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Development and Initial Validation of the Student Rating of Environmental Stressors Scale

(StRESS): Stressors Faced by Students in Accelerated High School Curricula

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Abstract

High school students in accelerated curricula face stressors beyond typical adolescent developmental challenges. The Student Rating of Environmental Stressors Scale (StRESS) is a self-report measure of environmental stressors appropriate for students in Advanced Placement (AP) and International Baccalaureate (IB) courses. We developed the StRESS in parallel with a new measure of coping designed for this same population (Suldo, Dedrick, Shaunessy-Dedrick, Fefer, & Ferron, in press). Items were derived from sentiments expressed during focus groups and individual interviews with 177 students, 72 parents, and 47 teachers. Multiple iterations of expert review and item analyses focusing on conceptual clarity and comprehensiveness resulted in 75 items reflecting stressors across domains, including school, home, and peers. High school students in AP or IB ($N = 727$) completed the 75-item inventory. Exploratory factor analyses and additional item review indicated a five-factor solution with 32 items. Cronbach alpha reliabilities ranged from .67 to .88. Five additional items representing a composite of Major Life Events also were included. The five factors and Major Life Events composite had test-retest reliabilities greater than .70. These scores were related to multiple conceptualizations of stress, as well as academic outcomes (GPA and attendance) and mental health (life satisfaction and anxiety), thus supporting the construct validity of the StRESS scores. Further support for the five-factor structure of the StRESS was provided by results of a confirmatory factor analysis (standardized root mean square residual = .051, root mean square error of approximation = .048, comparative fit index = .900) with a separate sample of 2,193 AP and IB students.

Keywords: stress, environmental demands, accelerated programs, high school students, measure development

Development and Initial Validation of the Student Rating of Environmental Stressors Scale
(StRESS): Stressors Faced by Students in Accelerated High School Curricula

Beyond the normative challenges of adolescence, high school students in accelerated curricula such as the International Baccalaureate (IB) Program and Advanced Placement (AP) courses face additional stressors related to their academic context (e.g., increased workload, more high-stakes tests, pressure to achieve). Preliminary research on stressors experienced by this population suggested the need for a unique assessment tool that includes an extensive checklist of school-related requirements, such as time-intensive homework assignments and community service requirements (Suldo, Shaunessy, Thalji, Michalowski, & Shaffer, 2009). Therefore, Suldo et al. (2009) developed the Sources of Stress Inventory (SOSI). The SOSI consists of 48 items within seven factors that capture problems related to school, families, friends, sports, and new transitions such as employment and college. The SOSI items were based on sentiments expressed by 48 IB students from one school in a rural community. To ensure relevance to a larger population of students in college-level coursework—including AP—we used multiple and more diverse sources (IB and AP students, parents, and teachers from six schools in urban and suburban communities) to further inform the possible environmental stressors appropriate for high school students in accelerated curricula. The expanded list of stressors was used to create a major revision of the SOSI with the newly revised measure termed the Student Rating of Environmental Stressors Scale (StRESS). Below we summarize literature pertinent to conceptualizing stress among high school students pursuing accelerated coursework.

Academic Context: Students in Accelerated High School Programs

Advanced Placement and IB programs in high schools have grown tremendously in response to calls for more accelerated coursework, greater academic rigor, and college readiness

(Klopfenstein & Thomas, 2009). The number of public school graduates who took an AP exam grew from 18% in 2000 to 32.4% in 2012 (College Board, 2013c). From 2012 to 2013, the number of students taking AP exams increased 6% to more than 2.2 million (College Board, 2013b). Likewise, the IB Diploma program has experienced international growth. In 2000, schools in North, Central, and South America, offered approximately 800 IB Diploma programs; by 2013, the IB Diploma offerings in these regions grew to more than 2300 (IBO, 2013c). The United States offered 800 IB Diploma programs in 2013 (IBO, 2013a), with the largest concentration of IB programs in the Southeast, particularly Florida (Perna, May, Yee, Ransom, Rodriquez, & Fester, 2011).

Advanced Placement courses are typically offered on a course-by-course basis in 34 areas and are completed primarily by high school juniors and seniors (College Board, 2013a). The IB Diploma program is a liberal-arts curriculum spanning the junior and senior years; successful diploma attainment is based on standard internal benchmarks, such as an extended essay, a community service project, and minimum course grades and exam scores (International Baccalaureate Organization [IBO], 2013a, 2013b). In IB schools, freshmen and sophomores may be offered a pre-IB curriculum, and may also take AP classes as electives or as part of the recommended program of study. Likewise, AP courses are offered throughout the U.S. on a limited basis to freshmen and sophomores. End-of-course exams are an integral feature of both the IB Diploma program and AP classes, and are primary determinants in college credit decisions.

The pressure to complete extensive academic requirements associated with AP or IB courses within the limited number of study hours can overwhelm students (Taylor, Pogrebin, & Dodge, 2002). Research comparing students in general education to those in IB found that the

latter perceived a significantly higher level of general stress (Suldo & Shaunessy-Dedrick, 2013; Suldo, Shaunessy, & Hardesty, 2008), primarily due to their extensive academic requirements (Suldo et al., 2009).

Associations between Stress and Student Functioning

The inverse relationship between stress and positive academic and psychological functioning in adolescents is well-established. In longitudinal studies, high school students who reported more academic stressors, such as problematic interactions with teachers, incurred declines in their school grades (Liu & Lu, 2011), whereas students with low levels of perceived stress earned better grades and completed more years of formal education than their peers with higher stress levels (Schmeelk-Cone & Zimmerman, 2003). Greater stress also predicts and co-occurs with multiple forms of psychopathology, including anxiety and depression (Schmeelk-Cone & Zimmerman; Willemen et al., 2008). Prior research of IB students indicates the same pattern of associations between increased stressors (particularly those related to school) and diminished mental health (Suldo et al., 2009). However, in comparing the correlations between stress and mental health among IB students and among general education students, IB students appeared significantly more likely to exhibit psychopathology and academic problems when they experienced greater stress. Such findings suggest that IB students may be more sensitive to adverse effects of stress than general education high school students, underscoring the need to further study and monitor stress among students in accelerated curricula.

Conceptual Frameworks of Stressors for High School Students in Accelerated Curricula

We operationalized stress in line with the environmental model, which views stress as external to a person, and includes threats of immediate harm or aversive environmental conditions. Environmental stress is typically assessed using checklists of events. This

conceptualization differs from the medical model, which focuses on physiological indicators, or the psychological model, which emphasizes global self-reports of perceived distress that are heightened when one's demands (environmental stressors) are perceived to exceed one's coping resources (McNamara, 2000). The events of most relevance to a given population vary as a function of the context, such as life stage (e.g., adolescence) and environment (e.g., accelerated curriculum).

