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ABSTRACT

Focusing on predictors of academic success may help in the design of effective educational interventions. This study explores the enhancement of education for at-risk minority students by considering educationally resilient students and the classroom learning environment. Data was collected from six middle schools in a multi-ethnic school district in a major metropolitan area in the south central region of the United States. Motivation and learning environments were compared for 180 resilient and 180 nonresilient students from each of 3 ethnic groups: Hispanic, African American, and Asian American. Instruments adapted and incorporated in the development of the study instrument were the Multidimensional Motivational Instrument, the Classroom Environment Scale, and the Instructional Learning Environment Questionnaire. Multivariate analysis and post hoc tests of student responses showed that high-achieving students had significantly higher perceptions of involvement, affiliation, satisfaction, academic self-concept, and achievement motivation than did low-achieving students within each ethnic group. (Contains 4 tables and 44 references.) (SLD)

Learning Environment Differences Between High- and Low-Achieving Minority Students in Urban Middle Schools

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Abstract

The demographic changes in urban public schools have presented a great challenge to educators. The increasing number of students from culturally and linguistically diverse backgrounds, the high number of minority students dropping out, the low achievement levels, and ineffective classroom instructions constitute critical educational problems. Some educational researchers, however, have found that a few of the problems are alterable and can be alleviated if we are able to identify differentiating variables. (Matsen, 1994; Wang & Gordon, 1994). It is important to examine students who have done well in schools despite environmental adversities and to see how they differ from less successful students. This approach focuses on the predictors of academic success and may help us design more effective educational interventions.

The present study tries to address the enhancement of education for at-risk minority students by drawing upon two distinct and emerging theoretical frameworks: (a) educationally resilient students, and (b) classroom learning environment. Recent research has found that the improvement of teaching and learning can emerge by examining the classroom learning environment perceived by student themselves (Knight & Waxman, 1991; Walberg, 1976). How students perceive and react to their classroom instruction may be more important in terms of influencing student outcome than the quality of teaching behavior (Anderson, 1987; Knight & Waxman, 1991; Walberg; 1976; Winne & Marx, 1977, 1982).

The data was collected from six middle schools from a multi-ethnic school district in a major metropolitan city located in the south central region of the United States. The study compares the motivation and learning environment of 180 resilient and 180 non-resilient students from each of the three ethnic groups: Hispanic, African and Asian Americans. Three instruments were adapted and incorporated for use: (a) the Multidimensional Motivational Instrument (Uguroglu, Schiller, & Walberg, 1981; Uguroglu & Walberg, 1986), (b) the Classroom Environment Scale (Fraser, 1982, 1986), and (c) the Instructional Learning Environment Questionnaire (Knight & Waxman 1989, 1990). The instrument has been found to have stability reliability and construct and predictive validity. For the present study the mean alpha coefficient of these scales was around .60, and the mean correlation between the scales was .32, suggesting that the survey instrument has adequate reliability and discriminant validity.

The multivariate analysis and univariate post hoc tests reveal that high-achieving students had significantly higher perceptions of Involvement, Affiliation, Satisfaction, Academic Self-Concept, and Achievement Motivation than low-achieving students within each ethnic group of students ($p<.001$). There were also significant differences among the three ethnic minority student groups in their Involvement, Satisfaction, Parent Involvement, Academic Self-Concept, and Achievement Motivation ($p<.05$). Results are discussed in relation to previous work on educational resilience and to implications for improving the education of minority students at risk of failure.

The demographic changes in urban public schools have presented a great challenge to educators. The increasing number of students from culturally and linguistically diverse backgrounds, the high number of minority students dropping out, the increasing crimes and violence in schools, the low achievement levels, and ineffective classroom instruction constitute critical educational problems. A statistical report of the National Center for Education Statistics (NCES) stated that, in 1993, approximately 3.4 million persons in the United States ages 16 through 24 had not completed high school and were not currently enrolled in school (McMillen, Kaufman, & Whitener, 1994). Another statistic report revealed that, in 1992, only 59% of the nation's 17 year-olds achieved proficiency level in mathematics moderately complex procedures and reasoning. While 66% of white students achieved this proficiency level, only 30% of African American students and 39% of Hispanic students did so. In response to these challenges, researchers are searching for strategies that may reduce these problems and foster learning (Garcia, 1994; Matsen, Best, & Garmezy, 1990; Reyes & Jason, 1993; Rutters, 1987; Slavin, 1989; Waxman, 1992).

