October 2019

Associations between Mental Health, Academic Success, and Perceived Stress among High School Freshman in Accelerated Coursework

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Associations between Mental Health, Academic Success, and Perceived Stress

among High School Freshman in Accelerated Coursework

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Education Specialist Degree
in Curriculum and Instruction with an emphasis in
School Psychology
Department of
Educational and Psychological Studies
College of Education
University of South Florida

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Date of Approval:
September 26, 2019

Keywords: International Baccalaureate, Advanced Placement, Psychopathology, Subjective Well-Being

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ABSTRACT

Youth in accelerated curricula programs are an understudied population in relation to groups who struggle academically. To date, few studies have been conducted examining relationships between psychopathology symptomology, life satisfaction, academic achievement, and perceived stress. To address this, the current study completed a secondary analysis of an archival dataset in order to expand upon previous research into the predictive relationships between mental health (psychopathology and life satisfaction; beginning of year) and students' subsequent academic achievement and perceived stress (assessed mid-year). Furthermore, the current study investigated the predictive effects of mid-year academic achievement (course grades) and perceived stress on students' subsequent psychopathology and life satisfaction (re-assessed end-of year, approximately 4 months after the mid-year point). The sample included 331 high school freshmen enrolled in accelerated curricula, specifically the International Baccalaureate (IB) program or an Advanced Placement (AP) class. Results from this study indicated that (1) students' initial mental health (internalizing problems, externalizing problems, and life satisfaction) were significant predictors of students' mid-year perceived stress levels; (2) students' initial mental health was not significantly predictive of students' mid-year academic achievement; (3) students' mid-year perceived stress levels were significant predictors of students' end-of-year mental health; and (4) students' mid-year academic achievement was not a significant predictor of students' end-of-year mental health. In sum, this study supported bidirectional relationships between mental health and stress, but no significant associations during the year between achievement and mental health.

CHAPTER ONE:

INTRODUCTION

Statement of the Problem

In 2000, the U.S. Department of Health and Human Services forecasted the prevalence of mental health problems in youth to grow by nearly 50% by the year 2020. Indeed, mental health concerns affect a growing number of youth. In a landmark study, Merikangas et al. (2010) found that over 20% of school-aged children have a diagnosable mental health disorder. Despite the high prevalence rate of mental health concerns in youth, most students do not receive the treatment that they may need (Anderson et al., 2019; Burns et al., 1995). If left unattended, serious behavioral and emotional disturbances can develop later in life, which can manifest themselves in numerous negative outcomes, such as school failure, substance abuse, employment difficulties, violence, and increased risk of suicide (Sprague & Walker, 2000). One population that is understudied is students in advanced academic curriculum programs; however, the current study was designed to address this deficit. In the following section, this paper will briefly examine the history of mental health services, introduce the purpose of the current study, and define key terms and concepts.

Understanding of mental health in youth has changed significantly. Mental health has traditionally focused around the presence or absence of symptoms of psychopathology. However, the absence of psychology does not adequately represent wellness (Suldo, 2016). To address this concern, recent studies have indicated the importance of using a more comprehensive model of

mental health that includes indicators of subjective well-being (SWB; Eklund, Dowdy, Jones, & Furlong, 2011; Suldo & Shaffer, 2008; Suldo, Thalji, & Ferron, 2011). As such, it is important to examine psychopathology and SWB simultaneously in order to gain a more complete understanding of wellness.

A more recent perspective that utilizes two indicators of wellness is identified as the Dual-Factor Model of Mental Health. Greenspoon and Saklofske (2001) developed this approach in part because the traditional approach to mental health missed students who were not being identified using symptom-based measures alone, and also because the outcomes of students who were identified as symptomatic, but nevertheless possessed high quality of life, had different outcomes (better social relationships) than their symptomatic peers with low life satisfaction. Using thresholds that correspond to clinical levels of risk (i.e., yes/no elevated symptoms), Suldo (2016) summarized that there are four primary subgroups from this model: complete mental health (e.g., low psychopathology and high SWB), symptomatic but content (e.g., high psychopathology, high SWB), vulnerable (e.g., low psychopathology, low SWB), and troubled (e.g., high psychopathology, low SWB). This model has been found to be useful in understanding youth outcomes in a sample of high school students (Suldo, Thalji-Raitano, Kiefer, & Ferron, 2016). The aforementioned classifications were determined by taking scores on continuous variables (i.e., indicators of SWB and the presence or absence of psychopathology) and dichotomizing them using research-based thresholds to determine the level of risk for each student (Suldo, 2016). Although the current study does not set out to categorize students into four groups, the prior research on the dual-factor is relevant as it establishes that psychopathology and SWB are related but separable constructs, and that both factors of mental health have significant associations with youth academic, social, emotional, and physical health outcomes (Greenspoon

& Saklofske, 2001; Suldo & Shaffer, 2008; Suldo et al., 2016).

The current study investigated the relationship between psychopathology, life satisfaction, perceived stress, and academic achievement in a sample of 9th grade students in accelerated courses, through a short-term longitudinal study. As indicated by previous research, perceived stress is higher among students enrolled in accelerated curricula, due in part by the demands of the accelerated curriculum (Suldo, Shaunessy, & Hardesty, 2008). Stress, in turn, is associated with higher levels of psychopathology (Moksnes, Moljord, Espnes, & Byrne, 2010; Suldo, Shaunessy, Hardesty, 2008) and lower levels of SWB (Suldo, Shaunessy, Thalji, Michalowski, & Shaffer, 2009). These factors can also lead to lower academic achievement (Vialle, Heaven, & Ciarrochi, 2007). The archival dataset analyzed in the current study is part of an ongoing larger project to develop an educational program to help students taking Advanced Placement (AP) and International Baccalaureate (IB) courses to manage stress tied to their rigorous coursework. Through the use of secondary analysis, the current study examined the predictive relationship of psychopathology and life satisfaction on academic achievement and perceived stress. Furthermore, this study examined the predictive relationships of academic achievement and stress on psychopathology and life satisfaction. It is possible that bidirectional relationships exist (Antaramian, Huebner, Hills, & Valois, 2010; Barriga et al., 2002; Feld & Shusterman, 2015; Funk, Huebner, & Gilman, 2000; Nelson et al., 2004; Ownes, Stevenson, Hadwin, & Norgate, 2012; Suldo, Thalji-Raitano; Fiefer, & Ferron, 2016) or it may be that mental health predicts achievement (Suldo, Thalji, & Ferron, 2011; Verboom, Sijtsema, Verhulst, & Penninx, 2014) and stress (Suldo, Shaunessy, & Hardesty, 2008) or, conversely, that adolescent achievement levels predict mental health and stress (Suldo et al., 2009).

Definition of Key Terms

      Life satisfaction, as part of subjective well-being (SWB). Subjective well-being is a broad construct that encompasses components of cognition and emotion. Put another way, SWB is often considered the operationally definition of happiness (Diener, 2000). SWB is comprised of three different components: global life satisfaction (e.g., satisfaction with life and current circumstances), positive affect, and negative affect (i.e., experiencing positive and negative emotions in daily life, respectively). In line with the majority of studies of youth SWB that focused on the most stable component of SWB—specifically, cognitive appraisal of perceived quality of life—the current study operationalized SWB by examining students' self-reported levels of satisfaction with their current life. For the purposes of this study, life satisfaction (LS) represented the student's satisfaction with life and current circumstances, and is utilized as one indicator of the larger SWB construct. Life satisfaction is one component of the overall SWB construct, and can be reliably measured using the Students' Life Satisfaction Scale (SLSS; Huebner, 1991). Participants' life satisfaction levels were indexed by calculating a mean score on the 7-item SLSS. Indicators of positive and negative affect were not available for analysis.

      Psychopathology. Psychopathology is a broad construct that encompasses social, emotional, and behavioral problems in youth. It is comprised of internalizing behaviors (e.g., anxiety, depressions, and somatic complaints), externalizing behaviors (e.g., hyperactivity, disobeying rules, and aggressive behavior), and attention problems (e.g., problems concentrating, focusing, and inattention). Internalizing problems are developed and maintained within the individual. This occurs when an individual attempts to maintain inappropriate or maladaptive control or regulation of their internal emotional and cognitive states (Merrell, 2008). Conversely, externalizing problems are acted out in the environment with behaviors that are directed

outwards, usually towards objects and other people. The current study examined adolescents'

psychopathology symptomology (internalizing problems and externalizing problems) as

indicated by mean and composite scores on the 19-item standardized Brief Problem Monitor

(BPM-Y; Achenbach, McConaughy, Ivanova, & Rescorla, 2011).

Perceived stress. In the medical model, stress is defined as distress or the body's

individual response to an environmental event. This physiological response of an organism can

be measured by increased blood pressure, the presence of a hormone called cortisol in the blood

system, or an elevated heart rate. Distress is the body's natural way of reacting to environmental

stimuli that may be a threat to the health or well-being of an individual. However, heightened

stress is associated with mental health problems (Moksnes, Moljord, Espnes, & Byrne, 2010;

Suldo, Shaunessy, & Hardesty, 2008) and decreased life satisfaction (Feld & Shusterman, 2015;

Moksnes, Lohre, Lillefjell, Byrne, & Haugan, 2016) in adolescents. Perceived stress refers to

interactions between an environmental cause of the stress (external stress); the psychological

reactions of the body to stress (distress), and the individuals' cognitive, emotional, and

behavioral response to the interaction (Lazarus & Folkman, 1984). The current study examined

adolescents' perceived stress as indicated by average score on the 6-item Perceived Stress Scale

(PSS; Cohen et al., 1983).

Academic achievement. In this study, student academic achievement was conceptualized

as students' performance on objective academic indicators. Specifically, students' course grades

(presumably reflecting student classroom behavior and academic skills as evidenced on exams

and homework completion) were converted to grade point average (GPA) during their first

semester of 9th grade. This is a potential limitation of the current study (i.e., using GPA to

determine student's academic achievement since these composite scores can be subjective due to

grades given by teachers). However, DeBerard, Spielmans, and Julka (2004) found that high

school GPA was a significant predictor of later achievement (measured by college cumulative

GPA). Other studies have demonstrated that GPA is significantly correlated with higher order

thinking skills (e.g., critical and creative thinking skills; $r = 0.81$, $p < .01$; Tanujaya, Mumu, &

Margono, 2017) and students' problem-solving skills ($r = .20$, $p < .01$; D'Zurilla & Sheedy,

1992). Additionally, Hassanbeigi and colleagues (2011) examined the relationship between study

skills (assessed using the Study Skills Assessment Questionnaire, from counseling services of

Houston University) and academic performance in a sample of university students. Compared to

students with lower GPAs, students with higher GPAs demonstrated significantly better ($p < .05$)

outcomes in the following areas: study skills (i.e., better time management and limiting

procrastination); concentration and memory; study aids and note taking skills; comprehensive

testing strategies and lower test anxiety; organization and processing of information; motivation

and attitude; and reading and selecting main idea skills (Hassanbeigi et al., 2011). Further,

Duckworth and Seligman (2005) determined that self-discipline (using the Junior Impulsiveness

Subscale [EJI]; Eysenck, Easting, & Pearson, 1984; and The Brief Self-Control Scale [BSCS];

Tangney et al., 2004) was significantly correlated with student GPA in two studies ($r = .55$, p

$< .001$; $r = .67$, $p < .001$; respectively) and student IQ was significantly correlated with student

GPA ($r = .32$, $p < .001$). In summary, although there may be limitations regarding the use of

student GPA as a predictor of academic achievement, previous research has demonstrated that

student GPA significantly correlates with many of the skills necessary to be successful in schools

(e.g., self-discipline, time and task management skills, better concentration and memory) and is

associated with student ability (IQ) in a logical direction.

Accelerated curricula. Advanced Placement (AP) and International Baccalaureate (IB) coursework are considered to be two of the accelerated curricular options for advanced learners, such as high-achieving or gifted secondary students. Students enrolled in AP courses are provided with coursework that exceeds basic general education requirements (Suldo, Shaunessy, & Hardesty, 2008). Similarly, students enrolled in IB program (or "pre-IB" program of study) are provided coursework that is more demanding than their general education peers and is presented with a more intense pace in preparation for continued education (International Baccalaureate Organization [IBO], 2018). The IBO is an international education program to develop intellectual, personal, emotional, and social skills needed to live, learn, and work in a rapidly globalizing world (IBO, 2018). There are other accelerated curricular options for advanced students that were not examined in this study, such as the Advanced International Certificate of Education (AICE) program and dual enrollment (DE) college courses. For the purposes of this study, 9th grade students enrolled in AP and IB coursework were considered high-achieving youth in accelerated curricula.

High-achieving high school students. In the current study, high-achieving students are operationalized to be freshmen who are enrolled in Advanced Placement (AP) or International Baccalaureate (IB) courses. For the current study, participants enrolled in at least one AP course were taking AP Human Geography. Ninth grade IB students are either considered as taking part in a pre-IB program with a curriculum created by their school/district to ensure preparation for success in the later IB Diploma Programme; in other districts, 9th grade IB-bound students are formally part of a Middle Years Programme (MYP) that is intended to prepare students to enter the IB Diploma Programme in 11th grade. Students enrolled as part of the MYP complete rigorous assessments to graduate to the IB Programme including completing a personal project,

onscreen assessment of the student skills in five subject areas (i.e., mathematics, language and literature, sciences, individuals and societies, and interdisciplinary subjects), or by submitting an ePortfolio which examples language acquisition, physical and health education, design, and arts (IBO, 2018). Conversely, students enrolled in AP classes gain admission by multiple methods (e.g., referral from guidance counselor or academic advisor if the student has previously excelled in the subject area or at the request of the student's teacher, parent, or the student), which may be considered less rigorous than the requirements to gain admission into the IB program. Due to the low sample size (i.e., one school with IB student participants and one school with AP student participants), differences between participants from different academic program (IB vs. AP) groups was not examined in the current study, as academic program was confounded with school and it would be impossible to know if any between group differences identified were due to school features or curricular features. For the purposes of this study, high school students enrolled in either AP courses or a "pre-IB" program of study are considered high-achieving students in relation to the general education students because they are enrolled in classes that are more rigorous or exceed the basic requirements of their peers in general education; however, this researcher acknowledges likely differences between the two groups.