Frydenberg (2008) posits that adolescent stressors span concerns about achievement, relationships, and social issues. One of the most well-established inventories of such stressors is the Adolescent Perceived Events Scale (APES; Compas, Davis, Forsythe, & Wagner, 1987), which includes numerous (164 to 210 depending on age group) major events (e.g., parent getting married) and daily stressors (e.g., having few or no friends), which are presented together due to discrepancies in youth perceptions of events as major or daily. Composite scores from such inventories can be aggregated to form a single stress index (e.g., Holmes & Rahe, 1967) in line with the notion that discrete stressful situations do not necessarily occur together, but the greater the accumulation of stressors experienced (regardless of in which domain), the worse the implications for functioning. Another analytic approach entails first categorizing the stressors into domains of context, such as family events, peer events, and academic events as in the APES (Wagner & Compas, 1990), and examining mean scores on items in that domain. More contemporary (and efficient) inventories for students include the 58-item revised Adolescent Stress Questionnaire (ASQ; Byrne, Davenport, & Mazonov, 2007) and the 48-item SOSI (Suldo et al., 2009). The ASQ was developed for typical high school students, while the SOSI is the only measure with items reflecting the unique experiences of IB students. Both the SOSI and the revision of the ASQ used exploratory factor analysis (EFA) to identify the underlying domains

that account for responses to the individual stress items. We set out to revise the SOSI so that it contained (a) daily stressors experienced by both AP and IB students, and (b) major events that are important to include in a comprehensive inventory but which we did not expect to load on empirically-derived factors because major events do not necessarily co-occur with other stressors (e.g., health issues and separation/divorce of parents).

To guide our item development work, we consulted Frydenberg's (2008) synthesis of literature and more recent instrument development efforts grounded in sentiments expressed by high school students (Byrne et al., 2007; Suldo et al., 2009) in order to identify a broad range of stressors. Our review of this prior research indicated variability in number and content of domains; we pulled together an initial set of 12 categories of environmental stressors to facilitate the coding of qualitative information. Achievement-related categories included problems pertinent to (a) academic requirements, (b) academic struggles, (c) school attendance, (d) future-oriented decisions, and (e) extracurricular activities. Relationship-related stressors included problems with (f) peers, (g) parents, and (h) within families, including between parents or siblings. Social issues included problems within students' overarching contexts, including in the (i) exosystem (community and school) and (j) macrosystem (society and culture). The last two categories were financial in nature: (k) insufficient monetary resources and (l) employment-related concerns that accompany emerging adult responsibilities.

Study Aims

Three studies were conducted as part of the development and initial validation of the StRESS. In Study 1, we created an item pool that reflects the wide range of stressors and major events faced by high school students pursuing two accelerated curricula—AP and IB—as reported by students and observed by teachers and parents. In Study 2, we administered this item

pool and a battery of related instruments to a separate sample of 727 AP/IB students in order to provide initial validation of the StRESS, which is a major revision and expansion of the SOSI. We selected an exploratory approach to examine the underlying factor structure because of (a) uncertainties in our theoretical expectations regarding the broad domains of stressors among AP and IB students, (b) general recommendations to use EFA in initial factor analytic work when there are questions about the number of underlying factors (Stevens, 2009), (c) established practice in the initial evaluation of revised stress inventories (Byrne et al., 2007), and (d) our plan to gather a new AP/IB sample in the upcoming year that could be used to confirm the structure indicated by the EFA (i.e., Study 3). The resulting StRESS factor scores were then examined in relation to (a) alternate measures of stress and (b) academic and psychological outcomes. Because psychological perceptions of stress are in part a function of the environmental demands faced, we expected each StRESS factor (reflecting daily stressors in a particular domain) to yield significant, positive associations with global distress. Given content overlap, we also anticipated a positive correlation between the StRESS major events composite and the Life Events Checklist (Johnson & McCutcheon, 1980). Based on literature linking stress to poor outcomes, we anticipated that students with higher StRESS scores would have lower life satisfaction, greater psychopathology, and less academic success (i.e., grades earned in classes, school attendance). In Study 3, we conducted a confirmatory factor analysis of the StRESS based on the structure indicated in Study 2, with data from a separate sample of 2,193 AP and IB students.

STUDY 1: ITEM POOL DEVELOPMENT

Method

Participants

Students, parents, and educators from six high schools in three large public school districts (one AP site and one IB site per district) in Florida agreed to take part in a larger project that included development of item pools for measures of stressors and coping (Suldo, Dedrick, Shaunessy-Dedrick, Fefer, & Ferron, in press).

Student focus groups. We invited all students from two AP/IB classes per school (total of 12 classrooms purposefully spread across grades 9 – 12) to participate. We held 24 focus groups (3 - 6 per school; $M = 4$) with 147 students (see Table 1 for sample demographics).

Student individual interviews. We held individual interviews with 30 AP/IB students (3 – 9 per school) identified by their school administrator as either excelling (50%) or struggling (50%) in their academic program.

Parent focus groups. School leaders invited parents of AP/IB students to participate in focus groups. We conducted 17 focus groups (1-8 per school; $M = 2.8$) with 72 parents of 96 children (1-3 AP/IB children per parent participant) who were enrolled in or recently graduated from the school's AP or IB program. For three students, two parents participated.

Educator focus groups. School leaders recruited AP or IB teachers and guidance counselors to take part in focus groups. We held six focus groups (one per school) with 47 educators.

Expert panel review. We convened a national panel of five consulting experts in stress and coping, gifted education, and/or measurement from five major U.S. research universities.

Student pilot study. Participants were drawn from the AP and IB sites from one of the participating districts. We invited all students in two AP/IB classes from each school (total of 4 classrooms purposefully spread across grade levels) to give feedback on the readability and relevance of the developed items. Fifty-six students participated (see Table 1).

Procedures

Item generation. We conducted all interviews and focus groups in fall 2010. First, we distributed a consent form that explained the project and incentives (i.e., student focus group participants: pre-paid movie pass and entry into a class-wide raffle for a \$50 gift card; student interview participants: \$10 gift card; parents and teacher focus group participant: \$25 gift card). Students with signed parent consent forms were assigned to focus groups based on shared availability in school schedules (3 to 8 students per group, $M = 6.1$). Educator focus groups were limited to the first 10 individuals available immediately after school on a specified date (6 to 9 educators per group, $M = 7.8$). Caregivers available at specified times in the afternoons and evenings (2 to 7 parents per group, $M = 4.1$) comprised the parent focus groups. While we utilized convenience sampling strategies to recruit participants for focus groups, we purposefully recruited students for individual interviews. Specifically, school leaders reflected on the pool of all AP or IB students in grades 10 – 12 at their school, and sought students who most stood out as being either particularly successful in academic and/or social-emotional functioning, or struggling in one of these areas. All participants provided written assent (students) or consent (adults) to participate and be audio recorded.

