SCHOOL-RELATED STRESS IN PUERTO RICAN CHILDREN

Rafael Baudillo Mora de Jesus, Ph.D.
The University of Connecticut, 1990

This present study involved two major components, the first was the translation and adaptation of the School Situation Survey (SSS) developed for use with Spanish-speaking Puerto Rican children; the second component addressed two research questions: (1) can variations in perceived sources of stress be explained by age, grade, gender, family structure (one parent vs. dual parent), length of time on the U.S. mainland, cognitive ability, and teacher’s ratings with respect to sources of stress; (2) can variations in perceived manifestations of stress be explained by age, grade, gender, family structure (one parent vs. dual parent), length of time on the U.S. mainland, cognitive ability, and teacher’s ratings with respect to manifestations of stress?

Spanish-speaking Puerto Rican children in fifth, seventh and ninth grade (N=334) participated in this study by responding to the Spanish version of the (SSS) and to the Raven Standard Progressive Matrices Test (SPM). In addition, their teachers responded to the School-Stress Behavior Rating Scale (BRS).

Canonical correlations were conducted to respond to the first research question. Multiple regression analyses with
a hierarchical procedure were conducted to determine how the
independent variables combined to explain variations in
manifestations of stress.

Two significant profiles emerged in examination of
sources of stress. The first canonical correlation revealed
that seventh and ninth grade children with stressful
interactions with peers, had low academic self-concept and
were viewed by teachers as experiencing academic problems.
The second profile showed males with stressful interactions
with teachers had very few academic concerns and were viewed
by teachers as experiencing emotional manifestations of
stress.

Six significant predictors were found to be related to
physiological manifestations of stress. These included
children of low cognitive ability, females, children in
lower grades, children with stressful interactions with
teachers, and those rated by their teachers as experiencing
physiological manifestations of stress.

Four significant predictors were found to be related to
behavioral manifestations of stress. These included seventh
graders, children who resided on the mainland for more than
one year, those with stressful interactions with their
teachers, and those identified by their teachers as
presenting behavioral manifestations of stress.

Implications and suggestions for future research are
presented.
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PUERTO RICAN CHILDREN

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Chapter I
INTRODUCTION

Puerto Rican children present an ongoing challenge for schools within the U.S. mainland. As migration to the mainland continues, Puerto Ricans encounter a new and unexpected array of stressors (Gallardo, 1970; Canino, I. Rogler, L., & Earley, B., 1980). By-products of this process include high frequencies of school dropouts, teenage pregnancies and delinquency among Puerto Rican youth (Canino et al., 1980, U.S. Bureau of Census, 1978). General recognition of the magnitude of this problem has done little to alleviate it. Puerto Ricans continue to have the highest incidence of school dropouts among all groups (Canino et al., 1980) and continue to experience the same array of socioeconomic stressors.

Motivating factors for migration such as unemployment, better job opportunities, the expectations of better living conditions, demand for a cheap work force, political status of the island, urbanization, changes in family structure and the movement of families to and from the island all serve as impetus for Puerto Ricans leaving their homeland (Maldonado-Denis, 1970; Gallardo, 1975). Upon their arrival to the mainland, migrants encounter stressors including depressed socioeconomic conditions as well as cultural and familial upheaval (Dohrenwend, 1969; Rogler, 1972). In
addition they experience a variety of feelings such as anomie, isolation, grief, alienation, confusion, conflict and personal disorganization (Warheit, Vega, Auth & Meinhardt, 1985).

Puerto Rican children in their adaptation to the mainland school system also experience cultural conflicts (Gallardo, 1970), and racism (Cordasco, 1976; Loomis, 1943, Fitzpatrick, 1976; Bucchioni, 1982). Bucchioni (1982) claimed that Puerto Rican children manifested school-related stress through hostility, defiance towards authority figures, acquiescence and withdrawal. These combined effects make the transition from Puerto Rico tenuous.

Statement of the Problem

The educational experience in the U.S. mainland may be stressful for Puerto Rican children due to differing cultural norms and expectations. Higher incidences of stress related disorders have been reported including sleep disorders (La Vietes, 1979), asthma (Canino, et al., 1980) and psychosomatic disorders (Abad & Boyce, 1979). In addition, demands placed upon these children to assimilate to different cultural views tends to threaten and devalue their Puerto Rican culture (Bucchioni, 1982; Canino et al., 1980).