Purpose of Current Study

The current study provided a 1-year longitudinal examination with three data points (beginning of year, mid-year, end-of-year) of the extent to which students' initial psychopathology and life satisfaction predicted students' subsequent academic achievement and perceived stress level at mid-year. Additionally, the current study examined the extent to which students' academic achievement and perceived stress level predicted students' subsequent end-

of-year psychopathology and life satisfaction. To date, no studies have looked at the predictive qualities of these variables in a longitudinal study of students in accelerated curricula.

The specific research questions answered in this study include:

1. To what extent is students' beginning of the year mental health as indicated by psychopathology symptomology and life satisfaction predictive of their mid-year grade point averages?

2. To what extent is students' beginning of the year mental health as indicated by psychopathology symptomology and life satisfaction predictive of their mid-year perceived stress levels?

3. To what extent is students' mid-year academic achievement as indicated by grade point averages predictive of their end-of-year mental health, as indicated by students' psychopathology symptomology and life satisfaction?

4. To what extent are students' mid-year perceived stress levels predictive of their end-of-year mental health, as indicated by psychopathology symptomology and life satisfaction?

Contributions to the Literature

To the author's knowledge, no studies have been conducted to examine the predictive relationships between students' initial mental health (psychopathology symptomology and life satisfaction) on students' mid-year perceived stress among students in accelerated curricula. The current study also examined the predictive relationship between psychopathology and academic success and then examined the predictive relationship that academic achievement has on psychopathology.

Researchers have examined relationships between psychopathology, SWB, perceived stress, and academic achievement through cross-sectional designs (Moksnes et al., 2016; Moksnes et al., 2010; Suldo, Dedrick, Shaunessy-Dedrick, Fefer, & Ferron, 2015; Suldo, Shaunessy, & Hardesty, 2008) of high achieving students. Those early studies highlighted the high prevalence and strong cross-sectional relationships between perceived stress and mental health problems in high-achieving adolescents. However, no published studies have examined associations between the aforementioned variables in a sample of high-achieving students in a longitudinal design.

Limitations and Delimitations

Several limitations and delimitations may impact the validity and generalizability of this study. Delimitations include that the data available for analysis all come from two high schools in the same southeastern school district, and the data are restricted to 9th grade students, as opposed to an entire high school population. A limitation is that the instrument used to measure psychopathology, which includes internalizing behaviors, externalizing behaviors, and attention, respectively, has not been extensively validated in previous literature. Another limitation is that the data to be analyzed come from an archival data set, thus limiting the variables and measures available for use in the analysis. For example, measures of positive and negative affect were not administered to participants, thus restricting SWB to life satisfaction. A final limitation that was mentioned above revolves around the use of student GPA as a measure of academic achievement, which at times can be subjective given the role of teacher assessments. These limitations will be discussed further in Chapter 3.

CHAPTER TWO:

REVIEW OF THE LITERATURE

This chapter sets the stage for a study of mental health among a specific group- freshmen in accelerated courses- by first establishing how mental health is best operationalized. Although it is not the focus of this study to examine the existence of the dual-factor model, it is important to establish how researchers have defined comprehensive mental health (i.e., as life satisfaction and psychopathology) as it relates directly to this study of perceived stress. To that end, this chapter reviews the progression of a field that focuses solely on psychopathology as an indicator of well-being to one that also examines a more comprehensive model that includes positive attributes of wellness. First, this chapter will focus on traditional approaches to mental health, followed by an overview of modern alternatives to the disease model of mental health that stem from positive psychology. Then, this chapter summarizes what is known about the mental health of a particular, understudied group of youth—high school students in accelerated curricula. The curricular context and the associated level of stress are described. Then, this chapter focuses in greater detail on studies of mental health (i.e., symptoms of internalizing and externalizing problems [psychopathology], levels of life satisfaction and affect [subjective well-being]) in relation to student stress and academic achievement. Finally, research exploring predictive relationships between mental illness, well-being, stress, and academic achievement in youth will be summarized.

Conceptualizing Mental Health

Traditional Focus on Psychopathology

Traditionally, mental health assessment and diagnosis was based only on the presence or absence of psychopathology. Psychopathology refers to both internalizing disorders (e.g., anxiety, depression) and externalizing disorders (e.g., attention-deficit/hyperactivity disorder, oppositional defiant disorder, conduct disorder; American Psychiatric Association, 2013). The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5; American Psychiatric Association, 2013) is a commonly used tool of practitioners, which encompasses clinical definitions and uses an illness-oriented psychology as a way of diagnosing or labeling patients in order to facilitate effective communication between professionals and to help aid in informing interventions (Maddux, 2005). However, the DSM has been subject to low interrater reliability of diagnosis among clinicians, as well as perpetuates a disease model of psychological functioning.

Modern Alternatives to a Disease Model of Mental Health

As previously mentioned, traditional psychology focuses on the presence or absence of psychopathology. However, in recent years, research has indicated that it may beneficial to examine a more comprehensive model of mental health (Suldo, 2016; Suldo & Shaffer, 2008). Positive psychology encourages practitioners to strengthen their clients' assets rather than "fix" their weaknesses; and as a result, empower people to develop a more positive state of mind by using their strengths and encouraging them to live a life to its fullest (Suldo, 2016).

Positive indicators of mental health. In positive psychology, the primary outcome that is studied is perceived quality of life (Suldo, 2016). Subjective well-being (SWB) is a generally accepted by researchers as a term that describes happiness and perceived quality of life. The term "SWB" was coined by Ed Diener (2000) at the University of Illinois at Urbana-Champaign who operationalizes happiness as a combination of cognitive and emotional aspects. The cognitive component of SWB is described as life satisfaction—an individual's cognitive appraisal of a person's quality of life—while the emotional component relates to the frequency with which an individual experiences positive and negative feelings (Suldo, 2016). Positive emotional experiences and states include those related to one's perceptions of the past (e.g., well-being and satisfaction), those related to the present (e.g., flow and joy), and those that are related to the future (e.g., hope and optimism; Seligman, Steen, Park, & Peterson, 2005; Suldo, 2016). Negative emotional experiences include emotions (e.g., mad, scared, guilty) and are generally associated with a more negative life satisfaction (Suldo, 2016). Examining all of these variables helps to gain a more comprehensive view of mental health.

Subjective well-being as a key factor of mental health. Suldo, Thalji-Raitano, Kiefer, and Ferron (2016) established that psychopathology and SWB are separate and important constructs that indicate high school students' mental health functioning. Examining a sample of 500 adolescents in two large schools in the southeastern United States, Suldo and colleagues (2016) grouped participants into four categories depending on their scores on measures of subjective well-being and psychopathology. Participants completed other measures of functioning (e.g., academic functioning, social adjustment measures, identity development measures, and physical health measures) to permit examination of between-group outcomes. Based on standardized t-scores, researchers grouped students into four categories. In the

"complete mental health group," participants scored high on a SWB measure and low on the psychopathology measures (e.g., internalizing and externalizing symptomology), whereas participants who scored low on the SWB measure yet elevated on the psychopathology measures were classified as "troubled" (Suldo et al., 2016, p. 437). In the "vulnerable" group, students scored low on SWB *and* low on the psychopathology symptomology measures; whereas in the "symptomatic but content" group, students scored high on SWB yet elevated on the psychopathology symptomology measures (Suldo et al., 2016, p. 437). The outcomes of students differed depending on their respective classification. For example, the largest group classified as "complete mental health" group had much better outcomes than their vulnerable peers, including better behavioral engagement (e.g., better school attendance and more attentive and compliant in class), and greater affective engagement (e.g., more positive attitudes about one's academic skills; Suldo et al., 2016, p. 437). Students classified as "vulnerable" (i.e., low levels of SWB with low levels of psychopathology symptomology), had worse physical health, lower self-concept, poorer social relationships, and diminished academic success (Suldo et al., 2016).

Earlier research established that students classified in the "troubled" group (i.e., low SWB with high psychopathology symptomology) had the worst outcomes of the four groups including lowest global self-worth, greatest external locus of control, and worst perceived behavioral competence (Greenspoon & Saklofske, 2001). More recent studies confirm that these students have the poorest physical health as well as the most social problems (Suldo et al., 2016; Suldo & Shaffer, 2008). Finally, the "symptomatic but content" group (i.e., high levels of SWB with elevated levels of psychopathology symptomology) had higher global self-worth (Greenspoon & Saklofske, 2001), academic engagement (Antaramian et al., 2010), and strong social relationships with parents, teachers, and classmates (Suldo & Shaffer, 2008); however, in a

traditional model of mental health these students still would likely be identified for services based on their elevated levels of psychopathology symptomology (Suldo et al., 2016). In summary, Suldo and colleagues (2016) demonstrated that measuring SWB and psychopathology in youth is necessary to gain a better understanding of comprehensive mental health and assessing both constructs and their relationship is a necessary to further the understanding of mental health functioning in adolescents.

Mental Health of High School Students In Accelerated Curricula

The current study focused on 9th grade high school students who are enrolled in at least one AP or IB class. While the IB program traditionally starts in 11th grade students, for the purposes of the current study, the students identified as "IB" are considered such because they are part of an organized pre-IB program which is a course of study designed by one of the two participating schools that prepares students for enrollment into the Diploma Programme (DP; International Baccalaureate Organization, 2018), which is widely considered the "traditional" IB high school diploma program. Students in schools that do not have an IB program often have an opportunity to take Advanced Placement (AP) classes; freshmen seeking accelerated curricular options often find AP Human Geography as the first AP class taken. Students in AP or IB classes in high school were chosen to be the focus of the current study because research on this population is limited. However, there has been some research that examined student mental health, life satisfaction, and psychopathology of high-achieving students compared to their general education peers. In one of the only studies comparing high-achieving and general education peers' levels of mental health, life satisfaction, and psychopathology, Shaunessy, Suldo, Hardesty and Shaffer (2006) found that both groups of students had similar levels of

mental health (e.g., psychopathology and life satisfaction).

There are differences between high-achieving youth in accelerated curricula and their general education peers in relation to their levels of perceived stress and most common types of stressors (Suldo et al., 2009). Suldo and colleagues (2008) found that high-achieving youth in accelerated curricula in particular have higher perceived stress levels than their general education peers. There are also differences in the types of stressors that are most salient. For example, Suldo, Shaunessy, Thalji, Michalowski, and Shaffer (2009) reported that high-achieving students experience more school-related stress while their general education peers reported greater stress as a result of issues with families, peers, or life events. In sum, high-achieving youth in accelerated curricula have higher rates of perceived stress, and may be more at risk to the negative effects of stress than their general education peers (Suldo et al., 2009; Suldo, Shaunessy, & Hardesty, 2008). This higher level of perceived stress can have a great impact on student functioning. For example, Feld and Shusterman (2015) discovered high levels of stress were associated with fatigue, lack of concentration, mood swing, irritability, restlessness, sleep problems, racing thoughts, physical health issues, internalizing behaviors and decreased academic performance. On the positive side, there are also different levels of achievement between youth in accelerated curricula and their general education peers. Students enrolled in the IB program had more consistent attendance, better school grades, and had greater perceptions of academic abilities (as indicated by scores on the Self-Efficacy Questionnaire for Children; Muris, 2001) than their general education peers (Shaunessy et al., 2006). Although self-efficacy may not be as robust of an indicator of academic success as other less subjective measures (e.g., student GPA or scores on standardized test scores), researchers have found that higher levels of students' self-efficacy at the beginning of the semester predicted better academic goals that students set for

themselves and was positively related to students' final grades (Zimmerman, Bandura, & Martinez-Pons, 1992). Thus, higher levels of academic self-efficacy (as examined by Shaunessy et al., 2006) could lead to better academic performance.

In summary, when comparing high-achieving students in accelerated curricula to their general education peers, researchers have found that the mental health status of students in accelerated curricula programs to be similar or superior, with regard to levels of psychopathology, life satisfaction, and social functioning (Shaunessy et al., 2006; Suldo & Shaunessy-Dedrick, 2013). Despite these similarities, high achieving students enrolled in accelerated curricula reported higher perceived stress (Suldo et al., 2009) and were more at risk to experience negative outcomes associated with stress (Suldo et al., 2009; Suldo, Shaunessy, & Hardesty, 2008). Although high-achieving students had greater levels of perceived stress than their general education peers, due likely in part to demands associated with more rigorous coursework, these students had greater beliefs about academic abilities (Shaunessy et al., 2006). Although, there is some evidence in support of the predictive relationships between stress, academic achievement, psychopathology, and life satisfaction (Feld & Shusterman, 2015; Owens, Stevenson, Hadwin, & Norgate, 2012; Suldo, Thalji, Ferron, 2011; Suldo, Thalji-Raitano, Kiefer, & Ferron, 2016), the current study examined the across-time relationships between these variables. For example, high levels of perceived stress are associated with negative academic outcomes (e.g., problems concentrating, fatigue; Feld & Shusterman, 2015); thus, it is possible that elevated levels of perceived stress may impact the academic achievement of students in a population known to be sensitive to their heightened perceived stress. In the following section, this paper reviews the literature between youth mental health (i.e., life satisfaction, psychopathology, and perceived stress) and academic achievement, especially

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among high-achieving youth (i.e., AP, IB, or students identified as gifted). Given the paucity of information specific to that subgroup, this section also reviews the relations between mental health and academic achievement in general education.

Relationships between Youth Mental Health and Academic Achievement

Psychopathology and Academic Achievement

It is estimated that nearly one in five children in the United States has a type of mental health difficulty (Brown, Riley, & Wissow, 2007; Merikangas et al., 2010). For instance, results of prevalence studies estimate that 4.5% of youth ages 5 to 17 suffer from major depression and nearly 8% of youth have some form of anxiety disorder (Costello, Egger, & Angold, 2015). The World Health Organization estimates that half of all mental health disorders begin before the age of 14 while three-quarters start by the mid-20s. As such, childhood and adolescents may be a critical time for the development of mental health issues and a critical time to intervene to address these issues. In this section, research that examined the concurrent and predictive relationships between psychopathology and academic achievement in youth will be summarized.

