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THE PSYCHOSOCIAL FUNCTIONING OF HIGH SCHOOL STUDENTS IN ACADEMICALLY RIGOROUS PROGRAMS

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This cross-sectional study determined whether students who take part in academically challenging high school curricula experience elevated levels of stress and whether this stress co-occurs with psychological and/or academic problems. Data from self-report questionnaires and school records were collected from 480 students from four high schools. Results of analyses of covariance suggested that stress is not always associated with deleterious outcomes, as students in academically rigorous programs (specifically, Advanced Placement [AP] classes and International Baccalaureate [IB] programs) reported more perceived stress than did students in general education, while maintaining exceptionally high academic functioning. Furthermore, despite their stress level, the psychological functioning of students in AP and IB is similar or superior to the levels of psychopathology, life satisfaction, and social functioning reported from their peers in general education. © 2013 Wiley Periodicals, Inc.

The prevalence of academically rigorous programs, such as Advanced Placement (AP) and International Baccalaureate (IB), is increasing in American high schools in response to demand for offerings (Iatarola, Conger, & Long, 2011), preparation for college academic success (Conley, 2005), national (Morse, 2012) and statewide (Florida Department of Education, 2012) rankings criteria, and economically feasible options for students to complete high school and reduce time to degree in college (Adelman, 2006). Advanced coursework, such as AP and IB, is also often offered to advanced students and gifted learners as a curriculum alternative to general education, as both programs offer accelerated content, opportunities to explore advanced concepts, and mastery of knowledge evaluated against clearly articulated quality standards (Van Tassel-Baska, 2001). Although research indicates completion of rigorous coursework in high school increases the odds that students will succeed in college (Adelman, 2006), research addressing the social–emotional aspects of participating in such rigorous curricula during adolescence has only recently emerged. Preliminary research with students in IB in one rural high school suggested that IB students experience higher levels of stress relative to their peers in general education (Suldo, Shaunessy, & Hardesty, 2008), but have comparable, if not superior, academic and social–emotional functioning (Shaunessy, Suldo, Hardesty, & Shaffer, 2006).

The current study aimed to see if this optimistic conclusion regarding the resilience of students in IB replicates and generalizes to students in other communities, including urban and suburban settings, as well as other academically rigorous programs (namely, AP). Such research is warranted to establish possible risks or benefits associated with participation in rigorous curricula during high school so that educators can help students make informed decisions about their choice of high school program. Student outcomes examined in this study were selected in line with a theoretical framework, which posits that adolescent functioning in the school context is reflected in multiple indictors of social–emotional and school functioning (Roeser, Eccles, & Sameroff, 2000).

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Academically Rigorous High School Programs

Advanced Placement

AP courses originated in 1956 in 104 schools as an accelerated curriculum for advanced high school students; in 2011, the program had expanded to more than 17, 000 high schools nationwide (College Board, 2012c). AP courses were developed as college-level classes offered in high school settings as an alternative to general education courses that do not often require the same level of content-depth or academic rigor (Hertberg-Davis & Callahan, 2008). In many schools where AP courses are offered, students may select among a host of classes (currently, more than 30 are offered in multiple content areas; College Board, 2012b). Although some schools offer a set program of study, including a specific number and sequence of AP classes, most schools that offer AP classes encourage a more cafeteria-like approach, where students may select the number of AP classes. Course completion is not a College Board requirement for individuals to opt to take the AP exams, which are scored by a panel of AP teachers and subject-area college faculty and are widely accepted for college credit throughout the United States (Ewing, 2006). Unlike the prescribed, sequenced, holistic curriculum outlined for juniors and seniors pursuing the IB Diploma, AP courses allow students more choices in determining which (and how many) subjects to study.

International Baccalaureate

The IB Diploma Program was developed in the late 1960s to provide high school juniors and seniors with a comprehensive, internationally recognized program of study based on a curriculum that emphasized content depth, metacognitive thinking, global understanding, interpersonal and communication skills, and service to the community (International Baccalaureate Organization [IBO], 2012a). Schools often offer a pre-IB curriculum to students in Grades 9 and 10 at IB Diploma-granting schools (Mayer, 2008; Suldo, Shaunessy et al., 2008), followed by the 2-year IB Diploma curriculum for 11th- and 12th-grade students. Compulsory features of the program include: (a) an in-depth independent research project (the extended essay), (b) an interdisciplinary course (Theory of Knowledge), and (c) experiences outside of academics to broaden learners' perspectives (Creativity, Action, Service). Students who meet these requirements and pass end-of course exams earn the distinction of an IB Diploma (IBO, 2012b).

As of 2012, the IB Diploma Program was offered in more than 2,300 schools worldwide and 781 in the United States (IBO, 2012d); the US offers the most IB programs in the world (Bunnell, 2011). Although all states offer AP programs, IB programs are particularly popular in some states (e.g., California, Florida, and New York) and nonexistent or sparsely offered in other states (IBO, 2012d). The most recent national study of exam-based courses offered to high-school students in the United States indicates AP exams were offered by 71% of public high school respondents, but only 2% of schools offered IB courses (Waits, Setzer, & Lewis, 2005). Many colleges recognize the IB Diploma and award college credits or advanced standing accordingly, whereas others award additional weight in college application decisions for IB diploma completers or based on end-of-course exam scores (IBO, 2012c). Eligibility for college-level exam-based courses is a school or district policy decision, but prior research indicates the most commonly used entrance criteria are minimum standardized achievement test score, minimum grade point average (GPA), and teacher recommendation (Waits et al., 2005). In the 2002–2003 school year, AP and IB were more commonly offered in urban "fringe" areas than cities or rural areas, and schools with the highest minority enrollment were the least likely to offer exam-based classes (Waits et al., 2005). Following national efforts to address these disparities, the College Board and state legislatures have jointly encouraged and realized dramatic increases in AP course enrollment in cities and among minority youth over the last decade (College Board, 2012a).

Stress Associated With AP–IB Participation

The term "stress" can refer to either the occurrence of objective, environmental events/*stressors* (either acute or chronic) or the psychological phenomenon of *perceived stress*, which occurs when one judges that a given environmental circumstance (or set of demands) exceeds one's available resources (i.e., the transactional model of stress; Lazarus & Folkman, 1984). The latter definition requires one to make a cognitive appraisal of the extent to which one's circumstances, including their stressors, tax his or her resources (Grant et al., 2003).

Regarding environmental stress, students in academically rigorous programs face stressors related to extreme academic demands and preparation for college (e.g., high-stakes college entrance exams, pressure to excel academically), in addition to the normative challenges of adolescence, such as increased parent–child conflict, risk-taking behaviors that can compromise physical health, and mood disruptions (Arnett, 1999; Compas & Reeslund, 2009). The pressure to complete academic requirements within the limited number of study hours can overwhelm many students (Taylor, Pogrebin, & Dodge, 2002), logically contributing to greater perceived stress. Given the community service, research, and writing requirements, the IB program, in particular, may be associated with elevated stress. A series of preliminary studies with one sample of students in the IB and general education programs in the same high school found that students in IB indeed reported a significantly higher level of overall perceived stress (Suldo, Shaunessy et al., 2008) and that specific stressors were primarily related to completion of academic requirements rather than such factors as family or peer relationship problems (Suldo, Shaunessy, Thalji, Michalowski, & Shaffer, 2009).