In general, research on school-related stress in Puerto Rican children has concentrated on classroom observations, (Bucchioni, 1982), psychosocial manifestations of stress
such as dropping out of school, academic difficulties, truancy, alcohol and drug consumption (Canino et al., 1980), parent and teacher reports, (N.Y. Board of Education, 1955), and case studies (Thomas & Chess, 1982). To date, there has been no empirical study on Puerto Rican children’s perceptions of school-related stress. The intent of this study is to answer the following research question:

What are the contributing sources and manifestations of school-related stress in Spanish-speaking Puerto Rican children in grades 5, 7 and 9?

The general objectives of this study are:

a) To translate and adapt Helms & Gables (1989) School Situation Survey (SSS) for use with Spanish-speaking Puerto Rican children and to estimate its reliability and validity.

b) To examine the relationships among student variables (e.g., grade, gender, cognitive ability, family composition and length of time in the mainland) and the school-related sources and manifestations of stress.

Theoretical Rationale

Bandura’s social learning theory (1971), provides the theoretical rationale underlying the child stress model. According to this perspective, human organisms are active mediators of experience instead of passive recipients of experience. Emotional responsivity develops through observing expressions of painful or pleasurable affect and
Hypothesis 2.3. There is no significant relationship with respect to emotional manifestations of stress when the effects of the predictor variables, gender, grade, family composition (single parent vs. dual parent), cognitive ability, teacher ratings and sources of stress are removed.

Definition of Terms
The following definitions which were adapted from Helms (1986) are used in the present study and are measured through children’s self-report.

Academic Self-Concept: children’s self-reported feelings of self-worth and self-esteem with respect to their academic ability.

Behavioral Manifestations of Stress: includes actions, reactions, or treatment of others such as striking out at others, being hurtful toward others, or being disrespectful.

Cognitive Ability: is defined as the obtained score on the Raven Progressive Matrices test.

Emotional Manifestations of Stress: represents mental processes exhibited through self-reported feelings such as fear, shyness, or loneliness.

Physiological Manifestations of Stress: represents self-reported bodily reactions or functions such as nausea, shaking or rapid heart beat, sleeplessness.
Social/Peer Interactions: children's reported perceptions of their social interactions with their peers and classmates.

Teacher Interactions: students reported perceptions of their social interactions with their teachers.

Methodology

Instrumentation

The School Situation Survey (SSS) (Helms & Gable, 1989) was translated and adapted for use with Puerto Rican Spanish-speaking children residing in Connecticut. This instrument is divided into two general scales (Sources of Stress and Manifestations of Stress) which are further divided into subscales (Academic Self-Concept, Teacher Interaction, Peer Interaction, Academic Stress, Physiological Manifestations, Emotional Manifestations and Behavioral Manifestations). The scales were normed on a sample of 7,036 students from grades 3-12 in 16 Connecticut and Rhode Island school districts. Test-Retest reliability coefficients, based on a three week interval varied from .72 to .83. Alpha Internal Consistency Reliability coefficients ranged from .70 to .81 for grades 3 to 5, from .66 to .79 for grades 6 to 8 and from .63 to .78 for grade 9 (Helms & Gable, 1989).

The Stress Behavior Rating Scale (SBRS) (Mora de Jesus, 1990) is an instrument based on the scales of the (SSS) and consists of seven questions in which the teachers are
requested to rate their students with respect to the presentation and verbalization of manifestations or sources of specific stressors and was developed for the present research project.

The Standard Progressive Matrices Test (SPM) was administered to all subjects and is a measure of cognitive ability consisting of a non-verbal test of reasoning ability based on figural materials. This instrument was standardized on a representative sample of British children between the ages 6 and 13. Test-Retest reliability ranged from .71 to .92. Correlations with both the Stanford Binet and Weschsler Scales ranged from .55 to .86 respectively (Llabre, 1984).

A demographic and personal characteristics questionnaire is included to obtain information relevant to the hypotheses. Information is collected on gender, grade, age, family structure, and length of time on the U.S. mainland.