Concurrent relationships. To investigate the relationship between internalizing disorders (i.e., anxiety and depression) and academic achievement, Owens, Stevenson, Hadwin, and Norgate (2012) examined 80 participants (32 boys, and 48 girls) aged 12 to 13 years old. The researchers utilized the Spielberger Trait Anxiety Form (Spielberger, Edwards, Lushene, Montour, & Platzek, 1973) to measure anxiety and the Worry subscale of the Children's Test Anxiety Scale (Wren & Benson, 2004) to measure worry about tests (Owens et al., 2012). To measure student depression, Owens et al. (2012) utilized the Major Depressive Disorder subscale

of the Revised Child Anxiety and Depression Scale (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000). To measure academic performance, Owens et al. (2012) utilized student's mathematics, English, and sciences scores on the National Curriculum Standards Tests. Owens et al. (2012) found that anxiety and depression were both significantly related to lower academic performance ($r = -.43$, $p < .01$, and $r = -.43$, $p < .01$, respectively) and that worry about tests was also related to lower academic performance ($r = -.42$, $p < .01$).

Another study that examined the relationships between problem behaviors and academic achievement in adolescents was conducted by Barriga, Doran, Newell, Morrison, Barbetti, and Robbins (2002). The sample consisted of 58 adolescents (41 boys, 17 girls) aged 11 to 19 years old ($M = 15.02$, $SD = 1.90$). The researchers used the Teacher's Report Form for Ages 5 to 18 (TRF; Achenbach, 1991) to measure youths' academic and adaptive functioning as well as their problem behaviors (i.e., Withdrawal, Somatic Complaints, Anxiety/Depression, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior and Aggressive Behavior). The Wide Range Achievement Test, Third Edition ([WRAT3]; Wilkinson, 1993) and The Academic Performance Scale (TAPS) as part of the TRF were used to measure student academic achievement. Barriga et al. (2002) found that there was a significant relationship between aggressive behavior and both academic outcome measures (overall achievement as measured by the WRAT3 and TAPS; $r = -.28$, $p < .05$, and $r = -.33$, $p < .05$, respectively); a significant relationship between delinquent behavior and overall achievement scores as measured by the WRAT3 scores ($r = -.28$, $p < .05$); a significant relationship between attention problems and both achievement outcome measures ($r = -.44$, $p < .01$, and $r = -.37$, $p < .01$, respectively; Barriga et al., 2002). Further, there were significant relationships between withdrawn behavior and somatic complaints with academic performance as measured by the TAPS ($r = -.35$, $p < .01$, and $r = -.30$,

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$p < .05$, respectively; Barriga et al., 2002). In summary, Barriga et al. (2002) found that there were significant relationships between academic achievement and student's internalizing concerns (i.e., withdrawn behavior and somatic complaints) and student's externalizing concerns (i.e., attention problems, delinquent behavior, and aggressive behavior).

Predictive relationships. There are some studies that explored the developmental effect of internalizing and externalizing behaviors in youth. For instance, Suldo, Thalji, and Ferron (2011) examined predictive relationship related to internalizing and externalizing behaviors on academic achievement and in-school behavior. Suldo and colleagues (2011) followed 341 children who at initial assessment were between 6th and 8th grades, with 300 children assessed a year later between 7th and 9th grades. Student psychopathology was measured using the Youth Self-Report (YSR) form of the Achenbach system (Achenbach & Rescorla, 2001). Academic variables included scores on Florida Comprehensive Assessment Tests (FCAT; Florida Department of Education, 2005) and the student's grade point averages. The findings from regression analyses indicated that higher levels of psychopathology predicted lowered academic achievement. Specifically, even controlling for baseline achievement, multivariate analyses indicated a significant relationship between initial level of internalizing and externalizing problems and student achievement the next year as measured by student GPA ($r = -.16$, $p < .05$, and $r = -.49$, $p < .05$, respectively; Suldo, Thalji, & Ferron, 2011).

In another study, Verboom, Sijtsema, Verhulst, Penninx, and Ormel (2014) examined the relationship between depressive problems, academic performance, social functioning in adolescents. Verboom et al. (2014) followed students from 2001 until 2007; 2,230 students participated in the first assessment wave ($M = 11.09$ years; $SD = 0.55$ years; 50.8% girls), 2,149 students participated in the second assessment wave, and 1,816 students participated in the final

assessment wave (M = 16.27 years; SD = 0.73 years; 52.3% girls). For this study, researchers used the YSR to measure self-reported depressive symptoms, and the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001; Verhulst & Achenbach, 1995) to measure parent report of depressive symptoms in their child. Academic performance was measured using a teacher questionnaire developed as part of the Tracking Adolescents' Individual Lives Survey (TRAILS). Social well-being was measured using a self-reported measure based on the social production functions theory (Ormel, 2002; Ormel, Lindenberg, Steverink, & Vonkorff, 1997). Social problems were measured using The Social Problem scale derived from the CBCL questionnaire. The findings of path analyses with cross-lagged effects conducted by means of structural equation modeling show that higher levels of depressive problems were correlated with less academic performance, with increases in depressive problems associated with lower academic performance (Verboom et al., 2014). Further, higher levels of depressive problems were associated with lower social well-being and more social problems (Verboom et al., 2014).

SWB and Academic Achievement

According to Erikson (1968), in order to promote adolescents' developmental success, families, schools, and communities must nurture adolescents' academic aspirations. Recent literature has shown that SWB co-occurs with many positive outcomes, including academic achievement, better perceived social support, and greater academic self-efficacy (Keyes, 2006; Suldo & Huebner, 2006; Suldo, Thalji, and Ferron, 2009; Suldo, Thalji-Raitano, Kiefer, & Ferron, 2016). In the following sections, I will review the concurrent and predictive relationships of SWB in relation to academics in particular.

Concurrent relationships. Youth who are satisfied with their lives are more likely than those that are not satisfied with their lives to show positive academic functioning, such as academic achievement, more perceived social support from peers and teachers, and greater academic self-efficacy (Suldo & Huebner, 2006). A growing body of research supports the notion that the experiences of well-being and schooling are intertwined. Suldo, Shaffer, and Riley (2008) examined the school related predictors of life satisfaction in a sample of 321 students (68% female and 32% male), ages 14 to 19 years ($M = 15.71$), who were enrolled in a college-preparatory curriculum ($N = 141$) or general education ($N = 171$). The SLSS was used to measure the student's life satisfaction. The School Attitude Assessment Survey-Revised (SAAS-R; McCoach & Siegle, 2003) was used to measure students' attitudes towards schooling and student's attachment to school. School climate was measured using The School Climate Survey-High School Version, Revised (SCS; Haynes, Emmons, & Ben-Avie, 2001). School satisfaction was measured using The School Satisfaction subscale of the Multidimensional Students' Life Satisfaction Scale (MSLSS; Huebner, 1994). Academic achievement was measured using the student's GPA. Suldo, Shaffer, and Riley (2008) found that school grades (GPA), personal self-efficacy in relation to academic ability, and students' perceptions about school climate and connectiveness are correlated with students' life satisfaction.

Similarly, Lyons, Huebner, Hills, and Shinkareva (2013) found that SWB has positive associations with student engagement in a sample that consisted of 990 students in grades 6 to 12 (mean age = 14.62; $SD = 2.06$). Suldo, Thalji-Raitano, Kiefer, and Ferron (2016) examined the relationship between SWB and students' GPA, academic self-perceptions, academic adjustment, and attendance in a sample 500 middle adolescents aged 14 to 18 years old ($M = 15.27$, $SD = 1.0$). Findings indicate that there were significant relationship between SWB and academic self-

perceptions, valuing of school, and attitudes toward school, but not SWB (Suldo et al., 2016).

Predictive relationships. There have been few published studies that examined predictive links between SWB and developmental outcomes in youth. Funk, Huebner, and Gilman (2000) evaluated life satisfaction in relation to indicators of school functioning. In a two-year longitudinal study, researchers followed 99 high school students ($M = 16.14$; $SD = 1.13$) from grades 9 ($N = 48$), 10 ($N = 55$), 11 ($N = 130$), and 12 ($N = 88$). The SLSS was used to measure student's life satisfaction. The Behavior Assessment System for Children-Self-Report-Adolescent Form (BASC; Reynolds & Kamphaus, 1992) was used to measure students' problem behaviors. The findings of the correlational analysis show that there are moderate positive correlations between students' life satisfaction and self-esteem, relations with parents, and interpersonal relations, and moderate inverse correlations between life satisfaction and students' locus of control, depression, anxiety, social stress, sense of inadequacy, atypicality, sensation seeking, attitude to school, and attitude to teacher (Funk, Huebner, & Gilman, 2000). Funk, Huebner, and Gilman (2000) also found that that there was not a predictive relationship between life satisfaction and students' attitudes toward schooling, though this may have been influenced by the study design. That is, 321 students participated in the first wave of data collection; however, only 99 students participated in the second wave of data collection.

Suldo, Thalji, and Ferron (2011) examined the relationship between SWB and academic achievement in a two-year longitudinal study. The SLSS was used to measure student's life satisfaction, and the Positive and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999) was used to measure students' positive and negative affect. Academic variables were measured by scores on the FCAT (reading and math) and students' GPAs. The finding from this study show significant small positive relationships between SWB and FCAT reading, FCAT

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math, and student's GPA ($r = .27$, $p < .05$, $r = .25$, $p < .05$, and $r = .24$, $p < .05$, respectively; Suldo, Thalji, & Ferron, 2011). Further, students who had higher SWB than those with lower SWB at T1 were more likely to increase their GPA at T2; however, these predictive associations were not seen with FCAT reading and math scores (Suldo, Thalji, & Ferron, 2011).

Perceived Stress and Academic Achievement, Predicting Mental Health

High levels of stress are a major concern among youth. Suldo et al. (2009) reported that students with high levels of stress experienced diminished self-efficacy and academic success. Stress also impacts the physical, emotional, and social domains of students' lives (Feld & Shusterman, 2015).

Concurrent relationships. Researchers have found that stress is a major concern among youth. For example, Feld and Shusterman (2015) found that in a sample of 333 high-achieving youth, nearly 25% of students self-reported daily constant fatigue and lack of concentration; 55% of students reported mood swings, irritability, restlessness, inability to sleep, and racing thoughts; 33% of students reported physical health issues (e.g., stiffness, headaches); and 12% of students had anxiety or panic attacks as a result of their high stress levels. Researchers also found significant negative relationships between life satisfaction (measured using the SLSS) and reported stress level as measured by the response to the prompt "I would consider myself to be" with answers ranging from very relaxed to very stress ($r = -.45$, $p < .001$) and the number of reported physical stress experienced per week ($r = -.39$, $p < .001$; Feld & Shusterman, 2015; p. 34). This would indicate that perceived stress has a large impact on students' well-being and functioning. In another study, Suldo et al. (2009) found that in relation to their general education peers, high-achieving students might be at an increased risk for higher stress levels which is

related to school-related issues (e.g., grades, academic self-efficacy).

Suldo and colleagues (2009) used the YSR, the SLSS, and the newly developed Sources of Stress Inventory (SOSI; Sternberg et al., 2016), and collected students' GPA and attendance records to determine the sources of stress and the negative impact of stress in a sample consisting of 319 IB ($N = 162$) and general education (GE) students ($N = 157$) ages 13 to 20 years old ($M = 16.06$, $SD = 1.14$). Researchers reported that reduced academic functioning and a greater number of mental health concerns were associated with greater perceived stress among IB students (Suldo et al., 2009). Suldo and colleagues (2009) also found a large, inverse relationship between perceived stress and life satisfaction among IB students. More specifically, this correlational study found that both internalizing and externalizing (e.g., depression or anxiety symptoms) were significantly correlated with different sources of stress (i.e., academic requirements, parent-child relations, stressful adolescent events, peer relations, problems within family, and academic struggles). The researchers also found differences between IB and GE students on the effect of stress on academic performance. For the students enrolled in the IB program, academic achievement was inversely associated with more stress related to academic struggles, stressful adolescent events, and problems within the family than their GE peers ($r = -.19$, $p < .05$, and $r = -.16$, $p < .05$, $r = -.28$, $p < .05$, respectively; Suldo et al., 2009). In contrast, among GE students, Suldo et al. (2009) found that there were no sources of stress associated with poorer academic achievement (i.e., poorer grades), and that higher levels of stress from academic requirements were associated with better grades.