In contrast to conceptualizing AP–IB participation as associated with distress due to the inherent workload and high expectations for academic success, it is possible that the challenge and engagement provided to these high-achieving students is facilitative in nature and thus contributes in a positive manner to development. Although no published studies have yet examined stress as facilitative within this population, the phenomena of eustress and flow are likely relevant. Eustress has been conceptualized as a positive psychological response to a stressor that is represented by the presence of positive psychological states, such as feelings of hope, meaningfulness in life, and manageability in one's situation due to perceptions of sufficient resources to manage demands (Nelson & Simmons, 2004). Strong links between flow experiences (i.e., full engagement in activities that are challenging while appropriate for one's skills; Nakamura & Csikszentmihalyi, 2009), personal expressiveness, and goal-directed behavior have been identified among both university and high school students (Schwartz & Waterman, 2006; Sharp, Coatsworth, Darling, Cumsille, & Ranieri, 2007; Waterman, 2005). In the case of students who select AP–IB classes, academic ability may be a form of their personal expressiveness. When engaging in scholastic endeavors, they may experience flow and become more motivated to excel in academically rigorous curricula. Although largely speculative due to the lack of empirical evidence, it is plausible that the positive effects of eustress or being in a flow state might offset the negative effects of distress associated with the same activities (i.e., academic experiences), particularly because activities of flow are considered enjoyable, albeit challenging.

Relationship between Stress and Mental Health

Monitoring students' stress is important, given the established inverse relationship between most forms of stress and adolescent functioning. Regarding academic outcomes, students who incur more stressful life events are at risk for dropping out of high school (Hess & Copeland, 2001) and earning worse grades (Cunningham, Hurley, Foney, & Hayes, 2002), whereas high school students with low levels of perceived stress advance further in their education and earn better grades

(Schmeelk-Cone & Zimmerman, 2003). Perceived stress is positively correlated with forms of psychopathology (Galaif, Sussman, Chou, & Wills, 2003; Willemen, Koot, Ferdinand, Goossens, & Schuenge, 2008), including depression (Meadows, Brown, & Elder, 2006), suicide (Liu & Tein, 2005), and substance use (Roberts, Roberts, & Chan, 2009). Stressors are inversely associated with positive indicators of wellness, such as life satisfaction (McKnight, Huebner, & Suldo, 2002). Most studies have utilized samples of at-risk youth; the effect of stress in high-achieving children is understudied. Because of the elevated stress associated with AP–IB participation, these students would appear to be at risk for diminished psychosocial functioning.

A growing body of research implicates temperament as at least partly responsible for individual differences in how people experience and respond to stress, and develop subsequent mental health problems associated with stress (Krueger & Tackett, 2003). For instance, adolescents with high negative emotionality and neuroticism are at risk for experiencing more stressful life events and acute stressors, which, in turn, increases the manifestation of later symptoms of depression (Barrocas & Hankin, 2011; Kercher, Rapee, & Schniering, 2009).

Links Specific to Students in Academically Rigorous Programs

Although academic success is suggested by the high level of achievement that is a requirement for obtaining an IB diploma or college credit for coursework, there is a limited body of published empirical research about the social–emotional functioning of students in these rigorous programs. Preliminary research with a convenience sample of 320 students enrolled in one of two curricula (IB or general education) at a single rural high school painted an optimistic picture. Specifically, despite the fact that the students in the IB program perceived significantly higher levels of stress (Suldo, Shaunessy et al., 2008), they reported similar or superior levels of psychosocial adjustment (school functioning, social–emotional wellness) compared with their general education peers (Shaunessy et al., 2006). The IB students indicated more positive perceptions of school climate, reported more confidence in their academic abilities, evidenced behavior patterns predictive of continued school success (i.e., good attendance and a virtual absence of in-school behavior problems), and achieved higher GPAs. In terms of well-being, students in the IB program reported comparable levels of life satisfaction and internalizing problems, as well as fewer externalizing symptoms of psychopathology than did their general education peers. Furthermore, IB students reported similarly low levels of social problems and significantly fewer affiliations with negative peers compared with the general education population.

Additional studies are needed to establish the stress levels, social–emotional functioning, and academic adjustment of high school students in different academically rigorous curricula. Roeser and colleagues (2000) advance that social–emotional functioning is indexed by psychological indicators of emotional distress and well-being, as well as behavioral indicators, such as peer relationships, whereas school functioning includes psychological indicators, such as attitudes toward school, in addition to more traditional behavioral indicators of achievement and in-school conduct. Regarding emotional distress, a focus on students' anxiety levels is indicated by research that demonstrates elevated symptoms of anxiety in adolescents often co-occur with stress associated with academic demands (e.g., stress related to school performance, attendance, interactions with teachers; Byrne, Davenport, & Mazanov, 2007). Life satisfaction, either domain-specific or global, is an increasingly employed indicator of wellness and a key construct within the positive psychology movement (Proctor, Linley, & Maltby, 2009). Peer relationships should also be explored comprehensively in terms of problematic social functioning (e.g., affiliations with deviant peers), as well as evidence of healthy social relationships, such as high perceived social support from classmates.

Purpose of Current Study

The aim of the current study was to replicate and extend the generalizability of optimistic but preliminary results (Shaunessy et al., 2006; Suldo, Shaunessy et al., 2008) through studying the psychosocial functioning of a sample of high school students from multiple communities that include a mix of urban, suburban, and rural settings, who are enrolled in either general education or one of two academically rigorous programs. The current study attempted to control for preexisting differences between the groups (i.e., typical students in general education and high-achieving students in academically rigorous programs) by statistically controlling for potential differences in personality and family environment. These particular variables were considered in line with prior research that indicated links between (a) personality and stress, (b) academic achievement and personality traits, such as conscientiousness (Furnham, Chamorro-Premuzic, & Dougall, 2003), and (c) enrollment in higher academic tracks and family factors such as socioeconomic status (SES) and parental level of education (Kelly, 2004).

Method

Participants

A total of 480 students from four high schools (hereafter referred to as Schools A, B, C, and D) in a single southeastern state participated in the current study. Schools A and B were magnet schools located in major metropolitan areas. Each offered the IB program, as well as a structured AP program that differed from other more common cafeteria-type, nonsequenced AP offerings available in most high schools that offer AP. At Schools A and B, students admitted to their AP programs were required to complete a minimum number of AP classes in a variety of disciplines. There were a total of 179 participants from School A, in Grades 9 (23%), 10 (28.5%), 11 (33.5%), and 12 (15%), from either the IB program ($n = 69$; 38.5%) or the AP program ($n = 110$; 61.5%). All 40 participants from School B were ninth-grade students, enrolled in the IB program ($n = 33$; 82.5%) or AP program ($n = 7$; 17.5%). Schools C and D, located in a medium-size city and a rural community, respectively, offered IB and general education programs but did not have a dedicated AP program, instead offering AP classes to all students (in general education and IB), without a minimum number of AP courses to be completed. The 174 participants from School C were in Grades 9 (42%), 10 (21.25%), 11 (17.25%), and 12 (19.5%), and in general education ($n = 87$; 50%) or the IB program ($n = 87$; 50%). The 87 participants from School D were all 10^{th}-grade students; most were in the IB program ($n = 61$; 70%), whereas 26 students (30%) were in general education.