Seven members of the research team (2 faculty members, 5 graduate student research assistants) were involved with the focus groups and interviews. Each focus group was conducted by a facilitator and note-taker. Participants reported (a) situations or events that cause AP and IB students stress and (b) behaviors that AP and IB students exhibit in response to school-related stressors (results reported in Suldo et al., in press). We listened to each of the 77 audio files (2 researchers per file) and independently classified participants' sentiments into the aforementioned 12 initial categories of stressors. The codebook was iteratively revised and

updated, including the addition of a 13th category that emerged from participant responses: problems with own physical health and development. The team then drafted at least two items for each stressor category, in many cases using the words expressed in the focus groups and interviews. Items from the SOSI were considered for inclusion pending consistency with sentiments expressed by the current sample. The number of items written for a given category varied as a function of the frequency in which a relevant sentiment emerged in the qualitative work, and the breadth of the category.

Item review. In early spring 2011, the expert panel reviewed the developed items for comprehensiveness, clarity, and redundancy.

Pilot. Recruitment procedures were identical to those described for student focus groups. In spring 2011, groups of 5 – 15 AP/IB students with parent consent and student assent independently completed a measure of stressors that contained the retained items. The five-point response scale ranged from 1 (*Never*) to 5 (*Almost Always*). We asked students to circle any words or phrases that were unclear or potentially confusing. Immediately upon completion, we solicited feedback from small groups using cognitive interviewing procedures (Willis, 1999). Students discussed the clarity of the survey instructions, response options, circled items, and the comprehensiveness of the measure.

Results

Item Generation

After reviewing the audio files, we developed 102 items across the 13 stress categories. Seven categories (e.g., school attendance, future-oriented concerns) had three to six items each. The categories represented with the most items included problems within the family (10 items), peer relations and parent-child relations (11 items each), academic struggles (16 items) and

academic requirements (20 items). Five additional items were written to capture other frequently-mentioned stressors that did not fit into any of the initial 12 categories (e.g., health problems). Although most items were derived primarily from current participants' words used to describe AP and IB students' stressors, 38% of the items were identical to ($n = 7$), or adapted from ($n = 32$), items in the SOSI. For example, "Conflict or arguments with teacher(s)" was adapted from "Poor relationships with teachers (e.g., teachers yell, accuse)."

Item Review

Following the expert panel's feedback, we deleted 26 of the 102 items, primarily in an attempt to ensure the retained items reflected environmental stressors as opposed to symptoms of personal distress, internal skills/resources, or maladaptive coping responses (Grant et al., 2003). For example, we deleted "Worrying about what the future holds" and "Negative feelings or worrying about your appearance," which were identified as stressors in the interviews, but may be confounded with emotional distress. We revised approximately half of the remaining items in order to increase clarity and ensure that each stressor was external to the student. One item was added to ensure adequate exploration of the cultural issues category, resulting in a 77 item measure.

Pilot

Following students' feedback, we deleted two items and made slight modifications to a few other items. Students did not recommend the addition of other items.

Final Item Pool

Sample items are included in Table 2. A complete list of the 75 items is available upon request from the authors. These items include a number of stressors that were identified previously in the development of the SOSI (approximately 43% overlap in item content; $n = 5$

identical items, $n = 27$ adapted items), reaffirming the generality of these stressors. The remaining 43 items were newly created and reflect types of stressors that were not identified in earlier qualitative work with rural IB students, such as problems related to finances or culture, as well as additional examples of school-related stressors (e.g., “Traveling a long way to school”).

STUDY 2: PSYCHOMETRIC PROPERTIES OF THE StRESS

Methods

Participants

We administered the 75 stress items, several self-report measures used as part of the validation process, and the Coping with Academic Demands Scale (CADS; Suldo et al., in press) to 415 AP and 312 IB students across six high schools (range = 85 to 160 participants per school). Participants’ ages ranged from 14 to 18 ($M = 16.20$, $SD = 1.19$); 18% qualified for free or reduced-price school lunch. The most common parent educational level was a college degree for mothers (43%) and fathers (37%). Sample characteristics are provided in Table 1.

Procedures

Three school districts (two from Study 1) each contributed one IB and one AP site, for a total of six public high schools (none of which had participated in Study 1). In the spring of 2011, we recruited from two classes of approximately 25 students per grade level per school, yielding eight classes per school. Recruitment procedures were identical to those described for student focus groups. The approximate participation rates across schools ranged from 43% to 89% ($M = 61\%$).

Data collection. From March to May of 2011, students with parent consent were gathered into groups of approximately 10 to 50 during the school day. We secured written assent, administered a brief demographic form, and read aloud instructions and example survey items to

model answering Likert-style questions on the StRESS. Participants completed a battery of measures—including those described below—at their own pace (most finished within 45 minutes). We administered four versions of the survey packets to limit possible order effects. We remained available to answer questions and monitor students' completion of the survey packet until all students completed the surveys. A subsample of 103 participants from two schools (one AP, one IB) completed the StRESS two to four weeks later to determine test-retest reliability. Unweighted cumulative high school grade point averages (GPA) and attendance (an indicator of academic engagement) came from school records.

Measures

StRESS. We developed the 75 items in Study 1, and note in Table 2 which retained items were identical to, or modified from, the SOSI. The measure began with these instructions:

Listed below are events or situations that may be stressful for students. Please think about your experience with each event or situation this school year. Mark how often you have experienced the event or situation this school year. For example, if you have not experienced the event or situation this school year, bubble in 1 for “*Never Happened*,” but if the event or situation seems to happen every day or every week, bubble in 5 for “*Almost Always Happened*.”

Students responded using the following scale: 1 (*never*), 2 (*rarely*), 3 (*sometimes*), 4 (*frequently*), and 5 (*almost always*).

Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). The original PSS includes 14 items that measure perceptions of global stress, including the degree to which individuals perceive their circumstances as exceeding their coping resources. In support of construct validity, Cohen and colleagues (1983) found that PSS scores were more strongly

related to college students' *perceived impact* of cumulative stressors, than to the simple *total number* of stressors experienced. In line with the psychological model's conceptualization of stress, we administered a 6-item version that consists of the negatively-worded items that reflect perceived distress, a composite confirmed recently in large samples as "capturing overall feelings of general distress stemming from perceptions of overwhelming and uncontrollable life circumstances" (Lavoie & Douglas, 2012, p. 54). Respondents indicated on a scale ranging from 1 (*never*) to 5 (*very often*) how many times in the last month they had, for example, "felt nervous and 'stressed.'" Suldo, Shaunessy, and Hardesty's (2008) prior research with high school students indicated that the 6-item PSS demonstrated strong internal consistency ($\alpha = .91$) and convergent validity through large correlations with indicators of students' mental health. In the current study, $\alpha = .86$.