Predictive relationships. In one of the only studies that this researcher identified that examined predictive relationships between depression, perceived stress, and academic stress, Barker, Howard, Villemaire-Krajden, and Galambos (2018) found that higher stress in general

education students at earlier points in time predict greater levels of later psychopathology, such as depressive symptoms. Barker et al. (2018) followed first-year college students from 2005 until 2006; 198 students participated in the first assessment wave ($M = 18.4$ years; $SD = .44$; 60% female), and 144 participants completed all three waves of assessments. Researchers used the 10-item version (CESD-10; Andresen et al., 1994) of the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1991) to measure depressive systems. To measure academic workload, participants were asked to indicate the number of grades that had been returned to them (e.g., grades on tests or assignments) within the last 14 days. To measure end-of-semester perceived stress, Barker et al. (2018) used a 4-item version of the PSS. In a second study, Barker et al. (2018) followed first-year college students from 2013-2014; 267 students participated in the first assessment wave ($M = 21.25$ years; $SD = 1.67$; 78% female), and 127 participants completed all four waves of assessments. In that second study, Barker et al. (2018) utilized the 20-item CES-D (Radloff, 1991) to measure participants' depressive symptoms. Similar to the first study conducted by Barker et al. (2018), for academic workload, participants indicated the number of grades that had been returned to them (e.g., grades on tests or assignments) within the last 14 days, and perceived stress was measured using a 4-item PSS. The results of correlational analyses from both studies indicated that depressive symptoms were positively associated with perceived stress and academic demands (Barker et al., 2018). In the first study, depressive symptoms were highly intercorrelated across data collection waves and with the end of semester stress. More specifically, participants' perceived stress at the end of semester 1 was significantly correlated with depressive symptoms at the beginning of semester 1 as well as at the end of semesters 1 and 2 ($r = .59$, $p < .001$, $r = .76$, $p < .001$, and $r = .57$, $p < .001$, respectively; Barker et al. 2018). Similarly, for the second study, participants' perceived stress at the start of semester

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1 was significantly correlated with depressive symptoms at the start of semester 1, the end of semester 1, the start of semester 2, and the end of semester 2 ($r = .52$, $p < .01$, $r = .46$, $p < .01$, $r = .42$, $p < .01$, and $r = .33$, $p < .01$, respectively; Barker et al. 2018). Further, participants' perceived stress at the end of semester 2 was significantly correlated with depressive symptoms at the start of semester 1, end of semester 1, the start of semester 2, and the end of semester 2 ($r = .46$, $p < .01$, $r = .60$, $p < .01$, $r = .55$, $p < .01$; and $r = .42$, $p < .01$, respectively; Barker et al. 2018). Barker et al. (2018) also found that participants' perceived stress at the start of semester 2 was significantly correlated with depressive symptoms at the start of semester 1, end of semester 1, start of semester 2, and the end of semester 2 ($r = .42$, $p < .01$, $r = .45$, $p < .01$, $r = .46$, $p < .01$, and $r = .40$, $p < .01$; respectively). Barker et al. (2018) also found that participant's perceived stress at the end of semester 2 were significantly correlated with depressive symptoms at the start of semester 1, end of semester 1, start of semester 2, and end of semester 2 ($r = .49$, $p < .01$; $r = .48$, $p < .01$; $r = .54$, $p < .01$; and $r = .51$, $p < .01$; respectively). Significant relations also existed with regard to the participants' academic workload. Researchers found that participants' depressive symptoms at the start of semester 1 were significantly correlated with academic workload at the end of semester 2 ($r = .21$, $p < .01$) and depressive symptoms at the end of semester 1 were significantly correlated with academic workload at the end of semester 1 ($r = .16$, $p < .01$; Barker et al. 2018). In summary, Barker et al. (2018) found that participants' perceived stress was significantly correlated with depressive symptoms across data collection waves. Academic workload was significantly correlated with depressive symptoms at only two time points across data collection waves (Barker et al. 2018).

There are fewer prospective studies of perceived stress in relation to positive indicators of mental health, such as aspects of SWB. In an exception, Burger and Samuel (2017) followed a

sample of 5,126 school aged youth ($M = 15.47$; $SD = .63$) from 2000 until 2004. Participants completed measures each year each from 2001 until 2004. Perceived stress was measured using a 5-item scale adapted from a questionnaire on job analysis (Prümper, Hartmannsgruber, & Frese, 1995). Perceived self-efficacy was measured using a 4-item scale, adapted from Schwarzer and Jerusalem (1999) and Schwarzer (2000). Life satisfaction was measured using five items (Grob et al., 1991), with a 1 = *completely wrong* to 6 = *completely right* response metric. The items were: "My future looks promising", "I am happy to live", "I am happy with the way my life is unfolding," "Whatever happens, I can see the bright side of it", and "My life seems meaningful to me" (Burger & Samuel, p. 82). Burger and Samuel (2017) found that baseline perceived stress predicted later life satisfaction. Specifically, results of growth curve models within a multilevel modeling framework found that for each one-unit increase in baseline perceived stress led to a decrease in life satisfaction by approximately 0.724 points and for each one-unit increase in change in perceived stress led to a decrease in life satisfaction by approximately 0.276 points (Burger & Samuel, 2017). The sample was not restricted to students enrolled accelerated curricula, but instead a community sample of high school youth who were followed for the duration of the study. While the researchers reported a significant decrease in participants across assessment waves, they did not report the attrition rates for each year of the study.

Taken together, these longitudinal studies illustrate that depressive symptoms are positively associated with perceived stress and academic demands (Barker et al., 2018), and that perceived stress predicts diminished life satisfaction (Burger & Samuel, 2017). This researcher could not identify any longitudinal studies of stress in relation to mental health among gifted, high-achieving, or students in accelerated curricula.

Summary and Conclusions

In summary, several researchers have examined the effects of psychopathology, SWB, and perceived stress on academic achievement. In regard to psychopathology (i.e., internalizing and externalizing behaviors), findings from the literature suggest that there are significant concurrent relationships between psychopathology and academic achievement (Barriga et al., 2002; Owens et al., 2012) as well as significant predictive relationships between psychopathology and academic achievement (Suldo, Thalji, & Ferron, 2011; Verboom et al., 2014). There are also significant concurrent relationships between SWB and academic achievement (Lyons et al., 2012; Suldo, Shaffer, & Riley, 2008). There are mixed results in the literature on the predictive effects of SWB on academic achievement, with some researchers finding no predictive effects (Funk, Heubner, & Gilman, 2000) while other studies have shown significant relationships (Suldo, Thalji, & Ferron, 2011). There are also significant concurrent relationships between perceived stress and academic achievement (Feld & Shusterman, 2015; Suldo et al., 2009), and a significant predictive relationship between perceived stress and academic achievement (Barker et al., 2018; Burger & Samuel, 2017).

School-based mental health services should provide students with the resources to succeed within the school (Severson, Walker, Hope-Dolittle, Kratochwill, & Greshman, 2007). Therefore, those in a position to work with students and help them succeed in the school system should focus on factors that will allow youth to thrive. Even though the traditional focus of mental health has been solely focused on psychopathology, there is a need to shift from pathology-driven work, to an approach that takes other factors into account such as SWB. The dual-factor model of mental health (Keyes, 2007; Suldo et al., 2016) that includes positive indicators (i.e., SWB) as well as indicators of psychopathology (i.e., internalizing and

externalizing behavior problems) yields a picture of youth mental health that is more complete than the traditional model that emphasizes psychopathology. However, little research has been conducted to determine the associations between stress, achievement, and mental health viewed comprehensively within a specific group of high school students in accelerated curricula. Therefore, the current study examined both life satisfaction and psychopathology when interested in examining 'mental health' as a predictor or outcome. First, the current study evaluated the predictive relationship between mental health—psychopathology and life satisfaction (when measured at the beginning of 9th grade)—on academic achievement (GPA) and perceived stress mid-year. Next, the current study evaluated the predictive relationship between academic achievement and perceived stress (mid-year) on mental health—psychopathology and life satisfaction—at the end-of-year.

CHAPTER THREE:

METHODS

The current study conducted a secondary analyses of an archival data set in order to investigate the relationships between psychopathology, life satisfaction, academic achievement, and perceived stress in a sample of 9th grade students enrolled in accelerated curricula (i.e., IB and AP students). This chapter provides an overview of the participants, how participants were chosen to be a part of the study, and method by which data were collected. Next, data collection procedures and specific information on the measures that were used to obtain the data are discussed. Finally, this chapter will examine the statistical analysis and any potential limitations will be discussed.

Participants

The archival data analyzed in this study were collected in Year 2 of an ongoing, 4-year project to develop an educational program to help students enrolled in AP and IB coursework manage their stress associated primarily with rigorous coursework. As reported in a description of the Year 2 work as represented in a recently published manuscript (Parker, Shum, Suldo, Shaunessy-Dedrick, Ferron, & Dedrick, 2019; Suldo, Storey, O'Brennan, Shaunessy-Dedrick, Ferron, Dedrick, & Parker, 2019), the sample available for analysis consists a total of 331 9th grade AP and IB high school students (59.8% female) enrolled in two high schools in one district in a southeastern state; these students took part in the data collection at some point during the year (see Table 1 for demographic characteristics). Students at the participating schools consisted

of 176 AP students (56.2%) and 155 IB students (46.8%). Students at the schools where the data were collected were diverse in terms of race and ethnicity (53.2% Caucasian, 2.4% African American, 22.7% Hispanic, 9.1% Asian, 7.9% multiracial, <1% American Indian or Native Alaskan, <1% Native Hawaiian/Pacific Islander, <1% other ethnic identity, 3% unknown [did not report]). Maternal education level- often used as a proxy for family income/socioeconomic status- was relatively high but also diverse with 6.6% of mothers having a doctoral degree, 27.8% obtaining their master's degree, 44.4% obtaining a bachelor's degree, 9.1% attended some college, 6.6% obtaining their high school diploma, 1.6% attending high school but not obtaining their high school diploma, <1% completing 8th grade or less, and 3.3% unknown (did not report).

Table 1. *Demographic Characteristics of Participants Included in This Study*

Demographic Characteristics	*N*	%
Classification		
AP	176	53.2
IB	155	46.8
Gender		
Male	133	40.2
Female	198	59.8
Ethnicity		
Hispanic, Latino, or other Spanish origin	75	22.7
Not Hispanic	241	72.8
Missing or Not Reported	15	4.5
Race		
American Indian or Alaskan Native	1	0.3
African American	8	2.4
Asian	30	9.1
Caucasian	176	53.2
Hispanic	75	22.7
Multiracial	26	7.9
Native Hawaiian/Pacific Islander	2	0.6
Other	3	0.9
Missing or Not Reported	10	3.0
Mother's Education Level		
Doctoral Degree	22	6.6
Master's Degree	92	27.8
Bachelor's Degree	147	44.4
Some College	30	9.1
High School Diploma	22	6.6

Table 1. (Continued)

Demographic Characteristics	N	%
Some High School	6	1.8
8th Grade or Less	1	0.3
Missing or Not Reported	11	3.3

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

During the September 2016 (T1) data collection, 319 students completed the baseline phase of the study. During January 2017 (T2), 304 students participated in a mid-year screening assessment; this sample includes students who were new to the study (recruited after baseline data collection was complete) and excludes students who withdrew from the school or accelerated courses during the first semester. During May 2017 (T3), 311 students completed the end-of-year assessment. The number of students with data at baseline (T1) and at mid-year screening (T2) is 293. The number of students with data at mid-year screening (T2) and at end-of-year assessment (T3) is 288. The number of students with data at all three data collection waves is 288. Please see Table 2 for a visual representation of the number of students who completed each wave of the analysis.

Table 2. *Number of Participants Who Completed Each Wave of the Data Collection*

Timepoint (month/year)	Measures/Data collected	Number of Students (N) in each data collection	Attrition %
T1	Student Demographics	331	
(September 2016)	Psychopathology	320	
	Life Satisfaction	319	
	Completed All Measures (T1)	319	- 6.0
T2	GPA	304	
(January 2017)	Perceived Stress	304	
	Completed All Measures (T2)	304	- 4.7
T3	Psychopathology	311	
(May 2017)	Life Satisfaction	311	
	Completed All Measures (T3)	311	+ 2.3

Note. GPA = student grade point average; T1 = the first wave of data collection (September 2016); T2 = the second wave of data collection (January 2017); T3 = the third wave of data collection (May 2017); % = percentage.

Procedures

This section reviews the procedures used to construct the longitudinal archival dataset. The data analyzed are from a larger intervention development study, funded by the Institute of Education Sciences (R305A150543). The curricular supports were developed through an iterative collaboration between university-based researchers and two southeastern high schools with either an AP or IB program. Faculty in school psychology and gifted education partnered with district educators to design and implement universal and selective supports for all AP and IB freshman. The universal support curriculum involved learning experiences connected to coping (e.g., responding to school stress such as by using task management and cognitive reappraisal strategies), and increasing student engagement (e.g., forming relationship with teachers and creating positive feelings about school and the academic program). In spring 2017, a selective support was provided by university-based interventionists. Specifically, coaches used motivational interviewing approach to help students reflect on their current levels of coping and engagement, identify a goal or an area to improve, and create an individualized action plan to address the target. The overarching goal of the universal and selective supports was to increase the well-being and academic success of students in accelerated curricula. See Table 3 for an overview of 2016-2017 project procedures.

Table 3. *Overview of Supporting High School Students in College-level Classes Grant Procedures*

Time	Description of Project Procedure
August 2016	Introduction to the project, student assent obtained (students were reminded that participation in the study was optional, and they may withdraw at any time)
September 2016	Students completed the demographics questionnaire and measures packet (**T1**)
September – November 2016	Ten- to twelve-week universal SEL curriculum provided to participating AP and IB classes
January 2017	Students completed screening measures (**T2**)

Table 3. (Continued)

Time	Description of Project Procedure
February 2017	First motivational interviewing selective intervention session provided to students nominated by their respective teachers or identified as needing additional based on academic data or screening measures completed in January 2017
March – April 2017	Second motivational interviewing selective intervention session provided to students who requested follow-up meetings with the coach
May 2017	Students completed the post data measures packet (including the measures utilized in this study) (**T3**)

Note. T1 = the first wave of data collection; T2 = the second wave of data collection; T3 = the third wave of data collection.

In August of 2015, approval to conduct this study was obtained from the research team's Institutional Review Board (study: *Supporting High School Students in College-Level Classes*, #Pro00022787). The author of this study is an approved member of the university research team. Study approval was also received from the research review board for the school district in which the schools are located. Parental consent (Appendix A) and student assent (Appendix B) were obtained prior to the implementation of any intervention and data collection. Students had the choice to refuse to participate for any reason (e.g., did not feel comfortable). Permission was obtained from parents via a written parental consent form that students were given at the beginning of the 2016-2017 school year. All freshmen in IB Inquiry Skills or AP Human Geography were asked to take the form home, share it with their parents, and return to school after acquiring a parent signature.

In August 2016 (before the beginning of the universal intervention), students who had obtained parental permission to participate in research met with the research team in large groups in either their classrooms or the school's cafeteria (i.e., 2 classes during one-time period). The days of the week and times varied according to the time allocated by the schools. Student classrooms varied in size from 15 students to 30 students, or 60 in the case of the two classes that

met concurrently in the cafeteria. Before students responded to items within the questionnaire packet, a member of the research team explained the purpose of the study and read aloud the student assent form (see Appendix B). Students learned that they had the right to withdraw from the study at any point during the data collection process. Only students who provided written assent were permitted to proceed with data collection procedures.