Some educational researchers have found that a few of the problems are alterable and can be alleviated if we are able to identify differentiating variables. (Matsen, 1994; Wang & Gordon, 1994). It is important to examine students who have done well in schools despite environmental adversities and to see how they differ from less successful students. Peng, Lee, Wang, and Walberg (1992), for example, identified students of low socioeconomic (SES) status from urban communities whose combined reading and mathematics test scores were in the highest quartile on national achievement norms, and found that these resilient students had higher self-concepts and educational aspirations and felt more internally controlled than non-resilient students. Bernard (1991) found that resilient children have strong interpersonal skills, responsiveness to others, and a high level of activity. In other words, these research studies identified the attributes of "educational resilience". This approach focuses on the predictors of academic success

rather than academic failure. This focus may help us design more effective educational interventions because it enables us to specificially identify these alterable factors that distinguish high- and low-achieving students.

In the present study, two groups of students were examined: (a) resilient students who show outstanding academic achievement, despite adverse life conditions in urban schools, and (b) non-resilient or marginal students who come from similar adverse life conditions but have not done well academically in school. Since there are disproportionate number of racial and ethnic minority students at margins (Wang, Reynolds, & Walberg, 1995), this study centers on three ethnic minority student groups: African American, Hispanic, and Asian American students. Although numerous studies have reported Asian American students' superior academic achievement and examined its contributing factors (Divorky, 1988; Mau, 1990; Schneider & Lee; 1990; Sue & Okazaki, 1990 &1991), a NCES report shows that around 24% of Asian American eighth graders failed to achieve the basic level in reading and 23% failed in mathematics (Bradby & Owings, 1992). In addition, Asian American students' 10th-12th grade dropout rate has more than doubled between 1982 and 1992, whereas the dropout rates for African American and Hispanic students have greatly decreased (McMillen, Kaufman, & Whitener, 1994). The bi-polarized research reports reflect the diversity in educational performance of Asian American students. Therefore, the same approach as for other ethnic minority students is taken to identify variables associated with the differences between resilient and non-resilient students.

The present study tries to address the educational enhancement for at-risk minority students by drawing upon two distinct and emerging theoretical frameworks: (a) educationally resilient students, and (b) classroom learning environments. A brief review of relevant research and policy literature follows.

Educational Resilience

One area of research that has important implications for the educational improvement of students in urban school is to examine "resilient students" or students who succeed in school despite the presence of adverse conditions (Gordon & Song, 1994; McMillan & Reed, 1994; Wang & Gordon, 1994). While the "resilience" construct has been widely used in areas like developmental psychology (Garmezy, 1991; Matsen, 1994; Matsen, Best, & Garmezy, 1990; Rutter, 1987), its application to educational phenomena has been relatively recent. Wang, Haertel, and Walberg (1994) define "educational resilience" as "the heightened likelihood of success in school and other life accomplishments despite environmental adversities brought by early traits, conditions, and experiences" (p. 46). This construct of "educational resilience" is not viewed as a fixed attribute of some students, but rather as alterable processes or mechanisms that can be developed or fostered.

Alva (1991) supports the view that research on students at risk needs to focus on aspects of school success rather than school failure. She used the term "academical invulnerability" to describe students who sustain high levels of achievement motivation and performance despite the presence of stressful events and conditions that place them at risk of doing poorly in school and ultimately dropping out of schools (p.19). She examined the characteristics of a cohort of tenth-grade Mexican-American students and found that resilient or invulnerable students reported higher levels of educational support from their teachers and friends.

Classroom Learning Environment

Recent research has found that the improvement of teaching and learning can emerge by examining the classroom learning environment perceived by students themselves (Knight & Waxman, 1991; Walberg, 1976; Waxman & Eash, 1983). How students perceive and react to their classroom instructions may be more important in terms of influencing student outcomes than the quality of teaching behavior (Anderson, 1987; Knight & Waxman, 1991; Walberg; 1976; Winne & Marx, 1977, 1982).