Life Events Checklist (LEC; Johnson & McCutcheon, 1980). The complete LEC includes 48 items, and respondents indicate whether or not they have experienced each stressor within the past year. We administered only the 18 dichotomous items that describe acute, major events. Summed scores range from zero to 18, with higher numbers indicating more frequent experiences of major life events (e.g., "Death of a close friend," "Mother or father lost job," "Parents divorced"). Suldo and Huebner's (2004) earlier research with the 18-item LEC indicated that a sum score yielded meaningful relationships with youth psychological functioning. Internal consistency of the LEC composite is not applicable, as different types of stressors pertinent to changes in health, family composition, and employment do not necessarily co-occur. Yang, Chiu, Soong, and Chen (2008) reported strong test-retest reliability ($ICC = .86$) for the total number of negative life events that adolescents reported at two time points separated by two weeks.

Students' Life Satisfaction Scale (SLSS; Huebner, 1991). The SLSS is a frequently-used measure of children's overall subjective well-being, a positive indicator of mental health. Students indicate their agreement with seven items (e.g., "I am pleased with my life") using a 6-point scale from 1 (*strongly disagree*) to 6 (*strongly agree*). After reverse-scoring two items, higher mean scores represent greater life satisfaction. Good internal consistency has been obtained among high school students ($\alpha = .89$; Suldo, McMahan, Chappel, & Bateman, 2014). Huebner (1991) has reported high test-retest reliability (.74 after 2-weeks and .64 after 4 weeks) and support for convergent validity via strong associations ($r > .50$) with other self-report measures of youth life satisfaction. In the current study, $\alpha = .87$.

Multidimensional Anxiety Scale for Children-10 (MASC-10; March, 1997). Other researchers developing measures of academic stressors in adolescents have established construct validity via moderate, significant correlations with clinical anxiety (Ang & Huan, 2006). The MASC-10 is a self-report of various symptoms of anxiety in youth. Respondents indicate from 0 (*never true about me*) to 3 (*often true about me*) the degree to which they endorse statements that reflect symptoms of four anxiety dimensions assessed by the MASC (the psychometrically-sound 39-item measure from which the MASC-10 is derived): physical symptoms, harm avoidance, social anxiety, and separation/panic. Following factor-analytic procedures, the 10 items with the highest loadings on the four MASC anxiety dimensions were retained in the MASC-10 (March, 1997). March (1997) reported a correlation of .90 between the MASC-10 and the complete MASC Total Anxiety scores, a test-retest correlation of .83 over a three-month interval, and internal reliability coefficients ranged from .64 to .69 for females and from .65 to .71 for males in the standardization sample. In the current study, $\alpha = .76$.

Results

Internal Structure

Exploratory factor analyses (EFA) of the correlation matrix using principal axis factoring and promax (oblique) rotation (factors were hypothesized to be correlated) were conducted in SPSS Version 21 (item-level correlation matrix is available on request). Multiple criteria were used to identify the number of factors to extract (i.e., eigenvalues greater than one, examination of the scree plot, parallel analysis, and the minimum average partial [MAP] correlation test) and several solutions were considered as part of the process of identifying a parsimonious factor solution that was theoretically and statistically meaningful. Using the results of the EFAs, item analyses, and evaluations of the items by the research team, items were dropped that (a) did not relate to any of the emerging factors (i.e., pattern coefficient $< .30$), (b) cross-loaded on more than one factor (i.e., pattern coefficient $\geq .30$ on two or more factors), (c) formed a factor that contained two items or less, or (d) were redundant with other items within a factor, and when items were removed did not negatively impact internal consistency reliability (Cronbach's alpha). These procedures are consistent with guidance offered by Smith and McCarthy (1995) regarding the establishment of internal consistency and content homogeneity in the refinement of assessment instruments. Once we dropped items we repeated the factor analyses and subsequently reviewed items using the criteria listed above. This process resulted in a final pool of 32 items.

These 32 items were factor analyzed using principal axis factoring and promax rotation. Based on a sample of 676 with complete data on all items, the eigenvalues greater than one criterion and scree plot suggested seven factors while parallel analysis and the MAP test each indicated five factors. We considered solutions with five, six, and seven factors and selected the five factor solution as the most theoretically and statistically meaningful. These five factors

accounted for 49.6% of the total variance. Table 2 presents items, along with their pattern and structure coefficients for the five-factor solution. All items had pattern coefficients $\geq .30$ on only a single factor. Table 2 also includes five additional items that were retained in the instrument because they assessed discrete major life events that although not conceptually related to each other, are typically included on measures of stress (e.g., family move).

Table 3 displays descriptive statistics and reliability values for the five factors and major life events composite. Mean scores were created for participants with responses on at least two-thirds of the items on a scale. Alpha values were satisfactory ($\geq .70$) for four factors and borderline acceptable for Academic and Social Struggles ($\alpha = .67$). Alpha for the Major Life Events composite is not reported because these stressors do not necessarily co-occur. Test-retest reliability coefficients ranged from .71 (Major Life Events) to .89 (Parent-Child Conflict). The most frequently encountered source of stress involved Academic Requirements and the least frequently encountered sources pertained to Cultural Issues and Major Life Events. Intercorrelations between the StRESS scales were small to moderate in magnitude (see Table 4).

Construct Validity of the StRESS Scores

Other stress indicators. Table 4 includes the correlations between the StRESS scores and the Perceived Stress Scale (PSS) and Life Events Checklist (LEC). The PSS yielded a large association with Academic Requirements, and moderate associations with Parent-Child Conflict, Financial Problems, and Academic and Social Struggles. Positive associations between the PSS and Cultural Issues and Major Life Events were statistically significant, but small in magnitude. The correlation between the LEC and Major Life Events was strong. The LEC also yielded a moderate correlation with Financial Problems, and small but significant associations with the remaining factors.

Mental health outcomes. Greater stress in all six areas, particularly Parent-Child Conflict, was associated with reduced life satisfaction (SLSS). Anxiety symptoms (MASC-10) increased with more frequent stress in four areas (Academic Requirements, Financial Problems, Parent-Child Conflict, and Major Life Events) but were unrelated to Cultural Issues and Academic and Social Struggles.

Academic adjustment. Lower grades (GPAs) co-occurred with more stress in four areas: Parent-Child Conflict, Major Life Events, Academic and Social Struggles, and Cultural Issues. In contrast, students who reported more Academic Requirements stressors had higher GPAs. More absences from school co-occurred with higher StRESS scores in three of six areas: Academic and Social Struggles, Financial Problems, and Major Life Events.

STUDY 3: CONFIRMATION OF FACTOR STRUCTURE

Method

Participants

As part of a larger project, the StRESS and several additional self-report measures not relevant to the purposes of this study were administered to 2193 AP and IB students across 20 high school programs (range = 78 to 169 per school). Participants' ages ranged from 13 to 19 ($M = 15.93$, $SD = 1.23$); 28.5% qualified for free or reduced-price school lunch. The most common parent educational level was a college degree for mothers (41.0%) and fathers (32.3%). Table 1 presents other sample characteristics.

Procedures

Five school districts each contributed two IB and two AP sites, from 19 public high schools (one school had an IB and AP program with no overlap in students). Ten of the 20 programs participated in Study 1 or Study 2, but no students retained in Study 3 were included in

the exploratory sample (Study 2). Participant recruitment procedures were as described for student focus groups. Participation rates across schools ranged from 32% to 84% ($M = 62\%$). Data were collected from February to May of 2012.

