Learning Environment Questionnaire (ILEQ) [50], (d) What is Happening in This Class (WIHIC) [60], and (e) Classroom Environment Scale (CES) [61], [62].

Two standardized observational instruments were used to carry out observational research: (a) the Overall Classroom Observation Measure (COM) [63], and (b) the Classroom Observation Schedule (COS) [58]. The COS instrument is a low-inference schedule whereas the COM instrument is a high-inference observation schedule. Overall, the Classroom Observation Measure (COM) [63] was used to measure the quality of instructional processes or strategies used by teachers during instruction.

The learning environment results indicate that the nonresilient students scored significantly higher on the difficulty scale than the average and the resilient students, and the average students scored significantly higher than the resilient students on the same scale. Resilient students scored significantly higher on the cohesion scale than nonresilient students, and there was no significant difference between nonresilient and average student groups or between average and resilient students on the cohesion scale. In general, the resilient student group and the average group were significantly more satisfied with their class work and enjoyed their classroom environment more compared with the nonresilient student group.

The results from the COM instrument indicate that the only instructional practice used extensively in the classrooms was direct instruction. Many of the instructional practices and strategies, such as cooperative learning and technology-enhanced classrooms, that have been found to be especially effective for ELLs (English Language Learners) and other students at risk of failure [56], were not frequently observed in these classrooms.

Overall descriptive statistics results from the COS revealed that students spent over 86% of their time doing independent work (no interaction). They spent more time interacting with other students (7%) than with teachers (4%) for instructional purposes. Students also were observed spending 3% of their time interacting with other students for personal or social reason. More than 98% of the time, classroom activities were designated by teachers. The most frequently observed activities included working on written assignments, watching or listening, instructional discussion, working with manipulative material or equipment, and not attending on task. The predominant classroom setting was the whole class setting, which was observed more than 96% of the time. Time on task varied greatly between resilient (85%) and nonresilient students (61%).

A one-way *ANOVA* was used to compare student classroom behaviors among resilient, average, and nonresilient students. Statistically significant differences were found on the *not attending to task* scale. The *Tukey Post Hoc* results indicated that the nonresilient students were observed not attending to task more frequently than the resilient students. There were no other statistically significant differences between nonresilient and average students, or between average and resilient students during the observed periods. No statistically significant differences were found on any other item from the COS.

VI. DISCUSSION

The combination of both survey and observational data used in these studies offers insight into the resilience phenomenon and furthers our understanding of how to close the achievement gaps between resilient and nonresilient students. The studies described in this article all focused on elementary school Hispanic students who were predominantly from low-income families and found that classroom learning environments and classroom behaviors significantly differed between resilient and nonresilient students. Despite coming from the same school environment and having similar home backgrounds and demographic characteristics, some students have done exceptionally well in their reading, language art, and mathematics classes, whereas others have done very poorly. The results from these studies indicate that resilient elementary school students generally perceive a more positive learning environment and they are more satisfied with their classrooms. In addition, nonresilient students indicate that they have more difficulty in their class work than both average students and resilient students. The magnitude of these differences is both statistically and educationally significant. These findings provide a great challenge for classroom teachers who need to provide optimal learning environments for all their students.

The observational results from studies described in this chapter are extremely important given that the amount and quality of teacher and student academic interactions are two of the most influential variables that promote student outcomes [64]. The observational results summarized here indicate that there are several classroom behavioral differences between resilient and nonresilient elementary school students, including different levels of interaction and classroom behavior. First, one of the differences related to the amount and type of interaction that were found in the classroom processes. In some of the studies, resilient Hispanic students spent significantly more time interacting with teachers for instructional purposes than nonresilient students. On the other hand, nonresilient Hispanic students spent significantly more time interacting with other students for social or personal purposes than resilient students. Second, these two student groups also significantly differed in classroom activity. Resilient students were observed more often watching or listening, whereas nonresilient students were observed more often not attending to task. The percentage of time resilient students were on task was much higher than that of nonresilient students in most of the studies. Resilient students were less often distracted or disruptive than nonresilient students.

In summary, significant differences were found between resilient and nonresilient students on their classroom behaviors and learning environment. These findings have important educational implications because researchers have found that many of these variables are critical for the academic success of students. Besides these important differences in classroom behaviors between resilient and nonresilient students, a few common classroom processes deserve special attention. First, there was no verbal

interaction between teacher and student or between students for both resilient and nonresilient student groups for over two-thirds of the time and students spent relatively little time interacting with teachers. Active learning is another critical instructional process that improves student outcomes, yet over 95% of the activities were assigned by teachers and students spent large proportions of time working on written assignments, watching, or listening to the teacher. Second, these students were observed in whole-class settings nearly all of the time. Such over reliance on whole-class instruction may be detrimental to student outcomes because teachers often have difficulty maintaining an appropriate pace that is suitable for all their students. In one of the studies [47], it was found to be especially harmful for nonresilient students.