McMillen, Kaufman, and Whitener (1994) have found that some of the most common reasons that students cited for dropping out were related to their experiences in the schools they left behind, including a general dislike for schools, failure in their schoolwork, and the feeling of not belonging. Students actively process information and interpret classroom reality (Schunk, 1992: Weinstein, 1989). The classroom environment experienced by them may be quite different from the observed or intended instruction (Waxman, 1989; Wittrock, 1986). Their perceptions of instructional and classroom learning environment have been found to explain a significant amount of variance for both students' cognitive and affective outcomes (Fraser, 1986, 1989; Fraser, Walberg, Welch, & Hattie, 1987; Haertel, Walberg, & Haertel, 1981; Knight & Waxman, 1990; Walberg, 1976; Waxman, 1989; Waxman, Huang. Knight, & Owens, 1992). Furthermore, research has found that these outcomes can be improved by changing classroom environments in the desired direction (Burden & Fraser; 1993; Fraser & Deer;, 1989; Fraser, Malone, & Neale, 1989; Fraser, Seddon, & Eagleson, 1982). That is, fostering an effective classroom learning environment has been suggested as a means of enabling at-risk students to achieve in school (Padron, 1992; Pierce, 1994).

Purpose of This Study

While a large body of research has found that students' perceptions of school learning environment are important factors that contribute to student learning, few studies have compared psychosocial variables between resilient and non-resilient students among ethnic minorities in urban middle schools . Therefore, the purpose of this study was to compare resilient and non-resilient urban students' perceptions of their learning environment in mathematics. In addition, other background and behavioral variables such as home language, academic aspirations, attendance record, and time allocation between resilient and resilient students were also examined since they have been found to be related to student academic achievement. The long term goals of this study are to a)

spring semester, a student survey was conducted at all middle schools to 7,000 students in the school district. A stratified sampling technique was used so that within each ethnic group, 180 resilient and 180 non-resilient students were randomly selected. Students were classified as "resilient" if they (a) scored on or above 75% on the district administered standardized test, and (b) reported receiving mostly "A's" and "B's" in mathematics grades. Students were classified as "non-resilient" if they (a) scored on or below 25% on the district administered standardized test, and (b) reported receiving mostly "B's," "C's," "D's," or "F's" in mathematics grades this year. Consequently, 360 each of Asian Americans, African Americans, and Hispanic students were included in the present study, each ethnic group had 120 students in the 6th, 7th, and 8th grade levels.

Instruments

Three standardized instruments were adapted and incorporated for use in the present study: (a) the Multidimensional Motivational Instrument (Uguroglu, Schiller, & Walberg, 1981; Uguroglu & Walberg, 1986), (b) the Classroom Environment Scale (Fraser, 1982, 1986), and (c) the Instructional Learning Environment Questionnaire (Knight & Waxman, 1989). All of the items on these instruments were modified to a "personal form" in the present study which elicits an individual student's responses to his/her role in their mathematics class, rather than a student's perception of the class as a whole (Fraser, 1991).

The Multidimensional Motivational Instrument (MMI) is a questionnaire that measures the motivation constructs of Achievement Motivation, Academic Self-Concept, and Social Self-Concept. The instrument has been found to have test-retest reliability and construct and predictive validity. For the present study, only Achievement Motivation and Academic Self-Concept scales were used. A brief description of the scales and a sample item from each follows:

Achievement Motivation--the extent to which students feel the intrinsic desire to succeed and earn "good" grades in mathematics (e.g., When I have a hard problem in mathematics, I usually keep trying to solve it).

Academic Self-Concept--the extent to which students exhibit pride in their classwork and expect to do well in mathematics (e.g., I am proud of my work in mathematics).

The Classroom Environment Scale (CES) conta... six scales. The content and concurrent validities of the CES have been established through correlational studies and classroom observation. Adequate internal consistency reliability coefficients were also obtained in previous studies (Fraser, 1982, 1986; Moos, 1979). For the present study, only the Involvement and Affiliation scales were used. A brief description of the two scales and a sample item from each follows:

Involvement--the extent to which students participate actively and attentively in their mathematics class (e.g., In my mathematics class, I really pay attention to what the teacher is saying).