Results

Confirmatory factor analysis (CFA) was used to evaluate the five-factor structure that was indicated by the EFA in Study 2. The CFA was fit using maximum likelihood estimation procedures in *Mplus* 7.11 (Muthén & Muthén, 1998-2012). The amount of missing data was minimal (95.85% of sample had complete data; 3.65% missed 1 item, 0.36% missed 2 items, 0.14% missed 3 items), and was handled via full-information maximum likelihood estimation within *Mplus*. We evaluated fit of the data to the hypothesized five-factor model using statistical criteria (χ^2 , standardized root mean square residual [SRMR], root mean square error of approximation [RMSEA], and comparative fit index [CFI]) along with conceptual judgment that reflects theoretical relationships. A significant χ^2 suggests the model is not strictly correct, but with large sample sizes models that provide useful approximations can yield significant χ^2 values. Thus, we focused on the descriptive measures of fit using cutoff values for acceptable fit of SRMR < .08, RMSEA < .06, and CFI \geq .90.

For the original five-factor hypothesized model, model fit was as follows: SRMR = .054, RMSEA = .058, CFI = .851, $\chi^2(454, N = 2193) = 3829.83, p < .001$. Because the CFI < .90, we looked at modification indices (for further discussion, see Schmitt, 2011) in terms of their size and conceptual meaning. One modification at a time was made until model fit reached marginally acceptable fit. We ultimately allowed nine pairs of item errors to co-vary. Eight pairs involved items from the same factor with conceptual similarities. Items 29, 30, and 37 (Academic Requirements factor) all pertained to not enough time for various activities (*rs*

between pairs of item residuals = .28, .29, 31). In the Parent-Child Conflict factor, the residual from Item 22 correlated .19 with residuals from other items regarding conflict specific to schooling (Items 8 and 34). In Academic Requirements, the residual from Item 22 correlated .19 with residuals from other items pertinent to challenges in the classroom environment (Items 8 and 34). In the Academic and Social Struggles factor, Items 24 and 25 ($r = .38$) each tap school-level problems. The pair that spanned two factors, Items 6 and 22 ($r = .21$), both referenced “high expectations for achievement” albeit from different sources (school program reputation vs. parents).

Fit statistics for this revised model were improved—SRMR = .051, RMSEA = .048, CFI = .900, $\chi^2(445, N = 2193) = 2703.43$. Table 2 includes the standardized factor loadings from the CFA. Parameter estimates from the original CFA were highly similar: identical for 10 items, < .10 magnitude different for the other 22. An examination of the standardized factor loadings indicates that all items served as valid indicators (loadings $\geq .30$) of their particular scale. Table 4 presents intercorrelations between the manifest variables created by averaging participants’ scores on items within a scale. Correlations were similar in magnitude to coefficients obtained in Study 2.

Discussion

This research yielded the StRESS, a 37-item self-report instrument measuring six domains of environmental stressors faced by high school students in accelerated coursework, specifically AP and IB. Our large and diverse sample affords increased confidence in the understanding of stressors most likely to be faced by this population. Despite being developed with prior relevant scale development work in mind, 51% of the StRESS items are novel and reflect sentiments not represented on the only other measure developed for IB students (i.e.,

SOSI; Suldo et al., 2009). Comparisons of pattern coefficients from the EFA with the standardized factor loadings from the CFA indicate the values for the empirically-identified factors appear to be relatively stable across the two samples and analyses.

Stressors Faced by Students in AP and IB

Across two large independent samples, the StRESS factor with the highest mean was Academic Requirements. This finding extends the salience of academic stressors to students in AP classes, and expands the specific academic stressors beyond the items in the SOSI. The contexts reflected in the other StRESS factors suggest that AP and IB students' lives are complicated by more than management of their numerous academic demands. Their environmental stressors also include challenging family and other social relationships, concerns about finances, and school-related issues involving cultural insensitivity. The latter two factors are sources of stress that did not emerge in prior research limited to students in one rural school's IB program (Suldo et al., 2009). The sample used in the SOSI item development procedures largely consisted of White youth (77% of participants) of average to high SES (only 6% were eligible for free/reduced-price lunch). The considerable diversity in our item pool development samples likely enabled the detection of stressors pertinent to money (although the financial concerns voiced may also reflect the recent economic recession) and culture.

The factors that were empirically identified were fewer in number and appear broader in nature than the initial groupings we used to code the qualitative responses, suggesting that that some of our initial coding categories shared commonalities. Academic Requirements encompassed schoolwork demands and stress related to extracurricular activities; AP/IB students likely face challenges balancing success across performance domains. A review of the items in Academic and Social Struggles suggests that students with peer and academic concerns may

experience stress when navigating systems, from relational dyads to schools. Finally, Major Life Events includes items that reflect familial problems, such as a change in the family structure and/or relocation, as well as physical health problems.

Some of the stressors identified in previous research are not represented in the StRESS. Stress pertinent to emerging adult responsibilities pertains primarily to employment, and items pertaining to after-school jobs were not applicable to most students in our sample. Our attempts to advance an inventory of environmental stressors (which excludes items confounded with general distress [Grant et al., 2003]) appropriate for use with all high school students in college-level courses likely precluded representation of items related to future-oriented concerns and local/community issues. The former category entails decision-making for future employment or education; concerns about college were not endorsed similarly across grade levels; thus, we excluded items reflecting diffuse worry about the future because of our conceptualization of stress as external/environmental. Local/community issues, which include classroom and regional stressors, were also of varying saliency across school context.

Construct Validity of the StRESS

Preliminary support for the psychometric properties of the StRESS is promising. Test-retest reliability of the six StRESS scores was strong, indicating that students' self-reports of the frequency with which they experience various environmental stressors are relatively stable across a few-week period. Internal consistency of the five empirically-derived StRESS factors was mostly satisfactory (value for Academic and Social Struggles was less than ideal). Content validity was supported through the rigorous process used in developing and refining the StRESS items. Our confidence in the empirically-derived five factors is enhanced by the confirmation of the factor structure in a large, independent sample. Construct validity was supported through

associations with existing measures of stress as conceptualized in the environmental model (the LEC) and the psychological model (the PSS), and associations with academic adjustment and mental health. We expected inverse associations between stress and desirable adolescent outcomes. As anticipated, more stress in all domains co-occurred with diminished wellness, as indicated by reduced life satisfaction. Further, symptoms of mental health problems (specifically, anxiety) co-occurred with greater stress in most areas, particularly Academic Requirements. Students with the best academic adjustment, as indexed by higher course grades and/or fewer absences, reported the least stress in all areas except Academic Requirements. The small positive correlation with GPA is in line with past research in which more stress in this domain yielded null ($r = .02$, ns) or positive ($r = .23$, $p < .05$) associations with GPA among students in IB and general education, respectively, which lead the researchers to speculate on the possible facilitative role of high academic demands (Suldo et al., 2009).