In September 2016 (T1), students completed the demographic questionnaire, as well as other self-report measures reviewed later within this chapter. The questionnaires contained in packets were counterbalanced in order to control for potential order effects. Approximately 45 minutes were provided to allow students to complete their questionnaire packets. Additional time was granted if needed. During the survey administration, the two Principal Investigators, postdoctoral fellows, and graduate research assistants (including the author of the current study) answered student questions and monitored students to be certain they were responding independently. After a student indicated completion of his or her questionnaire packet, a member of the research team visually scanned each measure in the packet, checking for skipped items or errors in responding. If needed, students were asked to complete the item(s) or correct the item(s). If students meant to skip the item, then they may left them unanswered. If students were not in attendance on the date of data collection, they were asked to come to the school psychologist's office on subsequent days, where a member of the research team would explained the study, obtained assent, and allowed students to complete the questionnaire packet.

In January 2017 (T2), students completed a 1-page measure of stress (i.e., perceived stress) and school satisfaction, as part of a screening procedure for the larger intervention project. Also, at T2, a member of the research team worked with administrative staff at the participating schools to gather additional information on participants' academic achievement (i.e., student

GPA) up to that point in the 2016-2017 academic school year. Participant's GPAs (1.0 to 4.0) were matched with his or her study identification number, then entered into the data set.

In May 2017 (T3) student participants completed the questionnaire packet in the same manner as described for Time 1 above. This wave of data collection provided information pertinent to post-intervention, for the larger research project. The variables measured during T3 were participant psychopathology and life satisfaction. Please see Table 4 for a visual representation of the data collected during each time point.

Table 4. *Data Collection Procedures to Examine the Predictive Effects of Variables Across a Longitudinal Study*
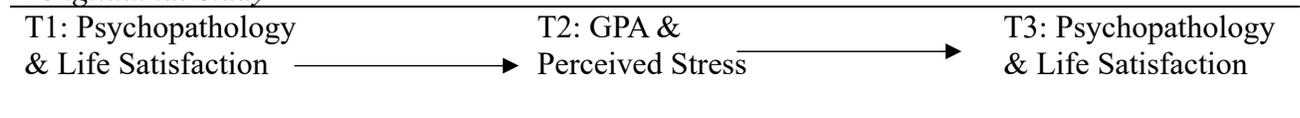
T1: Psychopathology & Life Satisfaction	T2: GPA & Perceived Stress	T3: Psychopathology & Life Satisfaction

Note. GPA = student grade point average; T1 = the first wave of data collection (September 2016); T2 = the second wave of data collection (January 2017); T3 = the third wave of data collection (May 2017).

Measures

Demographics form. The demographics form (see Appendix C) included questions about the students' age, grade, gender, middle school classes, race/ethnicity, parental marital status (e.g., my parents are married; my parents are divorced; etc.), parental highest education level, and home environment (e.g., which adult(s) do you love with most of the time, mother and father; mother only; father only; etc.). The form also contained two sample questions in Likert scale form (e.g., write about problems and feelings) which were similar to the format of subsequent measures completed at Time 1, Time 2, and Time 3. The research team used these items to train students on how to complete Likert-style questions.

Brief Problem Monitor-Youth Scale (BPM-Y; Achenbach, McConaughy, Ivanova, & Rescorla, 2011). The BPM-Y consists of 19 items measuring internalizing, attention, and

externalizing behaviors among youth ages 11 to 18 years. A sample of the BPM-Y is not included as an Appendix due to copyright restrictions. The BPM-Y was completed at T1 and T3. Respondents indicate on a 3-point scale, including 0 (*not true*), 1 (*somewhat true*), and 2 (*very true*), the extent to which various statements about their behavior (e.g., concentrating, worrying, and trouble staying still) are true. The scale consists of three separate scales scores for internalizing behaviors (six items), attention problems (six items), and externalizing behaviors (seven items). This researcher analyzed psychopathology symptomology (internalizing and externalizing problems) utilizing students' composite scores on the six-item internalizing scale scores and seven-item externalizing scale scores, consistent with previous research examining psychopathology.

In the technical manual, Achenbach et al. (2011) reported evidence of reliability in terms of internal consistency (α = .75 and .78 for the externalizing and internalizing scales, respectively). In a recent study of middle school students, internal consistency estimates were as follows: $\geq$ .82 for internalizing behaviors and $\geq$ .74 for externalizing behaviors (Roth, Suldo, & Ferron, 2017). Piper, Gray, Raber, and Birkett (2014) found that internal consistency of the BPM was high (Cronbach's alpha = .91), and satisfactory for the externalizing (α = .86) and internalizing scales (α = .78).

Students' Life Satisfaction Scale (SLSS; Huebner, 1991)**.** The SLSS consists of seven items measuring global life satisfaction (see Appendix E). The questionnaire was designed for children in grades 3 to 12 and was completed at Time 1 and T3. Using a 6-point Likert-type Scale (1 = *Strongly Disagree*; 6 = *Strongly Agree*), participants rated statements in relation to their current life at the time of administration (e.g., "I have a good life", "I have what I want in life", see Appendix D for a complete list of items). This measure included two items that were

reverse scored (items 3 and 4). Higher mean scores indicate higher global life satisfaction.

The initial validity study of SLSS found a high internal consistency (α = .82) and strong support for construct validity with moderate to high consistency with other measures of happiness. Studies have indicated that this scale had strong internal consistency estimates ≥ .82 (e.g., Gilman & Huebner, 1997; Roth, Suldo, & Ferron, 2017; Suldo et al., 2014). Construct validity was supported through moderate to high correlations (r = .36 to .62) with the Happiness subscale of the Piers-Harris (Piers, 1984), Andrews and Withey's (1976) measure of life satisfaction, and Bradburn's (1976) measure of subjective well-being.

Perceived Stress Scale (PSS; Cohen et al., 1983)**.** The original PSS assessed both stress and coping with 14-item scale. However, since coping was not a focus of the study, only the six items that were identified in an earlier exploratory factor analysis (Golden-Kreutz, Browne, Frierson, & Anderson, 2004) that measured perceived distress were used in the current study to measure student perceptions of stress (Appendix F). Respondents indicate on a 5-point scale (0 = *never*, 4 = *very often*), the degree to which they "found their lives unpredictable, uncontrollable and overloading" (Cohen et al., 1983, p. 387). The 6-item PSS was completed at T2. Consistent with the global nature of the items, the PSS measures general perceived (dis)stress rather than stress perceived from a particular demand, such as school (see Appendix E for a complete list of items). Internal consistency has been reported on the 6-item PSS in previous studies as ≥ .88 and there is evidence of convergent validity, with large correlations between student's reported perceived stress and indicators of student mental health (Suldo & Shaunessy-Dedrick, 2013; Suldo, Shaunessy, & Hardesty, 2008).

Indicator of Academic Achievement

        Grade point average (GPA). At T2, fall semester grade point averages (GPAs) were obtained from school records. Unweighted GPA (i.e., student grades that do not account for difficulty of coursework by 'weighting' accelerated coursework) was calculated by summing numerical values assigned to letter grades for academic performance (e.g., A = 4.0, B = 3.0) and divided by the total number of courses during the first semester of high school.

Overview of Data Analysis Plan

        Missing data. It was expected that the rates of missing data within the data set would be low because of the specific data collection procedures, which included scanning each of the measures for completion. Upon review of the measures, if an item was missing or incomplete, a research team member would ask the participant to clarify if the participant had meant to skip the item. During T1, 3.3% of student responses were missing from the BPM-Y (i.e., measure of participant's psychopathology symptomology) and 3.6% of student responses were missing from the Student's Life Satisfaction Scale (i.e., measure of participant's life satisfaction). During T2, 8.2% of student responses were missing from the Perceived Stress Scale (i.e., measure of participant's perceived stress). During T3, 6.0% of student responses were missing from the BPM-Y (i.e., measure of participant's psychopathology symptomology) and 6.0% of student responses were missing from the Student's Life Satisfaction Scale (i.e., measure of participant's life satisfaction).

        Preliminary analyses. Means, standard deviations, and further descriptive statistics (e.g., kurtosis, skew) were calculated for all variables of interest to identify any violations of assumptions. Additionally, for each variable at each time point, Cronbach's alpha was calculated

to determine the internal consistency of each measure. Throughout this study, statistical significance for each analysis was determined using an alpha level of .05. For each regression analysis, mother's level of education and student gender were controlled. Upon completion of the preliminary analyses, a series of statistical analysis were completed in order to examine the relationships for the following research questions:

1. To what extent is students' beginning of the year mental health as indicated by psychopathology symptomology and life satisfaction predictive of their mid-year grade point averages?

2. To what extent is students' beginning of the year mental health as indicated by psychopathology symptomology and life satisfaction predictive of their mid-year perceived stress levels?

3. To what extent is students' mid-year academic achievement as indicated by grade point averages predictive of their end-of-year mental health, as indicated by students' psychopathology symptomology and life satisfaction?

4. To what extent are students' mid-year perceived stress levels predictive of their end-of-year mental health, as indicated by psychopathology symptomology and life satisfaction?

Predictive relationships between psychopathology and life satisfaction to subsequent academic achievement and perceived stress. In order to address the first and second research questions, if psychopathology symptoms and life satisfaction at T1 predict students' subsequent academic achievement and perceived stress at T2, two series of multiple regression analyses were conducted because two dependent variables were examined. The presence of psychopathy symptomology was indicated using scores on the BPM-Y. The scores on the internalizing and

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externalizing subscales, respectively, were summed and analyzed separately for each analysis. Life satisfaction was indicated by a composite score based on the participant's average SLSS score. Academic achievement was indicated using the student's GPA. Perceived stress was indicated by a composite score based on the student's average PSS response. Further, Pearson correlational analyses were conducted for each variable of interest to determine the relationship between variables within the same time period (e.g., T1 & T2) and to examine the relationship between variables at T1 and T2 (i.e., psychopathology, life satisfaction, GPA, and perceived stress).

Predictive relationships between academic achievement and perceived stress to subsequent psychopathology and perceived stress. In order to address the third and fourth research questions, if mid-year GPA and perceived stress at T2 predict students' subsequent psychopathology symptoms and life satisfaction at T3, similarly, two series of multiple regression analyses were conducted because two dependent variables were examined. Academic achievement and perceived stress were measured using students' GPA and PSS average score, respectively. The presence of psychopathology symptomology was indicated using scores on the BPM-Y. Composite scores were created for the internalizing and externalizing subscales and analyzed separately for each analysis. SWB was indicated by a participant's SLSS average score. Further, Pearson correlational analyses were conducted for each variable of interest to determine the bivariate relationship between variables within the same time period (e.g., T2 & T3) and to examine the relationship between variables at T2 and T3 (i.e., GPA, perceived stress psychopathology, and life satisfaction).

Limitations and Delimitations

Several factors may compromise the validity and generalizability of the study. First, data analyzed within the current study came from archival data sets. Thus, the author of the current study was not able to control for content of questionnaires or variables included in various time points of the study design. More specifically, to fully examine the relationship between psychopathology, SWB, perceived stress, and academic achievement, data would ideally have been collected at all three time points for each variable. However, GPA was not available at T1 or at T3; SWB and psychopathology were not assessed at T2, and perceived stress was not examined at T1 or T3.

The author of this study was not personally present at all data collection occasions, although did contribute to some as a volunteer member of the research group. Written documents completed by the research team with responsibility for collecting the archival data set provide evidence that appropriate steps were taken to prevent threats to the validity and reliability of the data during data collection. For example, researcher team members evaluated student responses to verify that the participants appropriately completed the obtained measures. As such, there is no evidence that the archival data set contains improper data.

Another limitation of this study is the limited ability to generalize to larger populations. Since this study only examined AP and IB students in 9th grade, the ability to generalize these results to a larger population (e.g., high achieving students in other grades, all high school students) are limited. Furthermore, student participants are restricted to only two public high schools in the same district in a southeastern state, which limits generalizability to other geographic locations.

Further, the sample of AP and IB students in the current study is unique in that they took part in a newly developed intervention that focused on issues of stress and emotional wellness. Thus, the variables contributing to relationships examined as part of this study may be influenced by the intervention. Student scores on measures at T2 and/or T3 (that occurred after the 10-12-week SEL programing) may have been influenced by the universal SEL intervention. For example, one aspect of the intervention is designed to teach students effective coping strategies (e.g., turning to friends and family for social support) while also limiting ineffective coping strategies (e.g., skipping school). Thus, the impact of the intervention may directly influence student's perceived stress measured at T2, in a manner such that lower PSS scores than typical may be reported. Additionally, students identified for the selective interventions who received one to two motivational interviewing coaching sessions may have better than expected (if no intervention) scores on later measures collected at T3 (i.e., psychopathology and life satisfaction). There is no way to examine the relationships between the variables of interest without considering the effects of the universal SEL curricula or the selective motivational interviewing coaching sessions on the levels of variables at time points 2 and 3.

A final limitation of this study is limited indicators of the SWB construct. SWB is often conceptualized as having three different components: global life satisfaction (e.g., satisfaction with life and current circumstances), positive affect, and negative affect (i.e., experiencing positive and negative emotions in daily life, respectively). However, in the larger study, only one aspect of SWB (i.e., life satisfaction) was measured. However, utilizing life satisfaction as an indicator of SWB is consistent with the majority of studies of youth SWB that focused on the most stable component of SWB—specifically, cognitive appraisal of perceived quality of life, or students' self-reported levels of satisfaction with their current life. In any event, this study was

not be able to examine the overall SWB construct (i.e., life satisfaction, positive and negative

affect), but instead is limited to one indicator of SWB.

CHAPTER FOUR:

RESULTS

This chapter includes the results of the statistical analyses conducted to answer the four research questions in the current study. First, the steps taken to screen the data and create the variables are described. Next, the results of the preliminary analyses are described. Additionally, the results of a series of Pearson correlations are presented to examine the relationships between the variables of psychopathology (i.e., internalizing and externalizing problems), life satisfaction, student GPA, and perceived stress at various assessment points. Finally, the results of a series of regression analyses are reported to examine the predictive relationships between the variables of interest (i.e., psychopathology, life satisfaction, student GPA, and perceived stress) at various assessment points.