The combined sample from all four schools included students in general education ($n = 113$), IB ($n = 250$), and AP ($n = 117$). Participants were aged 13 to 18 years ($M = 15.95$, $SD = 1.07$). The majority were female (63%) and Caucasian (53.5%); the remaining were African American (18%), Hispanic (11.7%), Asian (7.3%), multiracial (6%) and of other ethnic backgrounds (2%). Additional demographic details (e.g., student grade level, SES, parental education level) for the total combined sample, as well as by curriculum group, are presented in Table 1. In line with the study's focus on testing the replicability of previous findings, no students in this sample had served as research participants in prior published studies of AP or IB students.

Measures and Indicators

Adolescent Personality Styles Inventory. The Adolescent Personality Styles Inventory (APSI, Lounsbury et al., 2003), is a 48-item self-report measure of personality developed for use with youth ranging in age from 11 to 18 years. The APSI contains five subscales that are aligned with the Big Five factors of personality: conscientiousness (e.g., I always finish everything I start), neuroticism (e.g., My mood goes up and down more than most people), extraversion (e.g., I am very outgoing

Table 1
Demographic Characteristics of Participants by Curriculum Group (N = 480)

	College Prep Programs				General Education		Total Sample	
	AP ($n = 117$)		IB ($n = 250$)		($n = 113$)		($N = 480$)	
Variable	*n*	%	*n*	%	*n*	%	*n*	%
Gender								
Male	36	31	93	37	49	43	178	37
Female	81	69	156	63	64	57	301	63
Grade								
9	23	20	102	41	28	25	153	32
10	36	31	92	37	48	43	176	36
11	39	33	28	11	23	20	90	19
12	19	16	28	11	14	12	61	13
Ethnicity								
Caucasian	55	47	155	62	47	41	257	54
African American	33	28	25	10	29	26	87	18
Asian	13	11	20	8	2	2	35	7
Hispanic/Latino	6	5	24	10	26	23	56	12
Native American	1	1	1	<1	0	0	2	<1
Pacific Islander	2	2	2	<1	0	0	4	<1
Multiracial	4	3	18	7	7	6	29	6
Other	3	3	5	2	2	2	10	2
Socioeconomic Status								
Low	13	11	29	12	54	48	96	20
Average/High	103	89	221	88	58	52	382	80
Father's Education								
8th Grade or Less	0	0	2	1	7	7	9	2
Some High School	8	7	8	3	16	16	32	7
H.S. Diploma/GED	28	24	48	20	36	35	112	24
Some College	22	19	28	11	19	18	69	15
College Degree	40	35	74	30	18	17	132	29
Master's Degree	14	12	56	23	5	5	75	16
Doctorate Degree	4	3	28	12	2	2	34	7
Mother's Education								
8th Grade or Less	0	0	1	<1	5	4	6	1
Some High School	3	2	5	2	14	13	22	5
H.S. Diploma/GED	23	20	48	19	34	31	105	22
Some College	25	21	44	18	22	20	91	19
College Degree	41	35	87	35	20	18	148	31
Master's Degree	23	20	49	20	12	11	84	18
Doctorate Degree	2	2	14	6	3	3	19	4

Note. H.S. = high school; GED = General Equivalency Degree.

and talkative), agreeableness (e.g., I am very easy to get along with), and openness (e.g., I like to learn about new ways of doing things). Participants endorse their agreement with each of the items using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Studies with multiple samples of adolescents have demonstrated that the APSI demonstrates adequate reliability and validity (Lounsbury et al., 2003). Convergent validity was supported through large (i.e., >.60),

significant relationships between the corresponding subscales of the APSI and other measures of personality (e.g., NEO-Five Factor Inventory), and internal reliability coefficients ranged from .79 to .86 across all subscales. Internal consistency for the subscales of the APSI ranged from .81 (agreeableness) to .86 (neuroticism) in the current study.

Perceived Stress Scale. The original Perceived Stress Scale (PSS, Cohen, Kamarck, & Mermelstein, 1983) is a 14-item self-report scale that measures the degree to which individuals perceive the circumstances and events in their lives are unpredictable and beyond their personal control, and exceed their coping resources. We administered a six-item version of the PSS that has been identified as measuring perceived distress (Golden-Kreutz, Browne, Frierson, & Anderson, 2004). Using a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*), respondents indicated how many times in the last month they felt, for example, that they had "been upset because of something that happened unexpectedly," "found that you could not cope with all the things that you had to do," and "been angered because of things that happened that were outside of your control." Prior research with the six-item PSS administered to youth has yielded a coefficient alpha of .91 and supported convergent validity through large correlations between perceived stress and indicators of students' mental health (Suldo, Shaunessy et al., 2008). In the current study, $\alpha = .88$.

Multidimensional Student Life Satisfaction Scale. The Multidimensional Student Life Satisfaction Scale (MSLSS, Huebner, 1994) is a 47-item self-report measure of life satisfaction developed for use with youth from 3rd through 12th grade. Satisfaction is assessed in five specific domains of life: family, friends, school, self, and living environment; global life satisfaction is also assessed via seven items. For each domain and the global index, high mean scores represent greater life satisfaction. Students rate their agreement with statements (e.g., my life is going well, my friends are great, I like my neighborhood) on a scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Internal consistency (coefficient alpha estimates) ranged from 0.72 to 0.85 across all subscales (Huebner & Gilman, 2002). Convergent and divergent validity has been supported with large correlations between the MSLSS and other measures of well-being (Huebner, Laughlin, Ash, & Gilman, 1998) and negative correlations with measures of internalizing problems (Gilman, Huebner, & Laughlin, 2000). Test–retest reliability over a 2- and 4-week time span ranged from 0.70 to 0.90 (Huebner & Gilman, 2002). In the current study, internal consistency for the five domains of life ranged from .79 (self-satisfaction) to .92 (family satisfaction); $\alpha = .89$ for global life satisfaction.

Youth Self-Report of the Achenbach System of Empirically Based Assessment. The Youth Self-Report of the Achenbach System of Empirically Based Assessment (YSR, Achenbach & Rescorla, 2001) is a 112-item self-report measure of multiple types of psychopathology developed for use with youth ages 11 to 18. In the current study, the 11-item subscale that assess social problems (i.e., immature and/or socially awkward behavior, loneliness, peer rejection), as well as the 31- and 32-item composites for internalizing problems (comprising all items in the anxious/depressed, somatic complaints, withdrawn/depressed subscales) and externalizing problems (comprising all items in the aggressive behavior and rule-breaking behavior subscales), respectively, were analyzed. Reliability and validity of the YSR is well established (see Achenbach & Rescorla, 2001). In the current study, $\alpha = .67$, .89, and .87 for social problems, internalizing, and externalizing, respectively.

Multidimensional Anxiety Scale for Children. The Multidimensional Anxiety Scale for Children (MASC, March, Parker, Sullivan, Stalling, & Conners, 1997). The MASC is a 39-item self-report measure of anxiety symptoms developed for use with youth ranging in age from 8 to 18 years. The total anxiety score comprises responses on four subscales: physical symptoms, harm avoidance, social anxiety, and separation anxiety. Students rate the degree to which a statement is true for

themselves on a Likert scale ranging from 0 (*never true about me*) to 3 (*often true about me*). High internal consistency values (i.e., $\alpha = .93$) for the total score have been reported, and validity has been supported through large correlations between the MASC total score and other measures of anxiety (Muris, Merckelbach, Ollendick, King, & Bogie, 2002). Test–retest reliability over a 3-week interval is excellent (March & Sullivan, 1999). In the current study, $\alpha = .89$ for the total anxiety scale.