Procedures

Sample

The following samples are identified for this study. First, a panel of Bilingual (English/Spanish) content raters selected on the basis of professional status, experience working with Puerto Rican school children, and personal experience with migration (four are migrants, two have resided on the mainland most of their lives). These raters
conducted a formal review of the items of the SSS after translating the items from English to Spanish.

The second sample consisted of 18 children in grades 5, 7 and 9 who represent children at different reading and achievement levels. Their participation helped estimate the readability of the SSS.

The third sample consisted of 334 Spanish-speaking children in grades 5, 7 and 9 who are selected from urban communities with predominant representations of Puerto Rican students.

Research Design

This study uses an ex-post facto design as described by Kerlinger (1973). The independent variables were not directly manipulated, participants in the study were not randomly assigned and no treatment is provided. This study is correlational and exploratory in nature.

Data Analysis

Two separate analyses are utilized with the data. To examine the sources of stress, canonical correlations are computed. This procedure is used to compute parsimoniously the best linear combination of sets of dependent variable (sources of stress) related to sets of independent variables (Tabachnik & Fidell, 1989).

Manifestations of stress data is analyzed through the use of hierarchical multiple regression. The dependent variable is the perceived manifestations of stress score.
The independent variables are grade, gender, family structure, length of time in the U.S. mainland, cognitive ability and teacher’s ratings of symptoms and manifestations of stress.

Limitations and Delimitations

One delimitation to this study is that inferential data derived from the current sample are only valid for the targeted populations, i.e., Spanish-speaking Puerto Rican children in grades 5, 7 and 9 in selected school districts.

A major limitation with respect to this study is the paucity of research in the area of child stress among Puerto Rican children which precludes prior knowledge of the impact of significant independent variables such as family structure, cognitive ability, gender, and length of time on the mainland.

Significance

The study of stress in Puerto Rican children has been overlooked. Puerto Rican children are a population at high risk for stress and for the negative consequences of stress. The limited research which exists focuses on the presentation of stressful life events. This only gives superficial attention to school-related stress. Further, this study is a significant departure from previous, similar research because it emphasizes children’s own perceptions of their stress and relates it to the teacher’s perceptions.
Summary

This chapter introduced the concept of school-related stress, discussed the rationale for conducting this research and provided an overview of the research design. In summary, this study attempts to answer the following questions:

1. Can variations in perceived manifestations of stress among Puerto Rican children be explained by age, grade, gender, family structure (single parent vs. dual parents), length of time in the U.S. mainland, cognitive ability and teachers ratings of manifestations of stress?

2. Can variations in perceived sources of stress among Puerto Rican children be explained by age, grade, family structure (single parent vs. dual parents), length of time in the U.S. mainland, cognitive ability and teachers ratings of sources of stress?

An instrument that measures sources and manifestations of school-related stress was translated and adapted for use with Spanish-speaking Puerto Rican children and was then used to test the research questions.

Chapter Outline

The present research project includes the following: Chapter I provides an overview of the theoretical rationale, methodology and the research questions involved in this
study. Chapter II provides a review of the literature on stress theory, child stress and descriptions of stressful life events for Puerto Ricans. Chapter III provides a description of the research methodology involved in this study. Chapter IV presents the results of the research and a discussion of these results in light of the theory. Chapter V provides a summary of the findings including implications and significance of the study.
Chapter III
RESEARCH DESIGN

Chapter three contains a description of the methodology, research design, sample selection, instrumentation, data collection procedures and an overview of the statistical methodology.

Sample Selection

Three samples were used for this study. The first sample consisted of judges who participated in the translation and content validation of the Spanish version of the SSS. The second sample consisted of 18 students from grades 5, 7 and 9 who participated in a content validity study. The third sample included 334 students from two school districts who participated in the final phase of this study.

Content Validity Samples

The first sample consisted of a panel of raters consisting of six bilingual (English/Spanish) teachers. Four of these teachers had migrated from Puerto Rico to the mainland while two of these teachers were born and raised on the mainland. These raters conducted a formal review of the items of the SSS. After translating the items from English to Spanish they recommended additional items. They rated the items on their relevance to school stress categories.
using the Content Validity Rating Form (Appendix B). The selection of the raters was based on their years of experience working with the targeted population (Spanish-speaking, Puerto Rican children residing on the mainland), and their own experiences having migrated from the Island and having studied in mainland schools.