Affiliation--the extents to which students know, help, and are friendly toward each other in their mathematics class (e.g., I know other students in my mathematics class really well).

The Instructional Learning Environment Questionnaire (ILEQ) measures students' perceptions of seven aspects of instructional learning environment. It has been found to have adequate internal consistency reliability coefficients and test-retest reliability (Knight & Waxman, 1989, 1990; Waxman, Huang, Knight, & Owens, 1992). For the present study, only the Satisfaction and Parent Involvement scales were used. A brief description of the two scales and a sample item from each follows:

Satisfaction--the extent to which students enjoy their mathematics class and school work in mathematics (e.g., I enjoy the schoolwork in my mathematics class).

Parent Involvement--the extent to which parents are interested and involved in what their children are doing in mathematics (e.g., My parents often ask me about what I learned in mathematics).

Each scale from the three instruments includes four items and all of the items were measured on a four-point, Likert-type scale. A response of "not at all true" corresponds to the value of "1"; "not very true," "2"; "sort of true," "3"; and "very true," "4." Students' responses to each item within the same scale were added and averaged. Consequently, a mean value of "4" indicates that the student responded agreeably to the scale, whereas a mean value of "1" indicates that the student responded disagreeably to the scale.

Several background items selected from the National Educational Longitudinal Study (NELS:88) were also included in the final study survey (Ingels, Abraham, Karr, Spencer, & Franekel, 1990). These items included questions about students' (a) background characteristics (e.g., home language), (b) academic aspirations (e.g., how far they will go in school) (c) attendance (e.g., number of days missed), and (d) time allocation (e.g., time spent on homework).

Procedures

The scales from the three instruments and the background items from the NELS:88 survey were combined into one survey and were administered concurrently by trained researchers near the end of the school year during students' regular mathematics class. We selected two scales from each of the three instruments because the school district only allowed us about 45 minutes to complete the combined survey instrument. Students were informed by the researchers that they were not tests and that completed questionnaires would not be seen by their teachers or other school personnel.

Chi-square tests were used to compare the frequencies of responses between resilient and non-resilient students on the items from the NELS:88 survey. A two-way multivariate analysis of variance (MANOVA) was used to determine (a) whether there

are significant differences in the six learning environment dimensions between resilient and non-resilient students as well as among the three ethnic minority student groups, and (b) whether there are any interaction effects by resilient/non-resilient and ethnic groups. Because of the rather large sample size, the probability level was set at $p < .001$ for overall MANOVA results. As a follow-up procedure, univariate analysis of variance (ANOVA) and post hoc multiple comparison tests were also performed to determine where the statistically significant differences were.

Validation of the Instrument

In order to ensure adequate reliability and validity of the six scales used in this study, internal consistency (Cronbach alpha) reliability and discriminant validity (correlations between scales) were computed. These coefficients were calculated using the individual student as unit of statistical analysis. Table 1 presents the statistical results with all 1,080 students for each of the six scales. The results indicated that alpha coefficients of these scales ranged from .48 to .78 with a mean of .60; and the correlations between scales ranged from .12 to .58, indicating that the survey instrument has adequate internal consistency reliability and discriminant validity.

Insert Table 1 about here

Since the students in this sample came from 63 different classrooms, we conducted an analysis of variance (ANOVA) with class as the main factor in order to determine its effect on students' perceptions of their learning environment. Table 1 presents the ANOVA results. Students from these various classrooms perceived significant differences ($p < .01$) for all of the six scales except the Academic Self-Concept scale. The eta^2 values for Involvement, Affiliation, Satisfaction, Parent Involvement, Academic Self-Concept, and Achievement Motivation were .12, .09, .13, .09, .07, and .09 respectively, representing the portion of variance in learning

environment scores accounted for by class membership. Five of the six scales (except Academic Self-Confidence) were able to differentiate between classrooms.