Negative Peer Affiliations. Problematic peer relationships were assessed using an 11-item measure of affiliations with deviant peers, the Negative Peer Affiliations (NPA, Shaunessy et al., 2006). On the NPA, youth indicate the proportion of their friends who exhibit problem behaviors (e.g., cheat on tests, skip school, fight, steal, use or sell illicit substances, belong to gangs), using a Likert scale ranging from 1 *(none of them*) to 5 (*all of them*). The specific items and response format for the NPA were derived from other published self-report instruments (Heinze, Toro, & Urberg, 2004; Roeser et al., 2000); these earlier measures yielded significant associations in the hypothesized direction with students' emotional distress, valuing of school, substance use, and conduct symptoms. The combined NPA was used successfully in an earlier study of the social functioning of students in an academically rigorous program (Shaunessy et al., 2006) and demonstrated adequate internal consistency ($\alpha = .87$). In the current study, $\alpha = .89$.

Child and Adolescent Social Support Scale. The Child and Adolescent Social Support Scale (CASSS; Malecki, Demaray, & Elliot, 2000) is a 60-item self-report measure of students' perceptions of support from various sources relevant to youth in third through 12th grade. For the purposes of this study, only the 12-item subscale that assessed perceived support from classmates was administered. Each source subscale measures four types of social support: emotional (e.g., my classmates treat me nicely), instrumental (e.g., my classmates help me with projects in class), appraisal (e.g., my classmates nicely tell me when I make mistakes), and informational (e.g., my classmates give me good advice). Students rated the frequency with which they perceived each type of support from their classmates via a 6-point Likert scale ranging from 1 (*never*) to 6 (*always*). Support for the validity of the CASSS (2000) is demonstrated in previous studies, as summarized by Malecki and Demaray (2006). Prior work has yielded high estimates of internal consistency for the classmate subscale ($\alpha = 0.92$); test–retest reliability over an 8-week period ranged from 0.60 to 0.94 for CASSS subscales (Malecki et al., 2000). In the current study, $\alpha = .92$.

The School Climate Survey-High School Student Version, Revised. The School Climate Survey-High School Student Version, Revised (SCS; Haynes, Emmons, & Ben-Avie, 2001) is a 42-item scale used to measure students' feelings and perceptions about their individual school in six domains, including order and discipline (safety and degree to which rules are followed), student interpersonal relations (students' behavior and treatment of one another), student–teacher relations (competence and relational ability of teachers), parental involvement (communication between home and school and frequency of parent visits to the school), sharing of resources (degree to which all students can access school resources and activities equally), and building (appearance and upkeep of school building). In the present study, students' perceptions of these domains of school climate served as indicators of their psychological attitudes toward school. Students respond to items using a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). After reverse-scoring negatively phrased items, high mean scores indicate more positive perceptions of school climate. Prior research supports convergent validity via attainment of significant correlations between all six SCS subscales and another self-report measure of attitudes toward school, as well adequate internal consistency for each subscale (alpha coefficients ranged from .70 to .90; Suldo, Shaffer, & Shaunessy, 2008). The current study yielded alpha coefficients of .65, .73, .74, .78, .89, and .90 for sharing of

resources, order and discipline, parental involvement, building appearance, student–teacher relations, and student interpersonal relations, respectively.

Demographic Survey. Participants completed a brief demographic questionnaire that requested information about their age, grade level, gender, ethnicity, SES (as indicated by receipt of free or reduced-price school lunch), curriculum (IB, AP, general education), and parental education level. On the two items assessing parent education, participants indicated the highest level of schooling completed by their mothers and fathers using a 7-point metric (eighth grade or less, some high school, high school graduate or General Equivalency Degree, some college, college degree, master's degree, doctoral-level degree).

Academic Achievement. Students' cumulative weighted GPAs reflect performance in all courses attempted for high school credit through the end of the school year in which self-report data were collected. Some values exceed 4.0 because of the districts' weighting procedures, in which college-level courses (i.e., AP, IB, dual enrollment) receive an extra point (thus, A = 5.0) and advanced courses are given an additional $\frac{1}{2}$ point (A = 4.5).

In-School Conduct. Attendance figures are equivalent to the number of school hours missed, and discipline is indexed by the number of office discipline referrals (ODRs) accrued. Tardiness was based on the number of times a student was reported late for each class.

Procedures

Permission to conduct this study was received from the Division of Research Integrity and Compliance at the university of the principal investigator (PI), as well as from Departments of Assessment and Research of the four participating school districts. To recruit students, building-level administrators distributed parent consent forms by providing designated teachers (e.g., homeroom teachers) with a sufficient number of parent information letters that described the purpose of the study and requested active parent consent for student participation for all students in a given class. To encourage participation, students with signed parent consent were included in a drawing for one of several gift certificates worth $50 to their local shopping mall. Participants were limited to those students who returned a signed parent consent form to the designated teacher rather than via direct contact with the university research team. Building-level administrators involved in the study did not track how many teachers participated in student recruitment efforts; thus, response rates (i.e., ratio of students with parent consent divided by total number of students recruited for participation) are not known for any school.

Approximately midway through the academic school year (late fall/winter of 2006), self-report data from students in Grades 9 through 12 were collected. Students with consent to participate were called in groups of 50 to 100 to a private location (e.g., auditorium, cafeteria). The PI then explained the study and informed participants of their right to withdraw or refuse participation at any time without penalty. After students signed assent forms to indicate voluntary agreement to participate, the university research team administered all measures described earlier. To guard against order effects and maintain confidential completion of measures, six versions of the packets were used (packets only varied by the order in which measures were presented), and students sitting near one another were provided different versions of the packet to reduce discussion about the measures among students. Participants took approximately 30 to 45 minutes to complete all measures in the packet. Trained graduate research assistants answered student questions and checked completed packets for errors and inadvertently skipped questions. Shortly after the end of the school year, school administrators provided the PI with data from participants' school records specific to achievement (weighted GPA) and school conduct (attendance, times late to school, ODRs).

Overview of Analysis Plan

All analyses were conducted using SAS version 9.2. An alpha level of .05 was used to determine statistical significance. Family SES (i.e., free/reduced-price lunch status, parental educational level) and personality traits that differed significantly between curriculum groups (as reported in the Results section) and were related to the dependent variable of interest were entered as covariates to control for potential influences of the demographic and personality variables on the student outcomes. Additionally, school was entered as a covariate in analyses of educational functioning to control for any between-school (vs. between-program) differences in students' achievement and perceptions of school climate that may exist due to school building-level effects (vs. program effects). One between-subjects analysis of covariance (ANCOVA) and two between-subjects multivariate analyses of covariance (MANCOVAs), using general linear model Method I (Type III), which adjusts for unequal sample sizes within cells, were employed to test the overall effect of group membership (IB, AP, general education) on perceived stress, social–emotional functioning, and school functioning, respectively. Following a significant multivariate effect, individual ANCOVAs (univariate F) were examined. In the event of a significant univariate effect, adjusted group means (i.e., least squares means) and the p values associated will all possible pairwise comparisons were examined to identify differences among curriculum groups on the specific indicator of adolescent functioning. To assess the strength of association between group membership and a given indicator of adolescent functioning, eta-square values were reported to indicate the percentage of total variance in the dependent variable accounted for by the variance in curriculum group after accounting for the influence of the covariates on the dependent variable.