In addition to these raters, a second sample consisting of 18 students in the targeted grades 5, 7 and 9 were given a pilot form of the translated SSS. This pilot assessed the children’s perceptions of the items as sources and manifestations of stress as well as their readability. A School Social Worker selected the students based on availability. These children were representative of various achievement levels, reading levels and levels of stress.

Final Sample

The final sample was chosen so that stress sources and manifestations could be examined in Spanish-speaking, Puerto Rican children in grades 5, 7 and 9 residing on the mainland. School districts with significant numbers of Spanish-speaking children in the state of Connecticut were examined for inclusion in this study. Based on the results of the examination nine school districts were selected for possible participation in this study. Letters were sent to each school district requesting their participation in this study. These letters included a summary of the study and an explanation of the test administrations (Appendix A).
Participation included having the students tested on the Spanish SSS and teachers rating the students on the SBRS. Two school districts agreed to participate in the study. This sample consisted of 334 Spanish-speaking, Puerto Rican children in grades 5, 7 and 9 from two school districts.

Student Sampling Procedures

Administrators from the participating school districts were requested to provide the researcher access to those schools with significant numbers of Spanish-speaking students in the targeted grades. From the schools which agreed to participate, all the Spanish-speaking children who were in bilingual or transitional programs in the targeted grades were requested to participate. Consent forms were sent to the parents of the participating students who were requested to send the form back if they did not agree. Children were also asked to participate and informed that participation was voluntary.

Instrumentation

Two main instruments were used in this study. The first was the School Situation Survey SSS developed by Helms & Gable (1989) which was translated and adapted for use with Puerto Rican, Spanish-speaking children in the initial phase of this study. The second instrument was the Raven Standard Progressive Matrices SPM (1938). In addition, teachers were requested to rate the students with respect to manifestations of stress and sources of stress on the SBRS.
Teachers were requested to assign ratings from 1 to 3 with respect to the sources of stress and manifestations of stress on each of their students.

**Demographic Variables**

To gain demographic information the students were requested to indicate their grade, gender, length of time residing on the mainland, and family composition (residing with mother, both parents, father, family members or others).

**Procedures for Data Collection**

Data was collected from November, 1989 to January, 1990 in those school districts that agreed to participate in the data collection. All selected students were tested in group administrations of the tests on the same day. Administration of both tests took around 45 to 50 minutes and was completed in a single sitting. The primary researcher or a Guidance staff member conducted the testing situation.

Students were told that this was part of a study to find out what kind of situations cause stress for Puerto Rican students who have recently come from the mainland. The researcher prepared the students by permitting them to have a class discussion for a period of 10 minutes. The directions were read to the students and any questions which they encountered during the SSS were answered. Students were assigned numbers by their home room teachers who were
present at the testing session. Students were requested to place their number on the upper right hand corner of both the SPM answer sheet and on the SSS. The SPM was administered using an overhead projector with the standardized instructions. Students were allowed 30 seconds to respond to each item. The testing period lasted until all students had completed all the items on the SSS.

Meanwhile, the teachers were requested to provide six ratings corresponding to each of the scales on the SSS. Teachers identified students exhibiting symptoms of stress or those appearing to have stress-related difficulties. They were also asked to identify those students who exhibit no stress-related difficulties (See Appendix C).

Development and Validation of the School Situation Survey

The School Situation Survey was developed by Helms & Gable (1985). This instrument is divided into two general scales which are sub-divided into seven subscales. The general scales are the Sources of Stress and the Manifestations of Stress. The Sources of Stress Scale is divided into peer interaction, teacher interaction, academic self-concept and academic stress scale. The Manifestations scale is divided into three subscales: physiological manifestations, behavioral manifestations, and emotional manifestations. The scales were normed on a sample of 1,036 students from grades 3-12 in 16 Connecticut and Rhode Island school districts. Test-retest reliability coefficients
based on a three week interval were reported to vary from .72 to .83. Alpha internal consistency reliability coefficients ranged from .70 to .81 for grades 3 to 5 from .66 to .79 for grades 6 to 8 and from .63 to .78 for grade 9 (Helms & Gable, 1989).