Study Limitations

Schools and participants were drawn from a single Southeastern state and were not randomly selected. Participation was limited to students with written parent permission. The StRESS should be examined in additional samples from more diverse regions, using more sensitive indicators of academic success (e.g., performance on end-of-course AP and IB exams) and mental health (e.g., narrow-band measures of depression) in order to determine which sources of stress predict risk and success. Our attempts for breadth in the measurement of stressors experienced by students in accelerated high school curricula created limitations in the measure. The factors measured by the StRESS are too broad to be useful in studies of specific stressors. For example, a researcher interested in the stress associated with mathematics tests would need a more narrowly defined measure than what is provided by the StRESS and its

global Academic Requirements factor. The results of the confirmatory factor analysis identified several correlated errors between pairs of items suggesting the possible presence of minor factors in addition to the major factors measured by the StRESS. Additional research is needed to determine if these correlated errors will replicate when the StRESS is used with new samples.

Implications for Research and Practice

We anticipate the StRESS may be useful in future research with high school students in accelerated courses, particularly AP and IB. Researchers could identify normative levels of stress in this group, or elucidate the sources of student stress educators may need to monitor most closely. The StRESS could also be used in research to identify (a) the conditions under which academic demands function as a positive form of stress, or at least are not harmful, or (b) moderators that protect students from exhibiting poor outcomes in response to Academic Requirements. For instance, Hystad, Eid, Laberg, Johnsen, and Bartone (2009) identified low levels of personal hardiness as a condition under which college students' academic stress related to poor outcomes (health complaints).

The StRESS provides educators with a comprehensive tool to examine the stressors faced by students in AP and IB. Educators can use the StRESS to identify baseline levels of students' mean stress levels in the domains relevant to this population. In the event elevated scores are identified for groups (e.g., freshmen) or individual students, educators can take action to improve these students' psychosocial outcomes via a combination of (a) direct efforts to reduce the stressors, (b) provision of additional supports to offset the adverse effects of stressors, and (c) instruction in coping strategies to deal with stressors effectively.

References

- Ang, R. P., & Huan, V. S. (2006). Academic expectations stress inventory: Development, factor analysis, reliability, and validity. *Educational and Psychological Measurement, 66*, 522-539. doi: 10.1177/0013164405282461
- Byrne, D. G., Davenport, S. C., & Mazonov, J. (2007). Profiles of adolescent stress: The development of the adolescent stress questionnaire (ASQ). *Journal of Adolescence, 30*, 393-416. doi:10.1016/j.adolescence.2006.04.004
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396. doi:10.2307/2136404
- College Board (2013a). *AP Courses*. Retrieved from <https://apstudent.collegeboard.org/apcourse>
- College Board (2013b). *AP Program Participation and Performance Data 2013*. Retrieved from <http://research.collegeboard.org/programs/ap/data/participation/2013>
- College Board (2013c). *9th Annual AP Report to the Nation*. Retrieved from <http://media.collegeboard.com/digitalServices/pdf/ap/rtn/9th-annual/9th-annual-ap-report-appendix-a.pdf>
- Compas, B. E., Davis, G. E., Forsythe, C. J., & Wagner, B. M. (1987). Assessment of major and daily stressful events during adolescence: The Adolescent Perceived Events Scale. *Journal of Consulting and Clinical Psychology, 55*, 534-541. doi: 10.1037/0022-006X.55.4.534
- Frydenberg, E. (2008). *Adolescent coping: Advances in theory, research, and practice*. New York, NY: Routledge.
- Grant, K. E., Compas, B. E., Stuhlmacher, A. F., Thurm, A. E., McMahon, S. D., & Halpert, J. A. (2003). Stressors and child and adolescent psychopathology: Moving from markers to

- mechanisms of risk. *Psychological Bulletin*, *129*, 447-466. doi: 10.1037/0033-2909.129.3.447
- Holmes, T. H., & Rahe, R. H. (1967). The Social Readjustment Rating Scale. *Journal of Psychosomatic Research*, *11*, 213-218.
- Huebner, E. S. (1991). Initial development of the Students' Life Satisfaction Scale. *School Psychology International*, *12*, 231-240. doi:10.1177/01430343911123010
- Hystad, S. W., Eid, J., Laberg, J.C., Johnsen, B. H., & Bartone, P. T. (2009). Academic stress and health: Exploring the moderating role of personality hardiness. *Scandinavian Journal of Educational Research*, *53*, 421-429. doi: 10.1080/00313830903180349
- International Baccalaureate Organization (2013a). *IB World School Statistics*. Retrieved from <http://www.ibo.org/facts/schoolstats/progsbycountry.cfm>
- International Baccalaureate Organization (2013b). *The IB Diploma Programme*. Retrieved from <http://www.ibo.org/diploma/>
- International Baccalaureate Organization (2013c). *Programme Growth Statistics*. Retrieved from <http://www.ibo.org/facts/schoolstats/growth.cfm>
- Johnson, J. H., & McCutcheon, S. (1980). Assessing life stress in older children and adolescents: Preliminary findings with the Life Events Checklist. In I. G. Sarason & C. D. Spielberger (Eds.), *Stress and Anxiety* (Vol. 7, pp. 111-125). Washington, D. C.: Hemisphere Press.
- Klopfenstein, K., & Thomas, M. K. (2009). The link between Advanced Placement experience and early college success. *Southern Economic Journal*, *75*, 873-891. Retrieved from <http://go.galegroup.com.ezproxy.lib.usf.edu>
- Lavoie, J. A., & Douglas, K. S. (2012). The Perceived Stress Scale: Evaluating configural, metric and scalar invariance across mental health status and gender. *Journal of*

- Psychopathology and Behavioral Assessment*, 34, 48-57. doi:10.1007/s10862-011-9266-1
- Liu, Y., & Lu, Z. (2011). Longitudinal analysis of Chinese high school student's stress in school and academic achievement. *Educational Psychology: An International Journal of Experimental Educational Psychology*, 31, 723-729. doi: 10.1080/01443410.2011.600245
- March, J. (1997). *Manual for the Multidimensional Anxiety Scale for Children (MASC)*. North Tonawanda, NY: Multi-Health Systems.
- McNamara, S. (2000). *Stress in young people: What's new and what can we do?* New York: Continuum.
- Muthén, L. K., & Muthén, B. O. (1998-2012). *Mplus user's guide*. Seventh Edition. Los Angeles, CA: Muthén & Muthén.
- Perna, L. W., May, H., Yee, A., Ransom, T., Rodriguez, A., & Fester, R. (2011). The potential role of the International Baccalaureate (IB) Diploma programme in improving academic preparation for college for all students. The Consortium for Policy Research in Education. Retrieved from <http://www.cpre.org/ib>
- Schmeelk-Cone, K., & Zimmerman, M. (2003). A longitudinal analysis of stress in African-American youth: Predictors and outcomes of stress trajectories. *Journal of Youth and Adolescence*, 32, 419-430. doi:10.1023/A:1025934301468
- Schmitt, T. A. (2011). Current methodological considerations in exploratory and confirmatory factor analysis. *Journal of Psychoeducational Assessment*, 29, 304 – 321. doi: 10.1177/0734282911406653
- Smith, G. T., & McCarthy, D. M. (1995). Methodological considerations in the refinement of clinical assessment instruments. *Psychological Assessment*, 7, 300-308.
- Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences* (5th ed.). New York:

Routledge.