Data Screening

Data entry. Raw student self-report data were entered into Microsoft Excel by members of the research team (including this researcher). To ensure accurate data entry, integrity checks were completed on the survey packets for 20% of the participants. No errors were found in these integrity checks, which indicate that the trustworthiness of the data entry procedures was very high. The resulting dataset analyzed in the current study is thus reflective of students' functioning as reported on the paper-and-pencil surveys. Upon completion of the data integrity checks, the dataset was imported into the Statistical Package for Social Sciences (SPSS) for data analysis.

Missing data. Rates of missing data points were low in this study, largely due to the data collection procedures in which study staff visually scanned completed packets for skipped items and directed students' attention to the missing items. When missing data were accidental, participants completed the item(s) on site. For the scales analyzed in the current study (i.e., SLSS, PSS, BPM-Y), overall composite scores were calculated as the average of the completed items (i.e., SLSS, PSS, BYM-Y). Participants' scale scores were utilized in the analysis as long as 70% or more of the items on the scale were completed for a given participant. Specifically, for each multiple regression analysis, participant data were not utilized (i.e., listwise deletion) if less than 70% of the items on each scale were not completed.

Variable Creation

To allow for analyses to be conducted between constructs (versus individual items), composite scores were created to index participants' levels of internalizing symptoms of psychopathology, externalizing symptoms of psychopathology, life satisfaction, and perceived stress. Participants' internalizing symptoms of psychopathology for each assessment point (T1 and T3) were calculated as the mean of participant responses to 6-items on the Internalizing Problems scale and the 7-items on the Externalizing Problems scale of the BPM-Y, respectively. Participants' life satisfaction scores for each assessment point (T1 and T3) were calculated as the mean of participants' responses to the 7-items on the SLSS (after items 3 and 4 were reverse scored). Participants perceived stress scores for the T2 assessment point were calculated as the mean of participants' responses to the 6-items on the PSS.

Preliminary Analysis

Preliminary analyses consisted of: (a) computing Cronbach's alphas for all the multi-item scales, (b) computing descriptive statistics (i.e., means, standard deviations, skewness, and kurtosis) for all variables of interest, and (c) examining correlations between key variables.

Measure reliability. Internal consistency was examined for all multi-item scales (i.e., Internalizing Problems scales of the BPM-Y, Externalizing Problems scale of the BPM-Y, PSS, SLSS) for each assessment point, as summarized in Table 5. For the 6-item Internalizing Problems scale of the BPM-Y, internal consistency was .83 at T1 and .82 at T3. Internal consistency for the 7-item Externalizing Problems scale of the BPM-Y was .69 at T1 and .74 at T3. Internal consistency of the 7-item SLSS was .86 at both times 1 and 3. The coefficient alpha for the 6-item PSS at T2 was .88. In sum, while the internal consistency of the Externalizing Problems scale of the BPM-Y was within the questionable range at T1, the internal consistency improved to within acceptable ranges at T3. Of note, Nunnally (1978) outlined that .70 is an acceptable minimum alpha. Additionally, the internal consistency of the Internalizing Problems scale of the BPM-Y, the SLSS, and the PSS across assessment points remained within the good range across time points.

Table 5. *Internal Consistency of Composite Measures at Each Time Point*

	Time Point		
Measure	T1	T2	T3
BPM-Int	.83 ($N = 320$)	n/a	.82 ($N = 311$)
BPM-Ext	.69 ($N = 320$)	n/a	.74 ($N = 311$)
SLSS	.86 ($N = 319$)	n/a	.86 ($N = 311$)
PSS	n/a	.88 ($N = 304$)	n/a

Note. Int = internalizing problems, Ext = externalizing problems, n/a = not applicable, T1 = the first wave of data collection (September 2017); T2 = the second wave of data collection (January 2017); T3 = the third wave of data collection (May 2017).

Descriptive analyses. To assess normality, skewness and kurtosis of the outcome variables, as well as other descriptive statistics (e.g., mean, standard deviation), were calculated for each assessment point. Tables 6, 7, and 8 present these results. As shown in Tables 6 and 8, students' internalizing problems at T1 ($M = .52$, $SD = .48$) were slightly lower than internalizing problems at T3 ($M = .54$, $SD = .52$); students' externalizing problems at T1 ($M = .29$, $SD = .29$) were slightly lower than students' externalizing problems at T3 ($M = .33$, $SD = .34$); and students' life satisfaction at T1 ($M = 4.62$, $SD = 0.88$) was slightly higher than students' life satisfaction at T3 ($M = 4.47$, $SD = 0.93$). As shown in Table 7, students' perceived stress was near the middle of the scale (possible scores ranging from 1 to 5) at T2 ($M = 2.67$, $SD = 0.87$) and students' average GPA was within the A to B ranges at T2 ($M = 3.57$, $SD = 0.39$). Students' perceived stress and average GPA mean values were comparable to averages seen in previous research with other samples of AP and IB students (Suldo & Shaunessy-Dedrick, 2013; Suldo, Shaunessy, & Hardesty, 2008). To assess univariate normality, skew and kurtosis of each of the eight variables were calculated. All variables had an approximate normal distribution (skew and kurtosis between -2.00 and +2.00) across time points.

Table 6. *Descriptive Statistics for Key Variables at Time Point One (T1; September 2016)*

Variable	N	Minimum	Maximum	M	SD	Skew	Kurtosis
Internalizing Problems	320	0.00	2.00	0.52	0.48	0.93	0.18
Externalizing Problems	320	0.00	1.43	0.29	0.29	1.09	0.86
Life Satisfaction	319	1.86	6.00	4.62	0.88	-0.66	0.33

Table 7. *Descriptive Statistics for Key Variables at Time Point Two (T2; January 2017)*

Variable	N	Minimum	Maximum	M	SD	Skew	Kurtosis
Perceived Stress	304	1.00	5.00	2.67	0.87	0.22	-0.33
GPA	305	2.08	4.00	3.57	0.39	-0.97	0.51

Note. GPA = Grade Point Average.

Table 8. *Descriptive Statistics for Key Variables at Time Point Three (T3; May 2017)*

Variable	*N*	Minimum	Maximum	*M*	*SD*	Skew	Kurtosis
Internalizing Problems	311	0.00	2.00	0.54	0.52	0.98	0.28
Externalizing Problems	311	0.00	1.43	0.33	0.34	1.09	0.50
Life Satisfaction	311	2.00	6.00	4.47	0.93	-0.50	-0.19

Students sum scores on the BPM-Y were also examined in order to assess percent of sample above the clinical cut point of $T \geq 65$ (93rd percentile in the measure's normative sample of 11-18 year olds). At T1, 21.9% and 17.7% of males and females, respectively, had elevated levels of internalizing problems, whereas 7.8% and 2.1% of males and females, respectively, had elevated levels of externalizing problems. At T3, 25.2% and 18.5% of males and females, respectively, had elevated levels of internalizing problems, whereas 6.3% and 9.2% of males and females, respectively, had elevated levels of externalizing problems. Research has demonstrated that psychopathology symptomology (i.e., internalizing and externalizing problems) remain stable in both one year and three year longitudinal studies with correlation coefficients ranging from $r = .40$ to .55 for males and females internalizing problems, respectively, and $r = .43$ to .55 for males and females externalizing problems (Achenbach, Howell, McConaughy, & Stranger, 1995; Reitz, Deković, & Meijer, 2005).

Correlational analyses. To examine the bivariate relationships between all outcome variables, correlation matrices were constructed at each assessment point. Tables 9, 10, and 11 present the correlations among variables at T1 and T2 (Table 9), T2 and T3 (Table 10), and T1 and T3 (Table 11). An alpha level of .05 was used to determine significance. As expected, life satisfaction at T1 was negatively correlated with internalizing and externalizing problems at T1 ($r = -.57$, $p < .001$, and $r = -.37$, $p < .001$, respectively); internalizing and externalizing problems at T1 were positively correlated ($r = .38$, $p < .001$); and GPA and perceived stress at T2 were negatively correlated ($r = -.19$, $p < .01$). Of interest are longitudinal relationships between T1

mental health indicators and T2 stress and achievement indicators. Perceived stress at T2 was

positively correlated with internalizing and externalizing problems at T1 ($r = .56$, $p < .001$, and r

$= .32$, $p < .001$, respectively) and negatively correlated with life satisfaction at T1 ($r = -.43$, p

$< .001$). GPA at T2 was negatively correlated with externalizing problems at T1 ($r = -.14$, p

$< .05$), and positively correlated with life satisfaction at T1 ($r = .17$, $p < .01$).

Table 9. *Correlation Matrix for Variables at Time Point One (T1; September 2016) and Time Point Two (T2; January 2017)*

	GPA (T2)	PS (T2)	IP (T1)	EP (T1)	LS (T1)
GPA (T2)	1.00				
PS (T2)	-.19**	1.00			
IP (T1)	-.09	.56***	1.00		
EP (T1)	-.14*	.32***	.37***	1.00	
LS (T1)	.17**	-.43***	-.57***	-.38***	1.00

Note. GPA = Grade Point Average; PS = perceived stress; IP = internalizing problems; EP = externalizing problems; LS = life satisfaction; T1 = the first wave of data collection (September 2016); T2 = the second wave of data collection (January 2017); Sample sizes ranged from 293 to 320; *$p < .05$, **$p < .01$, ***$p < .001$.

Similar correlational patterns were observed between variables at T2 and T3. Again, life

satisfaction at T3 was negatively correlated with internalizing and externalizing problems at T3

($r = -.54$, $p < .001$, and $r = -.36$, $p < .001$, respectively) and internalizing and externalizing

problems at T3 were positively correlated ($r = .39$, $p < .001$). Perceived stress at T2 was

positively correlated with internalizing problems and externalizing problems at T3 ($r = .58$, p

$< .001$ and $r = .35$, $p < .001$, respectively) and negatively correlated with life satisfaction at T3 (r

$= -.49$, $p < .001$). Student GPA at T2 was positively correlated with life satisfaction at T3 (r

$= .15$, $p < .05$); however, unlike the relationship between GPA at T2 and externalizing problems

at T1, externalizing problems at T3 was not found to be significantly correlated with GPA at T2.

These results indicated that significant relationships were present between students' life

satisfaction, internalizing problems, and externalizing problems. In addition, students' perceived

stress was negatively related to student GPA. Student's perceived stress was found to be

significantly positively related to student's internalizing and externalizing problems, and

negatively related to student's life satisfaction. Student GPA was positively correlated with

student's life satisfaction between assessment points and significantly negatively correlated with

student's externalizing problems between T1 and T2, however, there was not a significant

relationship between T2 and T3. Finally, student GPA was not found to be significantly

correlated with students' internalizing problems at T1 and T2 or T2 and T3.

Table 10. *Correlation Matrix for Variables at Time Point Two (T2; January 2017) and Time Point Three (T3; May 2017)*

	GPA (T2)	PS (T2)	IP (T3)	EP (T3)	LS (T3)
GPA (T2)	1.00				
PS (T2)	-.19**	1.00			
IP (T3)	-.06	.58***	1.00		
EP (T3)	-.09	.35***	.39***	1.00	
LS (T3)	.15*	-.49***	-.54***	-.36***	1.00

Note. GPA = Grade Point Average; PS = perceived stress; IP = internalizing problems; EP = externalizing problems; LS = life satisfaction; T2 = the second wave of data collection (January 2017); T3 = the third wave of data collection (May 2017); Sample sizes ranged from 299 to 311; *$p < .05$; **$p < .01$; ***$p < .001$.

There were also significant relationships between the variables at T1 and T3.

Internalizing problems at T1 were positively related to internalizing problems and externalizing

problems at T3 ($r = .65$, $p < .001$, and $r = .32$, $p < .001$, respectively) and negatively correlated

with life satisfaction at T3 ($r = -.43$, $p < .001$). Similarly, externalizing problems at T1 were

positively related to internalizing problems and externalizing problems at T3 ($r = .25$, $p < .001$,

and $r = .61$, $p < .001$, respectively) and negatively correlated with life satisfaction at T3 ($r = -.33$,

$p < .001$). Finally, life satisfaction at T1 was negatively correlated with internalizing and

externalizing problems at T3 ($r = -.41$ $p < .001$, and $r = -.30$, $p < .001$, respectively) and

positively correlated with life satisfaction at T3 ($r = .65$, $p < .001$).

In summary, student's initial psychopathology symptomology (internalizing and externalizing problems) was significantly positively correlated with student's end-of-year psychopathology (internalizing and externalizing problems). Likewise, student's initial life satisfaction was significantly positively correlated with student's end-of-year life satisfaction. Students' initial and end-of-year psychopathology symptomology were inversely correlated with initial and end-of-year life satisfaction. In sum, all mental health variables at T1 were significantly related to all mental health variables at T3.

Table 11. *Correlation Matrix for Variables at Time Point One (T2; September 2016) and Time Point Three (T3; May 2017)*

	IP (T1)	EP (T1)	LS (T1)	IP (T3)	EP (T3)	LS (T3)
IP (T1)	1.00					
EP (T1)	.37***	1.00				
LS (T1)	-.57***	-.38***	1.00			
IP (T3)	.65***	.25***	-.41***	1.00		
EP (T3)	.32***	.61***	-.30***	.39***	1.00	
LS (T3)	-.43***	-.33***	.65***	-.54***	-.36***	1.00

Note. IP = internalizing problems; EP = externalizing problems; LS = life satisfaction; T1 = the first wave of data collection (September 2016); T3 = the third wave of data collection (May 2017); Sample sizes ranged from 300 to 320; ***$p < .001$.