Spanish Version

Content Validity

The initial development of the Spanish version of the School Situation Survey involved a review of literature regarding school-related child stress and Puerto Rican children to ascertain potential sources and manifestations of stress. This review included the work of Helms & Gable (1989), Helms (1985), Schultz (1980), Schultz and Heuchert (1983), Sarason (1975, 1978), Canino (1980), Gallardo (1972), Cordasco (1977), and Bucchioni (1982). In addition, the English version of the SSS developed by Helms & Gable (1989) was examined. The items of the English version SSS were reviewed by a panel of bilingual (English/Spanish) judges selected on the basis of professional status, experience working with Puerto Rican school children and past migratory experiences (four are migrants, two have resided most of their lives on the mainland). This panel proceeded to translate the items on the English version of the SSS to Spanish and also to suggest new items independently.
The following sources of stress categories as presented by Helms (1985) were used: academic stress, peer interactions, teacher interactions, academic self concept. The following manifestations of stress categories were used: emotional, behavioral and physiological. Including the items on the English version of the SSS, eight to ten items were generated by the raters for each category.

The raters were then requested to formally review the categories and items. The following operational definitions were provided to them and they were requested to rate each item on how strongly they felt that the items belonged to the categories (strongly, not very strongly, not at all).

The Raters rated the following as Sources of Stress:

1) **Academic Stress:** Situations which relate to academic performance or achievement and may cause stress in children.

2) **Peer Interactions:** Children's interactions with peers and classmates in school.

3) **Teacher Interaction:** Children's interactions with teachers. These tend to be more of a personal nature rather than academic.

4) **Academic Self-Concept:** Children's feelings of self worth, self-esteem, or their self-concepts, with respect to their academic ability.
The Raters rated the following as Manifestations of Stress:

1) Emotional Manifestations: Represent mental feelings such as fear, shyness, loneliness.

2) Physiological Manifestations: Represent bodily reactions or functions such as nausea, shaking, or rapid heart beat.

3) Behavioral Manifestations: Represent actions, reactions or treatment of others such as striking out at others, being hurtful towards others or being disrespectful.

Items which did not receive majority agreement or were considered ambiguous or questionable by the judges were deleted or revised. The resulting 54 items were reviewed by three bilingual teachers representing each of the intended grades for readability for the intended population.

Content validity was further assessed by administering the 54 items to 18 children in grades 5, 7 and 9 selected by the School Social Worker as representative of the reading levels in each of the targeted grades. These children were asked to comment on the items following the administration. The results shall be presented in Chapter IV.

Construct Validity

The test was administered to 334 children in the targeted grades (5, 7 & 9) from two school districts. The survey was administered by the researcher. Students were
told that this was part of a study to find out what kind of school situations cause stress to Puerto Rican children and how they responded to these situations; all responses were anonymous. Teachers were requested to rate the students with respect to presentation of sources and manifestations of stress on the SBRS.

The data from the study was submitted to principal factor analysis followed by oblique rotation to examine the construct validity of the judgmental categories identified in the content validation. The 34 source items were analyzed separately from the 20 manifestations items. Of the original 334, 296 surveys were analyzed for sources and manifestations of stress after deleting outliers and incomplete responses. Items indicative of low stress were reverse-scored so that high scores reflected high stress.

Analysis of the sources of stress items revealed six factors which explained 80% of the total variance. Items which had factor loadings less than .40, or did not contribute to a meaningful factor structure were deleted (Gable, 1988; Nunnally, 1978). Two factors containing six items were also deleted because they did not relate to the initial categories. The remaining four factors contained 17 items which replicated the original categories from the content validation: academic self concept, peer interactions, teacher interactions, academic stress. The four factors with their respective items and factor loadings are presented in Table 1. Factor intercorrelations were
Factor intercorrelations ranged from .14 to .27 and were considered insufficient to form composites of factors as can be seen in Table 4.

Insert Table 4 about here

Internal Consistency Reliability

The internal consistency reliability of the four sources of stress factors and the three manifestations of stress factors was established using Cronbach’s Alpha (Cronbach, 1951). Item analysis data including response percentages, means, standard deviations and item/factor correlations were examined to identify the best items on psychometric basis. The alpha coefficients ranged from .67 to .72 for the sources of stress and from .57 to .75 for the manifestations of stress. Table 1 and Table 3 include each of the scales reliabilities as well as the item means and standard deviations.