Results

Table 2 presents the descriptive and chi-square results for two student groups. About 54% of the resilient students indicated that they spoke a language other than English before they started school, while nearly 50% of the non-resilient students responded that they also spoke a language other than English before starting school. Statistically significant differences were found in the following items. Fewer resilient students had been held back a grade in school than non-resilient students. More resilient students reported that they received "A" grades in mathematics last year than non-resilient students. More resilient student reported that they were very sure that they would graduate from high schools and/or would attend graduate school than non-resilient students.

Insert Table 2 about here

Resilient students also reported that they had significantly better attendance than non-resilient students. More specifically, a greater number of resilient than non-resilient students reported that they had perfect attendance. More resilient students also indicated that they never cut or skipped classes. More resilient students than non-resilient students spent over three hours per week on mathematics homework and/or on additional reading not assigned by teachers. More non-resilient students reported that they spent over three hours a day watching television during the week than resilient students, but there was no significant difference between the two student groups on the amount of time spent watching television on the weekends or listening to CD, tapes and radio, etc.

Table 3 reports the two-way MANOVA results. The results indicate that there are statistically significant main effects of ethnicity and group (resilient vs. non-resilient) on middle school students' perceptions of learning environment. Resilient students' overall perceptions of their mathematics classroom learning environment were significantly different from those of non-resilient students ($F(6, 1069)=47.13$, $p < .001$). Students' overall perceptions of their learning environment also differed by ethnicity ($F(12,2138)=4.39$, $p < .001$). There were, however, no significant interaction effects of ethnicity by group, suggesting that the differences in learning environment between resilient and non-resilient students were the same across various ethnic minority groups.

Insert Table 3 about here

Table 4 presents the descriptive and univariate analysis of variance results for students' perceptions of learning environment in mathematics by student group and ethnicity. In general, both resilient and non-resilient students had fairly positive perceptions of their learning environment in mathematics. Both groups of students scored relatively high on the Academic Self-Concept and Affiliation aspects and relatively low on the Satisfaction aspect. Non-resilient students had very low Achievement Motivation ($M < 2.5$). Resilient students' Academic Self-Concept and Achievement Motivation were significantly higher than those of non-resilient students. They also reported more Involvement, Satisfaction, and Affiliation than non-resilient students. There were, however, no significant differences in Parental Involvement between the two student groups. The standard deviations for non-resilient students were slightly higher than those for resilient students, suggesting that there was a greater variation among non-resilient students' responses.

Ethnicity was found to be another significant factor that differentiates students' perceptions. Asian American students had statistically higher Involvement and

Achievement Motivation than African American and Hispanic students. Asian American students had higher perceptions of Satisfaction than Hispanic students. Hispanic students had statistically lower Parent Involvement and Academic Self-Concept than Asian and African American students. There was no significant difference on Affiliation among students from the three ethnic groups.

Discussion

The present study investigated middle school students from a multi-cultural metropolitan school district and found that the psychological dimension of learning environment in mathematics differed significantly between resilient and non-resilient students. Despite coming from the same schools and classrooms, some minority students have excelled in mathematics achievement while others have not. Among the six learning environment scales, five differentiated the two groups of students. Resilient students responded greater involvement and affiliation than non-resilient students. They participated more attentively in mathematics instruction and classroom activities. They were also more attached to classmates. This finding supports previous research that found that the senses of student "involvement" and "belonging" reduce the feelings of alienation and disengagement and that this sense is very much emphasized in effective urban schools (Bryk & Driscoll, 1988; Lee, Bryk, & Smith, 1993; McMillan & Reed, 1994; Raywid, 1995). Students' positive attitudes appear to enhance their satisfaction and help them enjoy class and school work.

Resilient students also had significantly higher academic self-concept and achievement motivation than non-resilient students. They had greater intrinsic desire to s ıcceed and earn good grades. They expected to do well in mathematics and exhibited pride in the classwork. These may shield them against their adverse circumstances and lead to better educational outcomes.

In their examination of at-risk students and resiliency, McMillan and Reed (1994) identified four factors attributing to academic success: (a) individual attributes, like students' motivation; (b) school and classroom factors, like satisfaction, involvement, and affiliation; (c) family factors, like parent involvement; and (d) positive use of time, like working on homework. Results of this study support all their findings except parent involvement. Parents of both resilient and non-resilient minority students appeared to be equally interested and involved in what their children were doing in mathematics, although the reasons for their involvement were not explored in this study.