Not surprisingly, the instructional and classroom learning environment differences found in this study may be consistent with teachers' expectations and attitudes toward resilient and nonresilient Hispanic students. Thus, the use of teacher nomination to identify "resilient" and nonresilient" students could be considered a limitation of all of the studies because there is the danger that having teachers identify or classify students as nonresilient could impact their treatment of students and ultimately impact students' success [65]. On the other hand, the teacher nomination approach still appears to be a more valid identification procedure to identify resilient and nonresilient students than those exclusively based on grades and/or test scores which have been used in most other resiliency studies [61], [62], [66]. Our informal discussions with teachers about the nomination process revealed that they had no difficulty categorizing the students in their class. Several teachers, for example, shared specific examples with us of why certain students in their class were clearly resilient and nonresilient. The teachers also indicated that the resilience framework was a useful approach that helped them understand why certain students may be successful or unsuccessful.

One approach that has been found to be very effective in improving instructional practice is using feedback from classroom observation and learning environment measures to help teachers understand their current instructional strengths and weaknesses [28], [32], [51], [67], [68]. In several studies where we collected observation and survey data, for example, we provided individual teachers with an individual classroom profile. These profiles contained the teachers' individual data and a summary of the aggregated data across all the elementary schools. The class means for each of the indicators on both of the observation and survey instruments were presented along with the overall school district mean value. This allowed each teacher to compare their class means to the district's average. In some cases, school meetings were held where all the teachers and administrators received the profiles and discussed the implications. Feedback from these profiles was used to stimulate dialogue and discussion about instructional strengths and weaknesses in the school. The profiles also helped initiate discussion about specific instructional areas that needed to be improved in the school.

It should be pointed out again that these profiles provided some guidelines for practice; they were not attempts to tell teachers what to do. These profiles provide teachers with concepts and criteria that they can use to reflect about their own teaching [69]. We did not view the feedback session as one where we would apply our research findings into specific rules or guidelines for teachers to follow. Rather, the observational and survey feedback was intended to be used as guides for teachers where they and their colleagues could reflect about their practices on their own and decide what action to take. Additional staff development programs would be appropriate if teachers wanted to build upon the strengths and weaknesses of their profile in order to help them improve their instruction and classroom learning environment. Quality professional development is one of the important strategies for closing achievement gaps, and feedback from classroom observation and survey data can be the catalyst for this process.

A second approach to improving classroom instruction and narrowing achievement gaps centers on employing explicit teaching practices that have been found to be effective for students from disadvantaged circumstance. Waxman and Padrón [56], for example, describe five explicit practices that have been shown to improve the education of English language learners: (a) cognitively-guided instruction, (b) culturally responsive teaching, (c) technology-enriched instruction, (d) cooperative learning, and (e) instructional conversation. These research-based, instructional practices all stress a student-centered model of classroom instruction that emphasizes more active student learning and teachers becoming facilitators of learning. This may be one of the more important strategies to help close the achievement gaps within classrooms.

While student success and failure in school is dependent upon a number of influential determinants, it is apparent that instructional practices and the classroom learning environment are contributing factors [70]-[72]. The findings from our research are discouraging in that they paint a bleak picture of nonresilient, elementary school students who are not doing well in school. Many of the Hispanic students in these studies appear to have already "given up" on school and several of the students that we talked to indicated that they don't even plan to finish high school. Furthermore, since the teachers in this study easily identified the resilient and nonresilient students in their classrooms, it is troublesome that we observed few remediation or corrective activities for the nonresilient students. In other words, teachers were aware that their nonresilient students were not doing well in their classrooms, but there was no apparent effort to specifically help them or address their learning needs.

Finally, a noteworthy concern related to promoting resiliency in schools is that teachers sometimes have difficulty discussing issues related to fostering students' resiliency because they do not know their students on a social and personal level. As Darling-Hammond [73] puts it, the teacher's job is to get into the hearts and minds of their students. Many teachers know some basic demographic or

background information about their students (e.g., number of siblings, employment status of parents), but many teachers do not know about the goals and aspirations of their students. During the past decade, we have conducted hundreds of classroom observations across the United States. Unfortunately, we seldom observed teachers discussing social or personal issues with students [68], [74]. Schools today are often much depersonalized and teachers appear to spend very little time learning about their students. Effective teachers understand the various social and economic factors that may hinder their students' success, but they also know that in order to narrow the achievement gaps they need to focus on the affective domain and help students become resilient by providing: (a) caring and supportive relationships, (b) positive and high expectations, and (c) opportunities for meaningful participation [75].

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