Analysis of Predictive Relationships

To determine the extent to which SWB (i.e., life satisfaction) and psychopathology (i.e., internalizing and externalizing problems) were predictive of students' subsequent academic achievement (i.e., GPA) and stress, two separate multiple regression models were conducted (Tables 12 and 13). In addition, to determine the extent to which student academic achievement and perceived stress were predictive of students' subsequent SWB (i.e., life satisfaction) and psychopathology (i.e., internalizing and externalizing problems), three separate multiple regression models were conducted (Tables 14, 15, and 16). In total, five separate multiple regression models were conducted to analyze the predictive relationships between

psychopathology, life satisfaction, perceived stress, and academic achievement across data collection waves. The following sections will assess assumptions in multiple regressions (i.e., linearity, homogeneity of variance, and normality), present the predictive relationships between students' psychopathology symptomatology and life satisfaction (T1) on students' subsequent perceived stress and academic achievement (T2); and investigate the predictive relationships between students' perceived stress and academic achievement (T2) on students' subsequent psychopathology and life satisfaction (T3). Student gender and mother's education level were utilized as control variables in each of the following models. Gender was coded with male = 0 and female = 1. Mother's education level ranged from 1 = *8th grade or less* to 7 = *doctorate degree*.

Normality. For each multiple regression analysis, assumptions of linearity and homogeneity of variance were analyzed by graphing in a scatterplot the standardized and unstandardized residuals from the multiple regression models. Upon completion of the visual analysis of the standardized and unstandardized residuals, it was concluded that no violations to the assumptions of linearity and homogeneity of variance had occurred. In addition, normality was assessed by graphing the standardized residuals in a histogram. The resulting visual analysis concluded that no violations to the assumption of normality had occurred.

Predictive relationships between psychopathology and life satisfaction to subsequent academic achievement and perceived stress. To investigate the predictive relationship between students' initial psychopathology symptomology (internalizing and externalizing problems) to subsequent academic achievement (GPA) and perceived stress, a series of two multiple regressions were computed. The results are presented in Tables 12 and 13, respectively. An alpha level of .05 was used to determine significance. The results indicate that the mother's education

level and gender accounted for 5% of the variance in GPA at T2, $F(2, 291) = 7.63$, $p < .01$, adjusted $R^2 = .04$ ($p < .01$). When psychopathology symptomology and life satisfaction were added to the model, the model accounted for 7% of the variance in GPA at T2 $F(5, 288) = 4.55$, adjusted $R^2 = .06$ ($p = .07$); indicating that students' initial psychopathology and life satisfaction accounted for 2% of the unique variance in GPA at T2. Students' internalizing problems ($p = .18$), externalizing problems ($p = .49$), and life satisfaction ($p = .07$) were not significant predictors of T2 GPA after the influence of the other variables in the model was accounted for. Mother's education level and gender were both significant predictors of GPA ($\beta = .16$, $p < .01$, and $\beta = .12$, $p < .05$, respectively); however, students' internalizing problems, externalizing problems, and life satisfaction were not significant predictors of student GPA.

With respect to perceived stress at T2, the results indicate that mother's education level and gender accounted for 8% of the variance in perceived stress at T2, $F(2, 290) = 12.99$, $p < .001$, adjusted $R^2 = .8$ ($p < .001$). When psychopathology and life satisfaction were added to the model, the model accounted for 34% of the variance in perceived stress at T2 $F(5, 287) = 30.44$, $p < .001$, adjusted $R^2 = .34$ ($p < .001$); indicating that students' initial psychopathology and life satisfaction accounted for 27% of the unique variance in perceived stress at T2. Student gender, internalizing problems, externalizing problems, and life satisfaction were each significant predictors of perceived stress ($\beta = .12$, $p < .05$, $\beta = .41$, $p < .001$, $\beta = .11$, $p < .05$, and $\beta = -.13$, $p < .05$, respectively). Mother's education level was not a significant predictor of students' perceived stress at T2. In summary, students' gender, internalizing problems, externalizing problems, and life satisfaction were significant predictors of students' perceived stress at T2.

In summary, mother's education level and gender were both significant predictors of mid-year student GPA, accounting for 5% of the variance. Initial psychopathology symptomatology

(internalizing and externalizing problems) and initial life satisfaction were not unique predictors

of mid-year GPA. Contrary to the findings regarding GPA, student gender, initial

psychopathology symptomatology, and initial life satisfaction (but not maternal education/SES)

were significant predictors of mid-year perceived stress.

Table 12. *Summary of Multiple Regression Analysis for Variables Predicting Grade Point Average at Time Point Two (T2; January 2017; N = 294)*

Variable	Model 1			Model 2		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Mother's Ed. Level	0.08	0.22	.20**	0.06	0.02	.16**
Gender	0.10	0.45	.12*	0.09	0.05	.12*
IP (T1)				0.04	0.60	.05
EP (T1)				-0.11	0.09	-.09
LS (T1)				0.06	0.03	.13
R^2		.05			.07	
F for Change in R^2		7.64**			2.42	

Note. Ed. = Education; IP = internalizing problems; EP = externalizing problems; LS = life satisfaction; T1 = the first wave of data collection (September 2016); Gender was coded 0 = male, 1 = female; *p* < .05, **p* < .01.

Table 13. S*ummary of Multiple Regression Analysis for Variables Predicting Perceived Stress at Time Point Two (T2; January; N = 293)*

Variable	Model 1			Model 2		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Mother's Ed. Level	-0.19	0.05	-.22***	-0.03	0.04	-.04
Gender	0.31	0.10	.17**	0.09	0.05	.12*
IP (T1)				0.73	0.11	.41***
EP (T1)				0.32	0.16	.11*
LS (T1)				-0.13	0.60	-.13*
R^2		.08			.35	
F for Change in R^2		12.99***			38.70***	

Note. Ed. = Education; IP = internalizing problems; EP = externalizing problems; LS = life satisfaction; T1 = the first wave of data collection (September 2016); Gender was coded 0 = male, 1 = female; *p* < .05; **p* < .01; ***p* < .001.

Predictive relationships between academic achievement and perceived stress to subsequent psychopathology and life satisfaction. To investigate the predictive relationship between student academic achievement and perceived stress to subsequent psychopathology

symptomology (internalizing and externalizing problems) and life satisfaction, a series of three multiple regressions were computed. The results are presented in Tables 14, 15, and 16, respectively. An alpha level of .05 was used to determine significance. The results indicate that the mother's education level and gender accounted for 7% of the variance in internalizing problems at T3, $F(2, 285) = 10.20$, $p < .001$, adjusted $R^2 = .06$ ($p < .001$). When GPA and perceived stress were added to the model, the model accounted for 33% of the variance in internalizing problems at T3 $F(4, 283) = 35.50$, $p < .001$, adjusted $R^2 = .33$ ($p < .001$); indicating that students' GPA and perceived stress accounted for 26% of the unique variance in internalizing problems at T3. Students' perceived stress was a significant predictor of internalizing problems ($\beta = .54$, $p < .001$); however, student GPA, mother's education level, and gender were not found to be significant predictors of internalizing problems at T3.

With respect to externalizing problems at T3, the results indicate that mother's education level and gender accounted for 2% of the variance in externalizing problems at T3, $F(2, 285) = 3.13$, $p < .05$, adjusted $R^2 = .02$ ($p < .05$). When GPA and perceived stress were added to the model, the model accounted for 14% of the variance in externalizing problems at T2 $F(4, 283) = 11.25$, $p < .001$ adjusted $R^2 = .13$ ($p < .001$); indicating that students' mid-year GPA and perceived stress accounted for 12% of the unique variance in externalizing problems at T3. Similar to the results for internalizing problems, students' perceived stress was a significant predictor of externalizing problems ($\beta = .35$, $p < .001$) whereas students' GPA, mother's education level, and gender were not found to be significant predictors of externalizing problems at T3.

In regard to life satisfaction at T3, the results indicate that mother's education level and gender accounted for 4% of the variance in life satisfaction at T3, $F(2, 285) = 5.73$, $p < .01$,

adjusted $R^2 = .03$ ($p < .01$). When GPA and perceived stress were added to the model, the model accounted for 23% of the variance in life satisfaction at T2 $F(4, 283) = 20.68$, $p < .001$ adjusted $R^2 = .22$ ($p < .001$); indicating that students' mid-year GPA and perceived stress accounted for 19% of the unique variance in life satisfaction at T3. Students' perceived stress and student gender were found to be significant predictors of life satisfaction ($\beta = .06$, $p < .05$; $\beta = -.44$, $p < .001$, respectively). Student GPA and mother's education level were not found to be significant predictors of life satisfaction at T3.

In summary, students' mid-year perceived stress was a significant predictor of students' end-of-year psychopathology symptomology (internalizing and externalizing problems) and life satisfaction. Student demographic features (mother's education level, gender) and mid-year GPA were not found to be significant predictors of end-of-year psychopathology symptomology (internalizing and externalizing problems). Student gender predicted end-of-year life satisfaction, but not mother's educational level or mid-year GPA.

Table 14. *Summary of Multiple Regression Analysis for Variables Predicting Internalizing Psychopathology at Time Point Three (T3; May 2017; N = 288)*

	Model 1			Model 2		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Mother's Ed. Level	-0.10	0.03	-.19**	-0.04	0.03	-.09
Gender	0.17	0.60	.16**	0.64	0.05	.06
GPA (T2)				0.02	0.07	.02
PS (T2)				0.32	0.03	.54***
R^2	.07			.33		
F for Change in R^2	10.20***			56.81***		

Note. Ed. = education; GPA = grade point average; PS = perceived stress; T2 = the second wave of data collection (January 2017); Gender was coded 0 = male, 1 = female; **$p < .01$; ***$p < .001$.

Table 15. *Summary of Multiple Regression Analysis for Variables Predicting Externalizing Psychopathology at Time Point Three (T3; May 2017; N = 288)*

Variable	Model 1			Model 2		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Mother's Ed. Level	-0.05	0.02	-.14*	-0.02	0.02	-.07
Gender	-0.03	0.40	-.05	-0.07	0.04	-.11
GPA (T2)				-0.01	0.05	-.02
PS (T2)				0.14	0.02	.35***
R^2	.02			.14		
F for Change in R^2	3.13*			18.96***		

Note. Ed. = education; GPA = grade point average; PS = perceived stress; T2 = the second wave of data collection (January 2017); Gender was coded 0 = male, 1 = female; *p* < .05, ***p* < .001.

Table 16. *Summary of Multiple Regression Analysis for Variables Predicting Life Satisfaction at Time Point Three (T3; May; N = 288)*

Variable	Model 1			Model 2		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Mother's Ed. Level	-0.18	0.05	.20**	0.09	0.05	.10
Gender	-0.03	0.11	-.02	0.11	0.10	.06*
GPA (T2)				0.10	0.13	.04
PS (T2)				-0.47	0.06	-.44***
R^2	.04			.23		
F for Change in R^2	5.73**			34.30***		

Note. Ed. = education; GPA = grade point average; PS = perceived stress; T2 = the second wave of data collection (January 2017); Gender was coded 0 = male, 1 = female; *p* < .05, **p* < .01, ***p* < .001.

CHAPTER FIVE:

DISCUSSION

The current study examined longitudinal relationships between students' mental health (initial psychopathology—internalizing and externalizing problems—as well as life satisfaction) at the beginning of their freshmen year and their subsequent perceived stress and academic achievement at mid-year. In addition, the current study examined longitudinal relationships between students' perceived stress and academic achievement at mid-year and their subsequent mental health (psychopathology and life satisfaction) at the end-of-year. Specifically, research questions evaluated (1) the extent students' beginning of the year mental health as indicated by psychopathology symptomology and life satisfaction predicted their mid-year grade-point averages; (2) the extent students' beginning of the year mental health as indicated by psychopathology symptomology and life satisfaction predictive of their mid-year perceived stress levels; (3) the extent students' mid-year academic achievement as indicated by grade point averages predictive of their end-of-year mental health, as indicated by students' psychopathology symptomology and life satisfaction; and (4) the extent students' mid-year perceived stress levels predictive of their end-of-year mental health, as indicated by psychopathology symptomology and life satisfaction. The subsequent discussion explores the findings of this study in relation to the research questions and previous findings in the literature. Next, implications of the current study for practice, contributions to the literature, and the limitations of this study are reviewed. Finally, a summary of the current study and future directions are presented.

Predictive Relationships between Psychopathology, Life Satisfaction, Academic Achievement, and Stress

Traditionally, student well-being has been explored in relation to the presence or absence of psychopathology symptomology. Psychopathology consists of three separate domains: internalizing, externalizing, and attention problems (Merrell, 2008). Internalizing problems are developed and maintained within the individual when an individual attempts to maintain inappropriate or maladaptive control or regulation of his or her internal emotional and cognitive states; whereas externalizing problems are acted out in the environment with behaviors that are directed outwards, usually towards object and other people (Merrell, 2008). The current study examined adolescents' psychopathology using scores on the internalizing and externalizing problems subscales of the BPM-Y. One would expect approximately 7% of any sample to have elevated levels of psychopathology using the measure (which advises interpreting T scores ≥ 65 as "elevated"). In the current sample of AP/IB students, rates of elevated externalizing problems were on par with the national normative sample, whereas a substantially higher proportion of males and females in this AP/IB sample reported elevated levels of internalizing problems. This is somewhat consistent with an earlier study of IB students (grades 9 – 12) that found lower rates of externalizing vs. internalizing symptoms (Shaunessy et al., 2006). However, no prior studies of AP and IB students that compared mean levels of internalizing problems to peers in general education at the same schools have suggested elevated levels of internalizing amongst AP and IB students (Shaunessy et al., 2006; Suldo & Shaunessy-Dedrick, 2013). Of note, the prior studies focused only on mean levels of symptoms, and did not report percent of samples who were above the cut point for elevated levels of psychopathology.

More recent studies have indicated the importance of utilizing a more comprehensive model of mental health, which includes indicators of subjective well-being (SWB; Eklund, Dowdy, Jones, & Furlong, 2011; Suldo & Shaffer, 2008; Suldo, Thalji, & Ferron, 2011). Researchers have indicated SWB is comprised of three different components: global life satisfaction, positive and negative affect. In the current study, SWB was examined through life satisfaction as indicated by mean scores on the 7-item SLSS.

The current study examined the predictive effects of students' perceived stress. Following the medical model, stress is defined as distress or the body's individual response to an environmental factor. Perceived stress refers to interactions between an environmental cause of stress (external stress), the psychological reactions of the body to stress (distress), and the individuals' cognitive, emotional, and behavioral response to the interaction (Lazarus & Folkman, 1984). In the current study, adolescents' perceived stress was indicated by mean scores on the 6-item PSS.