- Suldo, S. M., & Huebner, E. S. (2004). Does life satisfaction moderate the effects of stressful life events on psychopathological behavior during adolescence? *School Psychology Quarterly, 19*, 93-105. doi: 10.1521/scpq.19.2.93.33313
- Suldo, S. M., Dedrick, R. F., Shaunessy-Dedrick, E., Fefer, S. A., & Ferron, J. (in press). Development and initial validation of the Coping with Academic Demands Scale (CADS): How students in accelerated high school curricula cope with school-related stressors. *Journal of Psychoeducational Assessment*. doi: 10.1177/0734282914552165
- Suldo, S. M., McMahan, M. A., Chappel, A. M., & Bateman, L. P. (2014). Evaluation of the Teacher-Student Relationship Inventory in American high school students. *Journal of Psychoeducational Assessment, 32*, 3-14. doi: 10.1177/0734282913485212
- Suldo, S. M., & Shaunessy-Dedrick, E. (2013). The psychosocial functioning of high school students in academically rigorous programs. *Psychology in the Schools, 50*, 823-843. doi: 10.1002/pits.21708
- Suldo, S., Shaunessy, E., & Hardesty, R. (2008). Relationships among stress, coping, and mental health in high-achieving high school students. *Psychology in the Schools, 45*, 273-290. doi: 10.1002/pits.20300
- Suldo, S., Shaunessy, E., Thalji, A., Michalowski, J., & Shaffer, E. (2009). Sources of stress for students in high school college preparatory and general educational programs: Group differences and associations with adjustment. *Adolescence, 44*, 925-948.
- Taylor, T., Pogrebin, M., & Dodge, M. (2002). Advanced placement-advanced pressures: Academic dishonesty among elite high school students. *Educational Studies: Journal of the American Educational Studies Association, 33*, 403-421.

- Wagner, B. M., & Compas, B. E. (1990). Gender, instrumentality, and expressivity: Moderators of the relation between stress and psychological symptoms during adolescence. *American Journal of Community Psychology, 18*, 383–406.
- Willemen, A. M., Koot, H. M., Ferdinand, R. F., Goossens, F. A., & Schuenge, C. (2008). Change in psychopathology in referred children: The role of life events and perceived stress. *Journal of Child Psychology and Psychiatry, 49*, 1175-1183. doi:10.1111/j.1469-7610.2008.01925.x
- Willis, G. B. (1999). *Cognitive interviewing: A "how-to" guide*. Retrieved from <http://fog.its.uiowa.edu/~c07b209/interview.pdf>
- Yang, H., Chiu, Y., Soong, W., & Chen, W. J. (2008). The roles of personality traits and negative life events on the episodes of depressive symptoms in nonreferred adolescents: A 1-year follow-up study. *Journal of Adolescent Health, 42*, 378 – 385. doi:10.1016/j.jadohealth.2007.09.017

Table 1
Participant Demographic Characteristics

	Study 1					Study 2: Exploratory Sample	Study 3: Confirmatory Sample
	Student Focus Groups	Student Interviews	Parent Focus Groups ^a	Educator Focus Groups ^b	Pilot		
<i>n</i> participants	147	30	72	47	56	727	2193
	%	%	%	%	%	%	%
Program							
AP	47.6	63.3	34.3	46.8	37.5	57.1	47.6
IB	52.4	36.7	65.6	53.2	62.5	42.9	52.4
Race/Ethnicity							
Caucasian	55.1	53.3			55.4	62.1	47.6
African- American	17.0	13.3			8.9	2.9	12.5
Hispanic	6.8	20.0			14.3	13.1	12.4
Asian/Pacific Islander	14.3	6.7			19.7	13.1	13.2
Multiracial	5.4	6.7			1.8	6.4	13.2
Other	1.4	0			0	2.5	1.1
Gender							
Female	61.4	40.0	85.7	61.1	46.4	63.0	61.9
Male	38.6	60.0	14.3	38.9	53.6	37.0	38.1
Grade							
9	12.2	n/a	30.7		26.8	21.6	27.5
10	31.3	6.7	22.7		17.9	25.9	26.7
11	23.8	40.0	17.3		3.6	26.3	24.2
12	32.7	53.3	22.7		51.8	26.3	21.6

Note. AP = Advanced Placement; IB = International Baccalaureate.

^aChild's grade level not reported for 6.7% of parents; race and ethnicity not collected for parents; 66.7% of parents reporting having only 1 child in AP or IB.

^bParticipants included 93.6% teachers, 4.3% counselors, 2.1% administrators; average professional K-12 experience was 16.6 years; average service or instruction of AP or IB = 7.1 years. Race and ethnicity not collected for educators.

Table 2

Student Rating of Environmental Stressors Scale Items and Pattern/Structure Coefficients from Exploratory Factor Analysis (Study 2) and Standardized Factor Loadings from Confirmatory Factor Analysis (Study 3).

Factor Name	Item	F1	F2	F3	F4	F5
F1. Academic Requirements	36. Requirements to study a lot of information at once	.83* /.80/.78	.06/.33	-.07/.26	-.07/.22	-.02/.16
	26. Large amount of homework _b	.81* /.74/.69	-.07/.19	-.13/.17	-.01/.22	.04/.18
	31. Multiple tests and/or assignments due on the same day _c	.77* /.72/.69	-.04/.24	-.01/.25	-.07/.20	.00/.15
	20. Tests or assignments that have a large impact on your grade	.67* /.67/.65	.04/.28	-.01/.33	-.07/.37	.02/.14
	37. Too little time (feeling like there are “not enough hours in the day” _b)	.65* /.67/.66	-.01/.25	.03/.31	.12/.35	-.15/.04
	30. Not enough free time or down time _c	.62* /.67/.59	.00/.29	.03/.25	.13/.19	-.05/.17
	23. Difficult classes	.61* /.62/.60	-.07/.20	.08/.31	.06/.30	-.05/.11
	14. Being surrounded by classmates that are exceptionally bright	.60* /.60/.46	.03/.25	-.06/.21	-.01/.20	.04/.17
	35. Competition among students in your classes or program _b	.54* /.56/.55	.05/.27	.03/.26	-.06/.18	.07/.20
	19. Additional program requirements, such as extended essay, internal assessments, service hours, etc.	.51* /.49/.45	-.06/.14	-.05/.16	-.01/.16	.10/.19
	29. Insufficient time to sleep _b	.51* /.55/.51	-.03/.22	.14/.32	.03/.27	-.07/.08
	6. Overly high expectations for achievement related to the reputation of your school program	.37* /.48/.48	.30/.43	-.02/.26	-.03/.19	.03/.18
	12. Pressure to excel in school while involved in extracurricular activities	.34* /.40/.46	.14/.29	.09/.26	-.05/.15	-.03/.09
F2. Parent-Child Conflict	22. Parents’ overly high expectations for achievement _b	.05/.30	.78* /.75/.67	-.09/.27	-.07/.12	.07/.23
	15. Parents hassling and nagging you _c	.02/.31	.75* /.75/.78	-.04/.34	.06/.24	-.02/.17
	8. Parents too involved with school (for example, check grades online too often, email or call teachers too often) _b	-.14/.06	.63* /.55/.40	.06/.21	-.15/-.02	-.06/.05
	21. Disagreements between you and your parent(s) _c	-.08/.27	.57* /.64/.75	.10/.45	.25/.41	-.01/.18