The extend of parental involvement, however, differed among ethnic minority groups. Asian and African American students indicated greater parental interest and help than Hispanic students. Both groups of students also had higher academic self-concept than Hispanic students. In addition, more Asian American students indicated that they worked hard and really paid attention to teachers in mathematics class than students from other groups. These may explain why Asian American students are generally superior in mathematics. Asian American middle school students in this district scored significantly higher than all other ethnic groups (including whites) on state-wide standardized achievement tests in mathematics and on the district-administered Four-Step Problem Solving Test (Hofmann, 1986).

In regard to background and behavioral characteristics, more resilient students had higher academic aspirations and better attendance records than non-resilient students. They also had positive use of time. All these are factors that may be improved for non-resilient students.

Results of this study reveal that more resilient students spoke a non-English language before they started going to school. This may imply that more mathematics resilient students came from immigrant families where a native language other English was generally spoken. This finding raises some concern. Further research needs to examine if this finding is valid within each ethnic group and across other subject areas,

such as reading and language (Kennedy & Park, 1994; Suarey-Orozco, 1991). For example, in her examination of eighth-grade Asian American students' home and school learning environments, Huang (1995) found that language minority students (those who spoke a non-English language at home) scored significantly lower in standardized reading test but scored about the same in mathematics as compared to students from English speaking families. On the other hand, Waxman, Huang, and Padron (1995) found that, in mathematics, more Hispanic resilient students than non-resilient students were language minority.

Findings of the present study identified some factors that are associated with minority students' resilience. Future research may need to (a) examine if these findings stand across different subject areas, (b) include Anglo American students in comparison, and (c) conduct observation on classroom instruction and interaction, since the analysis of variance showed that there were classroom-related differences in learning environment. Waxman and Huang (1994), for example, investigated classroom instructions for language minority students between effective and ineffective inner-city schools and concluded that there are significant differences. With adequate classroom, school, family, and community information in hand, educational researchers may concentrate on designing effective programs that alleviate educational problems in urban schools and enhance at-risk minority students' healthy development and learning.

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Table 1. Internal Consistency Reliability, Discriminant Validity, and ANOVA Results of Class Effect for the Six Scales

Variable	No. of Item	Alpha Reliability	Scale Intercorrelations						ANOVA	
			IN	AF	SA	PI	AS	AM	F	Eta^2
Involvement	4	.60		.12	.58	.29	.41	.53	2.30**	.12
Affiliation	4	.60			.21	.15	.19	.19	1.67*	.09
Satisfaction	4	.78				.23	.43	.42	2.49**	.13
Parent Involvement	4	.64					.25	.33	1.54*	.09
Academic Self-Concept	4	.48						.54	1.23	.07
Achievement Motivation	4	.52							1.64*	.09

*p<.01. **p<.001.

Table 2. Backgroun Information of Resilient and Non-Resilient Students

Indicators	Resilient (n = 540) f	%	Non-Resilient (n = 540) f	%	*Chisq.*
Background Characteristics					
Spoke non-English language before you started going to school.					21.94**
Yes	292	54.1	269	49.8	
No	248	45.9	271	50.2	
Have been held back a grade in school					114.97**
Yes	79	14.6	223	41.3	
No	461	85.4	317	58.7	
Math grade receive last year					387.24**
Mostly A's (90-100)	347	64.2	63	11.7	
Mostly B's (80-89)	154	28.5	201	37.2	
Mostly C's (75-79)	34	6.3	156	28.9	
Mostly D's (70-74)	4	0.7	69	12.8	
Mostly below D (below 70)	1	0.2	51	9.4	
Academic Aspirations					
Sure that you will graduate from high school					161.60**
Very sure	465	88.1	274	51.8	
Probably sure	52	9.8	186	35.2	
Probably won't graduate	5	1.0	36	19.0	
Very sure won't graduate	6	1.0	27	5.0	
Unspecified	12		17		
How far in school you will get					144.48**
Won't finish high school	6	1.1	43	8.1	
Will graduate from high school only	21	4.0	65	12.3	
Will attend college	21	4.0	91	17.2	
Will graduate college	178	33.5	178	33.7	
Will attend graduate school	305	57.4	152	28.7	
Unspecified	9		12		
Attendance Record					
Days of school you missed over the past 4 weeks					31.45**
Perfect attendance	363	70.9	274	51.6	
Missed 1 or 2 days	114	18.8	158	30.7	
Missed 3 or 4 days	41	6.7	66	11.8	
Missed 6 to 10 days	13	2.6	21	4.6	
Missed more than 10 days	9	1.0	21	1.4	