Results

Preliminary Analyses

Between curriculum group means and proportions on family SES and personality variables were examined to determine whether these should be considered as possible covariates in subsequent analyses due to significant associations with the independent variable. A series of ANOVAs (and a chi-square test) indicated that the curriculum groups differed on all indicators of family SES and three of five personality variables. Regarding SES, students in general education were more likely than their peers in AP or IB to qualify for free/reduced-price school lunch, $\chi^2(2) = 72.13$, $p < .0001$, and reported a lower educational level completed by their mothers, $F(2, 472) = 19.50$, $p < .0001$, and fathers, $F(2, 460) = 35.99$, $p < .0001$. Within academically rigorous programs, father's educational level was higher among the IB students ($p = .001$); IB and AP students had similar mean levels of mother's education level and free/reduced-price lunch status. A variable representing each participant's mean score on mother and father's educational level was used in all subsequent analyses. Regarding personality, no group differences were found on agreeableness, $F(2, 477) = 1.75$, $p = .18$, or neuroticism, $F(2, 477) = .14$, $p = .87$. However, between-group differences were observed for three personality variables: extraversion, $F(2, 477) = 4.22$, $p = .02$; openness to experience, $F(2, 477) = 6.68$, $p < .01$; and conscientiousness, $F(2, 477) = 4.92$, $p < .01$. Specifically, IB and AP students reported higher levels of extraversion and openness to experience ($p < .05$), compared with their general education peers; IB and AP students had similar mean scores on both variables. Regarding conscientiousness, the mean scores of IB students were lower ($p < .05$) than mean scores reported by students in AP and general education, which were statistically similar.

Procedures recommended in Tabachnick and Fidell (2006) were used to screen the dataset with regard to normality. Nineteen of the 22 dependent variables were within reasonable ranges for normal distribution (specifically, skewness and kurtosis near or between –1.0 and +1.0 for 17 variables; for social problems, skewness = 1.25, kurtosis = 1.72; for affiliation with deviant peers,

skewness = 1.72, kurtosis = 3.86). The three school conduct variables (absences, tardies, ODRs) evidenced values that were extreme (i.e., skewness > 3, kurtosis > 10; Kline, 2011) and were subsequently evaluated for univariate outliers. After data were removed from the 7 participants with standard scores greater than 4 on a school conduct variable, the distribution of the variables improved but continued to evidence moderate to substantial positive skewness: attendance (skewness = 1.83, kurtosis = 3.78), tardies (skewness = 2.70, kurtosis = 8.20), and ODRs (skewness = 4.73, kurtosis = 26.33). These variables were transformed by taking the square root (attendance) or logarithm (tardies, ODRs) of the raw variables. To determine the extent to which using the transformed versions of the school conduct variables would affect the study results, the subsequent analyses were conducted twice, first, using the raw/original versions of all variables, and second, using the transformed versions of the three variables. Conclusions regarding between-group differences in school conduct indicators were identical across the two datasets (both of which excluded the aforementioned univariate outliers on school conduct variables). The results obtained using the original (i.e., nontransformed) versions of variables are reported in this article for ease of interpretability of findings.

Curriculum Group Differences in Perceived Stress

A between-subjects ANCOVA indicated a main effect of curriculum group on perceived stress, $F(4, 475) = 6.21$, $p < .0001$, $\eta^2 = .02$, after adjusting for group differences in the two potential covariates (conscientiousness and extraversion) empirically associated with the dependent variable. Results of pairwise comparisons of adjusted group means indicated that perceived stress levels reported by students in the IB program ($M = 3.04$, $SD = .94$; lsmean = 3.03), as well as students in AP ($M = 3.09$, $SD = .95$; lsmean = 3.12), were significantly higher ($p < .05$) than perceived stress among students in general education ($M = 2.75$, $SD = .92$; lsmean = 2.75). IB and AP students perceived similar levels of stress ($p = .35$).

Curriculum Group Differences in Social–Emotional Functioning

A between-subjects MANCOVA tested the main effect of curriculum group on life satisfaction, psychopathology, and peer relationships. Adjustment was made for the five covariates (SES, parent education level, conscientiousness, extraversion, and openness to experience) that evidenced relationships with the dependent variables (as summarized in the note for Table 2). The median correlation between the 12 dependent variables included in the MANOVA was .34, and ranged from –.06 (between total anxiety symptoms and affiliations with deviant peers) to .70 (between internalizing psychopathology and social problems). With use of Wilks' criterion, the combined dependent variables (global life satisfaction, friend satisfaction, self-satisfaction, school satisfaction, living environment satisfaction, family satisfaction, internalizing psychopathology, externalizing psychopathology, anxiety, affiliations with deviant peers, classmate support, and social problems) were significantly affected by group membership, $F(24, 900) = 2.16$, $p < .001$. After adjustment by covariates, univariate tests for three aspects of social–emotional functioning reached statistical significance ($p < .05$), indicating that satisfaction with friends, affiliations with deviant peers, and perceived support from classmates differed among students in different curriculum groups, even after the effects of demographic variables (SES, parent education level) and personality characteristics were controlled for statistically. The strength of the association (η^2) yielded from univariate tests is displayed in Table 2. As shown in the table, the effect of group membership on satisfaction with friends and classmate support was small in magnitude ($\eta^2 = .01$ and .02, respectively), and a moderate effect size ($\eta^2 = .05$) was yielded for affiliations with deviant peers. Table 2 also includes results of the pairwise comparisons of adjusted means, along with unadjusted means and standard

Table 2
Social–Emotional Functioning by Curriculum Group (N = 469)

	College Prep Programs				General Education		
	AP ($n = 115$)		IB ($n = 246$)		($n = 108$)		
Dependent Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	η^2
Global Life Sat.[1,3,4]	4.19 (4.08)	0.99	4.28 (4.29)	0.98	4.11 (4.19)	1.03	0.01
Friend Satisfaction[3,4]	5.18 (5.13)$_a$	0.61	5.26 (5.27)$_b$	0.60	5.08 (5.11)$_a$	0.73	0.01
Self-Satisfaction[1,3,4]	4.98 (4.92)	0.62	4.87 (4.91)	0.67	4.95 (4.93)	0.72	0.00
School Satisfaction[3,4,5]	3.99 (3.93)	0.83	4.13 (4.13)	0.92	4.00 (4.06)	0.88	0.01
Living Envir. Sat.[2,3,4]	3.94 (3.87)	0.98	4.09 (4.05)	0.98	3.80 (3.97)	1.02	0.01
Family Satisfaction[3,4]	4.37 (4.27)	1.10	4.35 (4.34)	1.14	4.30 (4.42)	1.07	0.00
Internalizing[3,4,5]	12.24 (12.80)	7.92	12.73 (12.34)	9.42	11.25 (11.55)	7.81	0.00
Externalizing[3]	11.96 (12.31)	7.67	11.22 (10.89)	7.35	10.93 (11.31)	6.41	0.01
Anxiety[4,5]	39.75 (40.16)	14.44	38.73 (38.37)	15.42	36.56 (36.94)	14.78	0.01
Peer Delinquency[3]	1.63 (1.65)$_a$	0.42	1.40 (1.40)$_b$	0.42	1.57 (1.56)$_a$	0.58	0.05
Classmate Support[3,4]	4.24 (4.15)$_{ab}$	0.80	4.21 (4.23)$_b$	0.85	3.93 (3.96)$_a$	1.00	0.02
Social Problems[3,4,5]	3.25 (3.40)	2.90	2.99 (2.85)	2.53	2.57 (2.72)	2.60	0.01