Standard Progressive Matrices

The Standard Progressive Matrices was developed by Raven (1938) to measure a person’s ability to form perceptual relations and reason by analogy independent of language and schooling. This instrument was designed for use with persons ranging from age six years to adult according to Llubre (1984). The test is based on Spearman’s two factor theory of intelligence, which postulates that
every cognitive test measures a general factor (g) that is common to all cognitive tests and a specific factor (s) that is unique for each test. Spearman, according to Llabre (1984), conceptually defined (g) as the education of relations and correlates.

The test consists of 60 items arranged in five sets (A, B, C, D & E) of 12 items each. Each item contains a figure with a missing piece. Below each figure are either six or eight alternative pieces, presented to complete the figure, one of which is correct.

The principles involved in the five sets are described as (Llabre, 1984):

1) Completion of a pattern in a continuous figure.
2) Figural analogy in a two-by-two matrix.
3) Systematic alteration of a pattern in a three-by-three matrix.
4) Systematic permutations and synthesis of figural parts in a three-by-three matrix.

Reliability

Llabre (1984) documented 50 reliability studies of the Raven. Internal consistency studies using either the split-half method corrected for length or the KR20 estimates resulted in values ranging from .60 to .98 with a median of .90. Test-retest correlations range from a low of .46 for an eleven year interval to a high of .97 for a two day
interval. The median test-retest value is approximately .82 with time intervals ranging from a week to several weeks.

Validity

Construct Validity

Llabre (1984) described factor analytical methods which have been used to study the construct validity of Raven. The majority of these studies report loadings on a general factor (g) of .75. Research studies have shown the Raven to be influenced by a spatial factor. This spatial factor explains a lesser proportion of the test variance, and is less stable across studies.

Concurrent Validity

Concurrent validity (Llabre, 1984) studies between the Weschsler and Stanford Binet scales for English speakers range from .54 to .88 with the majority in the .70’s and .80’s. Correlations are lower with other non-verbal and performance tests of intelligence or vocabulary, where the typical value is below .70.

Overview of Statistical Treatment of Data

The statistical procedures used to test the hypotheses in the study shall be examined. Each hypothesis is restated followed by the particular statistical procedures used to test it.
TABLE 5

Frequency Distribution for the Demographic Characteristics of the Sample (N = 334)

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<tr>
<th>Variable</th>
<th>Frequency</th>
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<tr>
<td>Seventh</td>
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<tr>
<td><strong>Age</strong></td>
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<td><strong>Length of Residence on Mainland</strong></td>
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<td>Max</td>
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</tr>
<tr>
<td>(Note: males coded 1, females coded 2)</td>
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<td></td>
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<tr>
<td>Length of time in U.S.</td>
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<td>2</td>
</tr>
<tr>
<td>(Note: less than 1 yr. coded 1, more than 1 yr. coded 2)</td>
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</tr>
<tr>
<td>Family Composition</td>
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<td>2</td>
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<tr>
<td>(Note: intact families coded 1, single-parent coded 2)</td>
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</tbody>
</table>

Note: A key for the abbreviations used in this table may be found in Appendix F.
KEY TO TABLE ABBREVIATIONS

Demographic Variables
Age: Subject’s age
Gender: Subject’s gender (coded 1 for male, 2 for female)
Grade: Subject’s grade (coded 5 for fifth grade, 7 for seventh grade, and 9 for ninth grade)
Family Composition: (coded 1 for dual parent, 2 for single parent)
Length of Residence on Mainland: (coded 1 for one year or less, 2 for more than one year)
Ratot: Subject’s total score on Raven’s Standard Progressive Matrices (1938)

Psychological Precursors
ASC: Subject’s academic self concept as measured on SSS Spanish version (Mora, 1990)
ASS: Subject’s academic stress scale scores
TIS: Subject’s teacher interaction stress scale scores
PIS: Subject’s peer interaction stress scale scores
BRS1: Teacher’s rating of student’s level of presentation of symptoms of physiological manifestations of stress
BRS2: Teacher’s rating of student’s level of emotional manifestations of stress
BRS3: Teacher’s rating of student’s level of presentation of symptoms of behavioral manifestations of stress
BRS4: Teacher’s ratings of student’s experience of stressful interactions with peers
BRS5: Teacher’s ratings of student’s level of stressful interactions with family members
BRS6: Teacher’s rating of student’s level of academic stress