	Resilient		Non-Resilient		
	f	%	f	%	*Chisq.*
How often you cut or skip classes					48.08*
Never or almost never	520	96.3	453	83.9	
Sometimes, but less than once a week	13	2.4	51	9.4	
Not everyday, but at least once a week	2	0.4	17	3.1	
Daily	5	0.9	19	3.5	
Time Allocation					
Time spent on math homework each week					57.18**
None	36	6.7	65	12.0	
Less than 1 hour a week	147	27.3	224	41.5	
1 to 2 hours a week	187	34.5	169	31.3	
3 or 4 hours a week	104	19.3	47	8.7	
More than 4 hours	66	12.1	35	6.5	
Time spent on additional reading					79.69*
None	61	11.3	127	23.6	
1 hour or less per week	176	32.7	245	45.6	
2 hours per week	153	28.4	103	19.2	
3 to 4 hours per week	85	15.8	38	7.1	
5 hours per week	63	11.7	24	4.5	
Unspecified	2		3		
Time spent on TV per day					15.70*
Don't watch TV	16	3.0	28	5.2	
Less than one hour per day	58	10.7	72	13.4	
1 to 2 hours a day	149	27.6	128	23.7	
2 to 3 hours a day	117	21.7	80	14.8	
Over 3 hours a day	200	36.9	232	42.9	
Time spent on TV on weekends					6.49
Don't watch TV	20	3.7	26	4.8	
Less than one hour a day	49	9.1	69	12.8	
1 to 2 hours a day	99	18.4	109	20.2	
2 to 3 hours a day	108	20.0	97	18.0	
Over 3 hours a day	264	48.8	239	44.2	
Time spent on listening to CD, tapes, radio, etc.					6.48
None	43	8.0	58	10.8	
1 hour or less per week	158	29.4	132	24.6	
2 hours	118	21.9	117	21.8	
3 to 4 hours	91	16.9	82	15.3	
5 hours or more per week	128	23.8	148	27.6	
Unspecified	2		3		

* $p < .01$. ** $p < .001$.

Table 4. Descriptive and Univariate Analysis of Variance of Students' Learning Environments by Resilient/Non-Resilient Groups and Ethnicity

By Resilient/Non-Resilient Groups

Variable	Resilient (n=540) M	SD	Non-Resilient (n=540) M	SD	F
Involvement	3.13	.60	2.75	.60	111.45***
Affiliation	3.28	.58	3.07	.63	30.47***
Satisfaction	3.11	.73	2.70	.78	81.40***
Parent Involvement	3.04	.69	3.01	.72	0.41
Academic Self-Concept	3.35	.52	2.89	.54	204.71***
Achievement Motivation	3.28	.51	1.98	.58	85.92***

***p<.001

By Ethnicity

Variable	Asian (n=360) M	SD	Black (n=360) M	SD	Hispanic (n=360) M	SD	F
Involvement	3.07a	.62	2.91b	.64	2.84b	.61	13.71***
Affiliation	3.22a	.58	3.16a	.63	3.16a	.64	0.98
Satisfaction	2.99a	.76	2.90ab	.80	2.83b	.78	4.30*
Parent Involvement	3.03a	.69	3.13a	.67	2.91b	.74	8.45***
Academic Self-Concept	3.17a	.53	3.15a	.61	3.04b	.57	6.61**
Achievement Motivation	3.22a	.53	3.12b	.58	3.05b	.58	8.66***

*p<.05. **p<.01. ***p<.001.

Note: The same letter by the mean values indicates that there is no significant difference between the mean values.