Note. Sat. = satisfaction; envir. = environment. Pairwise comparisons of adjusted group means were examined in cases of significant *F* tests. Significant differences between group means ($p < .05$) are indicated by different letters. Means having the same subscript are not significantly different. Means not marked by letters are not significantly different from any group means. In the cases of dependent variables significantly related to covariates, adjusted means are presented in parentheses. [1]Dependent variables significantly related to the covariate SES (free/reduced-price lunch). [2]Dependent variables significantly related to the covariate parent education level. [3]Dependent variables significantly related to the covariate conscientiousness. [4]Dependent variables significantly related to the covariate extraversion. [5]Dependent variables significantly related to the covariate openness to experience.

deviations for each group on each aspect of social–emotional functioning. Adjusted means are also presented for dependent variables that were significantly related to one or more covariate. Students in the IB program reported greater satisfaction ($p < .05$) with their friendships than did students in AP or general education (whose mean scores were not statistically different from one another). Students in IB also reported significantly fewer affiliations with delinquent peers ($p < .05$); mean scores of students in AP and general education were not statistically different from one another. Finally, students in IB reported perceiving higher levels of social support from their classmates ($p < .05$) compared with students in general education; mean scores of students in AP were not statistically different from students in IB nor general education. No differences between groups were found with respect to any indicator of psychopathology, five of six indicators of life satisfaction, or the third indicator of peer relationships (i.e., social problems). In sum, in three areas of social–emotional functioning, students in the IB program reported the best outcomes, even after group differences in family SES and personality were statistically controlled.

Curriculum Group Differences in School Functioning

A between-subjects MANCOVA tested the main effect of curriculum group on student achievement, in-school conduct, and school climate perceptions. Adjustment was made for the five covariates (SES, parent education level, conscientiousness, extraversion, and openness to experience) that evidenced relationships with the dependent variables (as summarized in the note for Table 3), as well as the covariate school. The median correlation between the 10 dependent variables included in the

Table 3
School Functioning by Curriculum Group (N = 369)

	College Prep Programs				General Education		
	AP ($n = 107$)		IB ($n = 187$)		($n = 75$)		
Dependent Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	η^2
GPA[1,2,3,4,5]	3.51 $(3.53)_a$	0.57	3.96 $(3.92)_b$	0.50	2.84 $(2.90)_c$	0.77	0.28
Absences[3,6]	3.66 $(4.53)_a$	3.91	3.89 $(3.80)_a$	4.00	11.04 $(10.00)_b$	8.64	0.13
Occasions Tardy[1,4]	2.87 $(2.56)_{ab}$	4.20	1.67 $(1.90)_a$	2.63	4.27 $(4.14)_b$	6.29	0.03
Office Discipline Referrals[1,3,4]	0.30 $(0.66)_a$	1.09	0.38 $(0.36)_a$	1.00	3.40 $(2.93)_b$	5.20	0.10
Order and Discipline[3,4,6]	3.40 $(3.14)_b$	0.62	3.31 $(3.38)_a$	0.66	2.86 $(3.08)_b$	0.66	0.04
Sharing of Resources[3]	3.30 $(3.29)_{ab}$	0.60	3.36 $(3.38)_a$	0.59	3.14 $(3.13)_b$	0.64	0.02
Parent Involvement[4]	2.25 (2.24)	0.74	2.31 (2.29)	0.71	2.27 (2.33)	0.72	0.00
Appearance of School Building[3,4,6]	3.03 (3.20)	0.74	3.20 (3.20)	0.70	3.42 (3.17)	0.71	0.00
Peer Relations[3,4,6]	3.34 $(3.10)_b$	0.61	3.30 $(3.35)_a$	0.67	2.75 $(2.96)_b$	0.67	0.06
Teacher—Student Relat.[2,3,4,5]	3.66 $(3.59)_{ab}$	0.64	3.68 $(3.73)_a$	0.65	3.41 $(3.40)_b$	0.76	0.03

Note. Relat. = relations. Pairwise comparisons of adjusted group means were examined in cases of significant *F* tests. Significant differences between group means ($p < .05$, except $p = .05$ between AP and IB for the occasions tardy outcome) are indicated by different letters. Means having the same subscript are not significantly different. Means not marked by letters are not significantly different from any group means. In the cases of dependent variables significantly related to covariates, adjusted means are presented in parentheses. [1]Dependent variables significantly related to the covariate SES (free/reduced-price lunch). [2]Dependent variables significantly related to the covariate parent education level. [3]Dependent variables significantly related to the covariate conscientiousness. [4]Dependent variables significantly related to the covariate extraversion. [5]Dependent variables significantly related to the covariate openness to experience. [6]Dependent variables significantly related to the covariate school.

MANCOVA was .18 and ranged from .00 (between parental involvement in schooling and GPA) to .67 (between student interpersonal relations and order and discipline).

With use of Wilks' criterion, the combined dependent variables (GPA, attendance, tardies, ODRs, order and discipline, sharing of resources, parent involvement, appearance of school building, student interpersonal relations, and student–teacher relations) were significantly affected by group membership, $F(20, 702) = 9.45$, $p < .001$. After adjustment by covariates, univariate tests for eight of 10 aspects of school functioning reached statistical significance ($p < .05$), indicating that academic achievement, in-school conduct, and perceptions of four of six facets of school climate (all except parental involvement and appearance of school building) differed among students in different curriculum groups, even after the effects of demographic variables (SES, parent education level), school attended, and personality characteristics were statistically controlled.

The strength of the association (η^2) yielded from univariate tests is displayed in Table 3. As shown in the table, the effect of curriculum group membership on equal sharing of resources, tardiness, student–teacher relationships, and order and discipline was small in magnitude ($\eta^2 = .02$ to .04) and moderate for student interpersonal relations, ODRs, and attendance ($\eta^2 = .06$ to .13), whereas a large association was yielded for GPA ($\eta^2 = .28$). Table 3 includes results of the pairwise comparisons of adjusted means, along with unadjusted means and standard deviations for each group on each aspect of school functioning. Students in the IB program evidenced higher GPAs ($p < .05$) than did students in AP and general education; the GPAs of students in AP were, in turn, higher than were GPAs of students in general education ($p < .05$). On all three indicators of in-school conduct, students in general education demonstrated more problematic behavior ($p < .05$) than did students in IB; the two groups of students in academically rigorous programs evidenced similar numbers of

class periods absent from school and ODRs, whereas IB students were tardy to class fewer times than were AP students.

Regarding perceptions of school climate, students in IB reported the most positive perceptions of student interpersonal relations and order and discipline (i.e., appropriate student behavior at school); after controlling for the covariates, students in general education and AP were statistically similar on these indicators. Additionally, students in general education reported a more negative perception of the manner in which resources were shared in the school (i.e., equal opportunity to participate in school activities, materials, and equipment) and less positive student–teacher relations compared with students in IB; mean scores of AP students on these indicators were not statistically different from the other curriculum groups. No differences between curriculum groups were found with respect to perceived parent involvement in schooling or the physical appearance of the school building. In sum, students in the IB program evidenced better outcomes than did students in general education in eight areas of school functioning and better outcomes than did students in AP in three areas of school functioning, even after group differences in family SES, school attended, and personality were controlled for statistically. Students in AP, in turn, evidenced better outcomes in three areas of school functioning relative to students in general education.