	34. Pressure from parent(s) to stay in your high school program	.10/.28	.55* /.57/.49	-.03/.23	-.09/-.09	.05/.18
	33. Parents not understanding your school experiences and/or demands ^b	.13/.44	.52* /.67/.74	.12/.49	.14/.39	.02/.23
F3. Academic and Social Struggles	10. Pressure from peers to do risky behaviors, such as drinking, drugs, sex, etc. ^c	-.06/.18	.08/.31	.59* /.56/.50	-.06/.22	-.04/.10
	2. Problems related to romantic relationships, such as arguments with boy/girlfriend, breaking-up, etc. ^b	-.11/.09	.04/.22	.52* /.46/.46	-.05/.18	-.02/.08
	1. Conflicts or arguments with teachers(s) ^b	-.07/.11	.02/.20	.51* /.46/.38	-.04/.18	-.06/.05
	28. Problems with friends or classmates, such as rumors, fights, gossip (“high school drama”) ^b	.03/.25	.08/.30	.45* /.51/.60	.05/.29	-.03/.12
	24. Problems at your school, such as with the schedule, cafeteria/lunch, or building	.10/.27	-.12/.16	.44* /.47/.43	.05/.29	.09/.21
	11. Not getting enough help from teachers to learn or do well on assignments	.16/.34	-.01/.27	.43* /.50/.51	-.04/.26	.11/.25
	25. New school policies, schedules, layout, etc.	.11/.24	-.14/.12	.40* /.41/.33	.01/.23	.09/.18
F4. Financial Problems	32. Family financial problems	-.06/.24	-.04/.14	-.08/.33	.89* /.83/.79	.01/.16
	27. Not enough money to do or buy the things that you want	-.06/.24	.05/.21	-.03/.35	.79* /.76/.78	-.02/.14
	16. High cost of high school including fees, school supplies, special events, extra-curricular activities, etc.	.15/.34	-.15/.10	.08/.36	.55* /.62/.62	.05/.19
F5. Cultural Issues	13. Having classmates who do not understand your culture or ethnic/racial group	-.02/.19	.04/.21	-.06/.19	.09/.22	.78* /.79/.80
	7. Having teachers, administrators, or counselors who do not understand your culture or ethnic/racial group	-.02/.17	-.01/.19	.10/.25	-.03/.16	.71* /.72/.76
	18. Problems with the representation of your culture or ethnic/racial group in textbooks and other materials in the classroom	.00/.15	.02/.16	-.02/.15	-.02/.12	.67* /.67/.68

Major Life Events composite^a

Note. The largest loading for each item is bolded. First two values indicate pattern/structure coefficients from Principal Axis Factor Analysis with Promax Rotation from Study 2 ($n = 676$). Third values are standardized factor loadings from a Confirmatory Factor Analysis from Study 3 ($n = 2193$).

^aItems not included in factor analysis because these events do not necessarily co-occur or correlate with other stressors. These items include: 3. Family move; 4. Change in who lives in your house, such as sibling leaving home, new person moving in, etc.; 5. Separation or divorce of parents^b; 9. Family member's death or serious illness^b; and 17. Health issues^b.

^bStRESS item modified from SOSI item.

^cStRESS item identical to SOSI item.

* $p < .0001$.

Table 3

Descriptive Statistics and Reliabilities for Student Rating of Environmental Stressors Scale Factors

Factor Name	# of Items	<i>M</i>	<i>SD</i>	Skew	Kurtosis	α	Test-Retest
Academic Requirements	13	3.48/3.57	0.75/0.73	-0.35/-0.38	-0.29/-0.22	.88/.87	.87
Parent-Child Conflict	6	2.71/2.83	0.97/0.95	0.25/0.20	-0.74/-0.77	.81/.81	.89
Academic and Social Struggles	7	2.07/2.01	0.65/0.60	0.71/0.68	0.22/0.33	.67/.67	.78
Financial Problems	3	2.46/2.49	1.06/1.08	0.49/0.45	-0.52/-0.66	.78/.77	.84
Cultural Issues	3	1.35/1.45	0.70/0.74	2.46/1.98	6.39/3.81	.76/.78	.73
Major Life Events	5	1.48/1.59	0.48/0.55	1.75/1.45	4.39/2.73	n/a	.71

Note. Factor means range from 1 (*never*) to 5 (*almost always*). Values from Study 2 ($n = 727$) presented first; values from Study 3 ($n = 2193$) presented after slash. Test-retest sample includes 103 participants from Study 2.

Table 4

Relationships between the Student Rating of Environmental Stressors Scale (StRESS), Other Stress Measures, and Student Outcomes

StRESS scale	Study 2						Study 2/Study 3				
	Perceived Stress Scale	Life Events Checklist	Life Satisfaction	Anxiety	GPA	Absences	F1.	F2.	F3.	F4.	F5.
F1. Academic Requirements	.53*	.13*	-.23*	.28*	.09*	-.02					
F2. Parent-Child Conflict	.41*	.19*	-.37*	.08*	-.20*	.01	.40/.45				
F3. Academic and Social Struggles	.43*	.21*	-.26*	.06	-.11*	.12*	.36/.39	.39/.43			
F4. Financial Problems	.34*	.35*	-.33*	.14*	-.06	.11*	.31/.34	.20/.32	.34/.37		
F5. Cultural Issues	.09*	.10*	-.13*	-.04	-.08*	-.07	.19/.20	.23/.24	.23/.26	.16/.17	
Major Life Events	.24*	.51*	-.18*	.09*	-.15*	.20*	.17/.18	.17/.21	.30/.31	.28/.38	.09/.19

Note. * $p < .05$. Values from Study 2 ($n = 700-727$ due to missing data on some outcomes) presented first; values from Study 3 ($n = 2193$) presented after slash. GPA = Grade Point Average.