Discussion

The overarching purpose of this study was to examine the replicability of preliminary results (Shaunessy et al., 2006; Suldo, Shaunessy et al., 2008) and further explore the psychosocial functioning of a more diverse sample of students in either the IB or AP program. Additionally, the current study attempted to account for some of the preexisting differences between the groups by statistically controlling for between-group differences in personality (extraversion, openness to experience, and conscientiousness) and family environment (SES, parents educational level) that were associated with the dependent variables.

Student psychosocial functioning was examined comprehensively, consistent with the theoretical framework of adolescent functioning in the school context as composed of multiple indicators of social–emotional functioning (i.e., psychopathology, life satisfaction, peer relationships) and school functioning (i.e., school climate perceptions, academic achievement, and in-school behavior; Roeser et al., 2000). Taken together, the results of the current study confirm that students in academically rigorous programs experience more stress than is typical of students in general education. In contrast to research in at-risk populations, this increased stress level did not co-occur with deleterious academic and social–emotional outcomes. The average psychological functioning of students in academically rigorous programs was similar or superior to the levels reported by their peers in general education, and the academic functioning (grades, school behavior) of students in the academically rigorous programs was exceptionally high. The IB students were distinguished by their particularly high perceptions of the relational dimensions of school climate, echoing the prior research of Matthews and Kitchen (2007), who found IB students and high-ability learners highly value daily interactions with peers of similar abilities, interests, and motivations. The current study's results corroborate prior research findings (Shaunessy et al., 2006) regarding the positive psychosocial adjustment of students enrolled in an IB program.

Previous research with high school students in IB and general education programs found that students in IB perceived a significantly higher level of general stress (Suldo, Shaunessy et al., 2008). Other retrospective reports of graduates of high school IB programs found that almost 40% viewed the IB workload as excessive, unmanageable, and/or detrimental to their well-being (Taylor & Porath, 2006), a theme that also emerged in a qualitative study of students enrolled in IB and AP programs (Foust, Hertberg-Davis, & Callahan, 2009).

Corroborating these findings, results of the current study indicated that perceived stress levels reported by students in IB and AP programs were significantly higher than were perceived stress levels reported by students in general education. These findings are consistent with the assumption that students in academically rigorous programs that include college-level courses face stressors related to extreme academic demands and preparations for college admission, in addition to the normative challenges of adolescence. Indeed, empirical evidence confirms that stressors experienced by students in IB are primarily related to completion of academic requirements rather than factors such as family or peer relationship problems (Suldo et al., 2009). IB and AP students in the current study reported similar levels of stress. These results suggest that whether experiencing increased academic demands through the prescribed, holistic IB curriculum or through a unique sequenced AP program (as offered at schools A and B in the current study), students in academically rigorous magnet programs generally experience significantly more stress than do students enrolled in the general education curriculum, where few, if any, AP classes may be taken.

Despite the stress that students in the IB and AP programs are experiencing, the psychosocial functioning of these students was similar or superior to that of students in the general education curriculum, even after controlling for family SES and personality. Regarding psychopathology, AP and IB students in the current study did not manifest greater psychopathology on any indicators compared with their general education counterparts. These findings are in contrast to the body of research on the effects of stressors on children's psychosocial adjustment that has consistently confirmed a positive relationship between perceived stress and psychopathology in youth (Liu & Tein, 2005; Meadows et al., 2006; Roberts et al., 2009).

The relative lack of psychopathology among AP and IB students in the current study is consistent with an earlier examination of IB students that identified similar and reduced symptoms of internalizing and externalizing psychopathology, respectively, relative to students in general education, despite elevated stress among the IB sample (Shaunessy et al., 2006). Research is needed to determine what precludes or protects this unique group of learners from developing psychopathology in the face of stress. As put forth by Suldo and colleagues (2009), it could be that the stress related to the heightened academic demands inherent in AP–IB coursework is facilitative in nature (i.e., a form of eustress; Nelson & Simmons, 2004; Selye, 1975). Alternatively, students in academically rigorous programs may experience increased academic engagement that engenders a beneficial state of flow (c.f. Nakamura & Csikszentmihalyi, 2009). Contrary to research that demonstrated elevated symptoms of anxiety in adolescents with increased stress (Byrne et al., 2007; O'Conner, Rasmussen, & Hawton, 2010; Schmeelk-Cone & Zimmerman, 2003), AP and IB students in the current study did not manifest significantly higher mean levels of anxiety compared with their peers in general education. These findings suggest that students in academically rigorous programs have unique resources that allow them to experience academic stress without manifesting compromised functioning, specifically with regard to clinical symptoms of anxiety.

The current study's attention to positive indicators of psychosocial functioning is consistent with calls to examine psychological wellness as more than the absence of symptoms (Seligman & Csikszentmihalyi, 2000). By incorporating measures of students' subjective well-being within the current study, optimal functioning among curriculum groups could be examined more thoroughly. Notably, the findings in the present study that IB and AP students' levels of global life satisfaction and domain-specific life satisfaction were comparable with that of their general education counterparts are consistent with previous research (Shaunessy et al., 2006). A lack of diminished life satisfaction among youth experiencing high levels of stress is somewhat contradictory to prior research that has identified stress as inversely associated with positive indicators of wellness, such as life satisfaction (McKnight et al., 2002). The current results further support the conclusion that the stress of participating in a rigorous academic program neither diminishes students' life satisfaction

nor induces psychopathology and suggests that positive levels of psychological functioning cannot be attributed to between-group differences in personality or family SES. The intact wellness among AP and IB students lends further support to the notion that the stress associated with their academic experiences is facilitative.

The current study examined the school functioning of students enrolled in general education and academically rigorous programs in terms of academic performance and perceived school climate. In general, results suggested that academic achievement and in-school conduct were exceptionally positive among students in both academically rigorous programs, even after between-group differences in demographic and personality characteristics were accounted for statistically. Regarding school climate, after school-level differences were accounted for, students in IB programs indicated the most positive perceptions of student interpersonal relations and orderly student behavior (i.e., order and discipline scale). IB students also perceived more positive student–teacher relations than did students in general education, with students in AP programs in between. These findings were markedly similar and further corroborate previous research that identified IB students as having more positive perceptions of the majority of indicators of school climate than their peers in general education (Shaunessy et al., 2006). Similarly, themes that emerged in a qualitative study of AP and IB students included that these students hold positive feelings regarding their interactions with their AP and IB classmates, and perceive a better classroom atmosphere and student–teacher interactions within only their AP and IB classes (Foust et al., 2009). Shaunessy and colleagues (2006) identified a number of plausible explanations regarding why IB students perceive school more positively. Such factors include student characteristics (e.g., motivation to participate in school through positive reinforcement from achievement), teaching behaviors (e.g., teaching strategies and course objectives), teacher expectations, and disparities in school behavioral problems in terms of discipline referrals.

The current sample of students in general education reported a relatively negative perception of the manner in which resources were shared in the school compared with students in the IB program. These feelings of inequity regarding access to school activities and resources may elicit and/or exacerbate the diminished perceptions of general education students' relationships with their teacher and their peers. These findings validate the presence of diminished views of equality within schools identified in previous research (Shaunessy et al., 2006). Students' perceptions of school climate are particularly noteworthy, given that studies have highlighted the impact of school climate on students' psychological and academic outcomes (e.g., Jia et al., 2009; Way & Robinson, 2003).

In addition to holding more positive views of school climate, students in the IB programs achieved at a higher level, as indicated by higher GPAs. Although significantly higher GPAs were evidenced by IB students, students in both the AP and IB programs evidenced similar behavioral patterns predictive of continued school success (i.e., good attendance and the virtual absence of in-school behavioral problems). Specifically, on all three indicators of in-school conduct (i.e., ODRs, times tardy to class, number of class periods absent from school), students in general education demonstrated more problematic behavior than did students in IB, and more problematic behavior compared with AP students on all indicators but tardies. These results are commensurate with previous research that identified students in IB as more academically and behaviorally successful at school than their general education counterparts (Shaunessy et al., 2006) and contradict studies by a number of researchers (e.g., Cunningham et al., 2002; Kaplan, Liu, & Kaplan, 2005; Windle & Windle, 1996) that found that increased stress co-occurs with reduced GPA. Findings in the current study are consistent with a recent longitudinal study that found that school-related stress did not predict changes in academic achievement among Chinese high school students (Liu & Lu, 2011).

Participation in academically rigorous curricular programs may also contribute to superior social functioning. These results support the idea that students within academically rigorous programs have

prioritized having good social relationships, even in the face of academic demands, a theme that emerged in a qualitative study of AP and IB students (Foust et al., 2008). However, contrasting the other domains of psychosocial functioning assessed within the current study, the positive effects on peer relationships appear to be specific to participation in the IB program. Students in the IB program reported significantly greater satisfaction with their friendships compared with students in AP and general education, and higher levels of social support from their classmates relative to students in general education, findings consistent with previous research about students' perceptions of specialized high school programming (Matthews & Kitchen, 2007). Although all three groups of students reported similarly low levels of social problems, students in the IB program reported significantly fewer affiliations with delinquent peers.

These results corroborate the presence of superior social functioning in IB youth previously identified in research (Shaunessy et al., 2006) and are consistent with the current finding that IB students perceive greater student interpersonal relations as well as order and discipline in their school (a construct that also taps interactions with rule-breaking youth in the school setting). The reduced presence of rule-breaking peers is important due to the link between association with deviant peers in youth and important psychosocial outcomes in young adulthood, such as substance use and criminal behavior (Fergusson, Swain-Campbell, & Horwood, 2002; Kaufmann, Wyman, Forbes-Jones, & Barry, 2007). Overall, these results suggest that the IB program in particular is associated with positive social functioning (e.g., greater satisfaction with friendships, fewer affiliations with deviant peers), even compared with another academically rigorous program. Given the holistic approach to educating IB students, including the recognition of learners as needing social and behavioral as well as academic learning opportunities, this curriculum may promote more optimal outcomes for students who have exposure to a cohesive, integrated, program-wide philosophy that is unique to IB. This notion is consistent with Foust and colleagues' (2009) qualitative inquiry that suggested the presence of a special bond that characterizes the unique relationships among students participating in academically rigorous programs, particularly because of "shared experiences and an ability to help each other academically" (p. 299).

Limitations and Directions for Future Research

The current study adds to the growing body of research regarding the psychosocial adjustment of students in academically rigorous curricula. Despite sampling a more diverse population enrolled in a wider array of academic programs, findings warrant replication due to several important reasons. First, generalizability of the results from the current study are limited by the sample (i.e., high school students residing in the southeastern United States). Specifically, the use of convenience sampling from four high schools offering rigorous academic programs may have resulted in a sample that is not representative of the larger population of American youth or even students in general education who take some AP courses (vs. enrolled in an AP magnet program). Future studies may wish to sample multiple schools in other states that participate in a variety of academically rigorous curricula options to increase the population to which results can be generalized and consider analyzing the data by subgroup to determine whether factors such as rigor of admissions criteria, curriculum demands, program funding, and geographical locale are related to student outcomes. Such research attempts should also consider assessing additional factors that may distinguish students in academically rigorous programs, such as cognitive ability level, perhaps by including a group-administered test of ability and then controlling for student ability in subsequent comparative analyses. Other possibly unique features of AP and IB students to be considered prior to definitively attributing between-group differences to curricular effects include pressure to succeed academically, family support for learning, and/or historical teacher–student relationships. For example, it is conceivable that students with

advanced social functioning may have, throughout their schooling, been more positively received by educators, and, in turn, been guided into more selective programs such as AP and IB.

Replication with a more representative sample of youth obtained using more stringent sampling techniques would also enhance confidence in the preliminary findings and conclusions from this study. Due to methodological limitations, it is unknown whether the sample obtained from each school is reflective of the school's student population. Partly because the research team did not have direct contact with the teachers involved in the recruitment process, it is unknown how many teachers adhered with the researchers' request to distribute parent information letters. The school contacts (e.g., IB coordinators, counselors) indicated that participant response rates ranged considerably (from 0% to 50%) across teachers.

Conclusions of the current study can be strengthened by following students from freshman through senior year. Such longitudinal research can help disentangle the relationship between time (i.e., exposure to the curriculum) and psychosocial adjustment (e.g., academic achievement, perception of school climate, psychological functioning) in IB and AP students.

Preliminary findings from the current study also support the need for future researchers to expand upon these unique findings related to the positive psychosocial adjustment of students participating in academically rigorous programs. The intact psychological functioning of AP and IB students in the current study supports the importance of investigating the coping strategies employed by these students who are succeeding in a stressful academic environment. Suldo, Shaunessy et al. (2008) identified specific coping styles that differentially related to mental health outcomes in a sample of high school IB students, which further suggests the importance of expanding these findings to students participating in other academically rigorous programs. The IB program in particular was identified in the current study as associated with positive social functioning, even when compared with another academically rigorous program. Future research should seek to identify the unique qualities and characteristics of the IB program that facilitate desirable student outcomes, perhaps via qualitative methods (e.g., interviews with students and/or teachers) designed to uncover why between-group differences occur. With regard to the academic functioning, future research should also examine other indicators of school outcomes, such as scores on IB and AP exams and performance on college entrance exams, to provide a more complete picture of the academic functioning of students enrolled in academically rigorous programs. Assessment of these student outcomes may provide further evidence that academically rigorous programs are appropriate for the cognitive, affective, and long-term academic development of advanced learners.

Implications of findings from this study pertain to educational policy relevant to academic programming in schools. First, the current study adds to the growing body of research that supports the notion that participating in an academically rigorous curriculum during high school is not harmful with respect to psychosocial functioning. Despite experiencing more academic demands and greater stress, the emotional functioning of IB and AP students is commensurate with that of the general education students. Furthermore, because measures of subjective well-being were included in the current study, educators can make a more definitive conclusion that the stress experienced through participating in academically rigorous programs is not associated with diminished optimal functioning. Importantly, findings from the current study further support the notion that participation in academically rigorous programs is associated with achievement of better social and school-related outcomes. Taken together, these results suggest that participation in academically rigorous programs co-occurs with multiple positive outcomes for students. With a greater need to identify effective programming to enhance education, the empirical support of the success of academically rigorous programs indicates a noteworthy need to focus on the potential that these magnet programs have to offer our students. Replication of findings with diverse populations is warranted to further explore

how the unique methods and innovative approaches utilized in these academically rigorous programs affect a variety of students.

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