Academic achievement was conceptualized as students' performance in courses. Specifically, students' course grades were converted to the students' GPA during their first semester of 9th grade. Students' GPAs were obtained from their school records.

Although the associations between these variables have been widely researched in general education students, less in know about these associations between these variables in high achieving students. For the current study, high-achieving students were operationalized to be freshmen who were enrolled in Advanced Placement (AP) or International Baccalaureate (IB) courses. In total, 331 (176 AP and 155 IB) 9th grade students across two southeastern high schools participated in the current study.

Predictive relationships between mental health (psychopathology and life satisfaction) and subsequent academic achievement. The results of correlational analyses in the current study indicate that mid-year academic achievement (GPA) was significantly positively related to initial life satisfaction and inversely related to students' initial externalizing problems ($r = .17$ and $-.14$, respectively). Results indicate that the demographic variables included are both significant predictors of later GPA. Student SES (mother's education level) is a significant positive predictor of higher GPAs and female participants had higher GPAs than male participants. Despite these small bivariate associations, in multivariate analyses students' internalizing problems, externalizing problems, and life satisfaction were not significant predictors of student's mid-year GPA after accounting for the effect of student demographic features (SES, as indicated by maternal education level; gender). Those two demographic variables accounted for approximately 5% of the variance in mid-year GPA. Students' initial mental health (internalizing problems, externalizing problems, and life satisfaction) only accounted for an additional 2% of the variance in student GPA, for a total of 7% of explained variance in GPA. Despite this small increase in the percentage of the mid-year GPA variance accounted for by mental health variables, mother's education level and student gender remained the only significant predictors of student GPA in the model. Results from this research are somewhat inconsistent with prior research. For example, Suldo, Thalji, and Ferron (2011) found that higher student psychopathology levels predicted lower academic achievement the next year. Similarly, other researchers have found similar inverse predictive relationships between psychopathology symptomology and academic achievement (Verboom et al., 2014). The null results regarding life satisfaction may also be inconsistent with some prior research. Although Funk, Huebner, and Gilman (2000) found that life satisfaction was not significantly related to

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academic achievement similar to the results of the current study, Suldo, Thalji, and Ferron (2011) found significant small positive relationships between SWB and later GPA in that students with higher initial SWB were more likely to increase in GPA.

This difference in findings may be explained by the population studied. Both of the aforementioned studies found predictive relationships between psychopathology symptomology, life satisfaction, and academic achievement in samples of general education students. As such, the differences in results of the current study and the previous research examining these constructs may be due to the differences between general education students and students in accelerated curricula, namely AP and IB students. Researchers have found that students in accelerated curricula programs had similar or lower levels of psychopathology symptomology, higher life satisfaction, and better social functioning in relation to their general education peers (Shaunessy et al., 2006; Suldo & Shaunessy-Dedrick, 2013). As such, although previous researchers may have found relationships between the variables in general education populations, it is possible that mental health (psychopathology symptomology and life satisfaction) may be less impactful on the academic functioning of students in accelerated curricula. Another possible explanation for the difference in findings is the high academic functioning of this sample. The GPA of participants was generally within the A to B ranges ($M = 3.57$, $SD = 0.39$). It is possible that students enrolled in accelerated curricula courses have higher academic achievement than their general education peers and work to maintain or improve their achievement scores, which could explain why their academic achievement was not related to psychopathology symptomology and life satisfaction. Another possible explanation for the differences in results is differences in the study designs. For example, Suldo, Thalji, and Ferron (2011) controlled for initial school functioning (i.e., initial GPA, test scores in math and reading). Conversely, Funk,

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Huebner, and Gilman (2000) did not statistically control for any demographic variables; however, the researchers conducted three comparisons based on gender, race, and socioeconomic status. The results indicate that the only comparison of significance were the higher attrition rates among male participants than female participants. One final explanation for the differences in the results is regarding a delimitation of this study, which may have influenced the effects of initial psychopathology symptomology and life satisfaction on mid-year academic achievement. All participants were being provided a universal SEL program meant to improve the functioning of this population. AP and IB students in this study had participated in a newly developed SEL intervention, which may have reduced the effects of participants' initial psychopathology symptomology and life satisfaction on subsequent academic achievement indicators. For example, one aspect of the intervention is designed to teach students to limit ineffective coping strategies (e.g., skipping school), which may have resulted in higher academic achievement of participants (e.g., if students refrained from skipping school to cope with stress), which may have in turn influenced the results of the study. That is, the universal SEL programing may have increased positive school behaviors (e.g., attending vs. skipping school), which may have in turn led to better GPAs by reducing the potential effects of initial psychopathology and life satisfaction on mid-year GPA. Despite the differences in findings from previous research, the current study is the first to the author's knowledge to examine the relationship between students' psychopathology and life satisfaction on subsequent academic achievement in this population.

Predictive relationships between mental health (psychopathology and life satisfaction) and subsequent perceived stress. The results of this study indicate that student demographic features (SES [mother's education level]; gender) accounted for approximately 8% of the variance of students' mid-year perceived stress. Specifically, student SES (mother's

education level) was a significant inverse predictor of perceived stress levels (higher levels of SES predicting lower levels of stress), while female participants had higher levels of perceived stress levels than male participants. When students' initial internalizing problems, externalizing problems, and life satisfaction were added to the regression model, the percentage of variance accounted for in students' perceived stress increased to 35%. This indicates that students' initial mental health accounted for the nearly 27% of the unique variance in the model. When all five variables were input into the regression model, student gender and each facet of initial mental health (internalizing problems, externalizing problems, and life satisfaction) emerged as significant unique predictors of students' mid-year perceived stress.

Results from this analysis are consistent with previous research findings on these constructs. To the author's knowledge, there are no studies that examined the predictive effects of initial levels of psychopathology on perceived stress; however, there have been studies examining concurrent relationships between psychopathology and perceived stress. In one study, Feld and Shusterman (2015) found that high perceived stress was positively related to anxiety or panic attacks (internalizing psychopathology) in a sample of 333 high achieving youth. The results of this study indicate that there are significant bivariate positive relationships between students' initial levels of psychopathology (internalizing and externalizing problems) and students' mid-year perceived stress ($r = .56$ and $r = .32$, respectively). As a result, it is possible that students presenting psychopathology symptomology at the beginning of the year are more likely to experience higher levels of stress at mid-year. Of the unique predictors of mid-year perceived stress (gender, internalizing problems, externalizing problems, and life satisfaction), students' internalizing psychopathology problems was the strongest predictor of later perceived stress ($\beta = .41$). This result may be specific to students in accelerated curricula. However, Suldo

and Shaunessy-Dedrick (2013) found that in a sample of 134 freshman enrolled in either the IB program or general education, that regardless of which program students were enrolled in, internalizing problems increased across the school year.

In regard to the predictive effects of student's initial life satisfaction on mid-year perceived stress, no studies currently exist (to the author's knowledge) that have examined these relationships. However, Funk, Huebner, and Gilman (2000) examined the concurrent relationships between life satisfaction and perceived stress. Funk, Huebner, and Gilman (2000) found moderate inverse correlations between life satisfaction and students' social stress in a sample of general education students. Although Suldo et al. (2009) found that AP and IB students reported higher levels of school-related stress instead of other types of stressors (i.e., stress related to families, peers, or life events), it is possible that the results found by Funk and colleagues (2000) extend to the findings of the current study. Regardless, to the author's knowledge, this is the first study to examine the predictive effects of psychopathology symptomology and life satisfaction on perceived stress in a sample of students in accelerated curricula. Findings suggest that elevated life satisfaction at the start of the year might be an asset in terms of later perceptions of (dis)stress that are relatively common to AP/IB freshmen (Suldo & Shaunessy, 2013).

Predictive relationships between academic achievement and subsequent mental health (psychopathology and life satisfaction). Results of the regression models indicate that student SES (mother's education level) is a significant predictor of better end-of-year mental health (internalizing problems, externalizing problems, and life satisfaction). In addition, gender was also found to be a significant predictor of internalizing problems. Specifically, female participants on average had greater levels of internalizing problems than male participants. When

GPA and perceived stress were added to the model, only mid-year perceived stress predicted end-of-year psychopathology (internalizing and externalizing problems). Both mid-year perceived stress and gender predicted end-of-year life satisfaction. However, student achievement as measured by GPA was not found to be a significant predictor of any indicator of students' mental health. The lack of predictive relationships between mid-year academic achievement and subsequent end-of-year psychopathology and life satisfaction is similar to the null results from the reverse direction (initial mental health predicting mid-year GPA). To the author's knowledge, there are no published research studies that examined these predictive effects. Additionally, the current study found that there were no significant bivariate relationships between academic achievement at mid-year and end-of-year psychopathology symptomology (internalizing and externalizing problems). However, there was a significant positive bivariate relationship between mid-year academic achievement and end-of-year life satisfaction ($r = .15$), an effect that was not apparent in multivariate analyses that accounted for student demographic features.

Some possible explanations for the lack of relationships exist. First, as mentioned previously, researchers have shown that students' psychological functioning in accelerated curricula programs is similar or better in terms of psychopathology symptomology, life satisfaction, and social functioning when compared to their general education peers (Shaunessy et al., 2006; Suldo & Shaunessy-Dedrick, 2013). This overall higher functioning may limit the predictive effects of academic achievement on subsequent psychopathology and life satisfaction for students in accelerated curricula. This overall higher functioning of students in advanced curricula could result in more prominent academic standards and academic achievement, regardless of mental health. As a result, students enrolled in accelerated curricula programs such as those enrolled in this study may maintain high academic achievement regardless of other

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indicators of student functioning (psychopathology symptomology and life satisfaction) as indicated by the results of the current study.

Another explanation is regarding the study design. As stated previously all students took part in a universal SEL intervention before the assessments were completed at T2 and T3. In addition, some students received one to two motivational interviewing sessions before the assessments at T3. If these influenced student functioning, it could be expected that the psychopathology symptomology (internalizing and externalizing problems) should decrease from T1 to T3 while life satisfaction should increase from T1 to T3. However, it is unclear if the universal SEL programing and individualized supports influenced the results of this study, as there was not a control group that would indicate natural patterns of change in mental health during students' freshmen year without intervention. Regardless, the current study is the first study to examine the predictive relationships of academic achievement on psychopathology and life satisfaction in a sample of students in accelerated curricula, and suggests minimal influence of GPA on mental health or vice versa.

Predictive relationships between perceived stress and subsequent mental health (psychopathology and life satisfaction). As explained in the previous section, results of the regression models indicate that student's mid-year perceived stress was a significant predictor of end-of-year psychopathology symptomology (internalizing and externalizing problems) and life satisfaction, even after accounting for the significant influence of student SES and gender. Higher student SES significantly predicted better mental health (fewer symptoms of internalizing problems and externalizing problems; higher life satisfaction). In addition, female participants had overall higher rates of internalizing problems; however, student gender was not a significant predictor of externalizing problems or life satisfaction. In fact, mid-year perceived stress was the

only significant predictor of end-of-year internalizing and externalizing problems when mental health indicators were included in the analysis. In relation to end-of-year life satisfaction, mid-year perceived stress and gender were both significant predictors.

The findings regarding the effects of mid-year perceived stress on end-of-year psychopathology symptomology (internalizing and externalizing problems) and life satisfaction are consistent with findings from prior studies. Previous research related to stress indicate students enrolled in accelerated curricula reported higher levels of stress (Suldo et al., 2009) and were more at risk to experience negative outcomes associated with stress (Suldo et al., 2009; Suldo, Shaunessy, & Hardesty, 2008). In one study that examined the concurrent relationships in a sample of high achieving youth, 25% of students self-reported daily constant fatigue and lack of concentration; 55% of students reported mood swing, irritability, restlessness, inability to sleep, and racing thoughts, 33% of students reported physical health issues (e.g., stiffness, headaches); and 12% of students had anxiety or panic attaches as a result of their high levels of stress (Feld & Shusterman, 2015). This research indicates that perceived stress is indeed a large concern due the pervasive effects of stress of daily functioning and the long-term influence on mental health. Findings from the current study are similar to Barker et al. (2018) who found that higher stress in general education students related to greater levels of psychopathology (e.g., depressive symptomology) in across two studies. In the first study, Barker et al. (2018) followed 144 first year college students aged 17.5 to 19.8 years old ($M = 18.4$ years; $SD = .44$; 60% female) whereas in the second study, the researchers followed 267 undergraduate students aged 18 to 25 years ($M = 21.25$, $SD = 1.67$; 78.7% female). Further, Burger and Samuel (2017) found that perceived stress predicts diminished life satisfaction in a large sample of 5,126 school aged general education students (M age = 15.47; $SD = .63$).

One possible explanation for these findings is that youth enrolled in accelerated curricula have increased stress due to the increased overall academic demands placed on them by their respective AP or IB programs. These increased academic demands may increase their overall levels of perceived stress, which take a negative toll on global indicators of mental health functioning (internalizing and externalizing psychopathology and SWB).

Implications for Practice

Early adolescence is a critical stage for change, growth, and development of youth. Institutions such as schools that are responsible for educating and socializing children should assess, monitor, and ensure the growth and success of their students. To do so, schools should periodically assess and monitor students' strengths as well as maladaptive dysfunctions. The results of the current study along with previous research demonstrated that constructs such as psychopathology and/or life satisfaction relate to levels of perceived stress a student may experience. Conversely, the results of this study also indicated that students' perceived stress levels relate to their overall mental health functioning (psychopathology and life satisfaction). As a result, these constructs should be periodically measured among AP/IB students in part to determine who might be in particular need of early intervention.

Research specific to students enrolled in accelerated curricula programs has indicated that this population has similar or lower levels of psychopathology symptomology, higher life satisfaction, and better social functioning in relation to their general education peers (Shaunessy et al., 2006; Suldo & Shaunessy-Dedrick, 2013). However, these students reported higher levels of perceived stress (Suldo et al., 2009) and were more at risk to experience the negative outcomes associated with stress (Suldo et al., 2009; Suldo Shaunessy, & Hardesty, 2008). The

current study identifies worse mental health as a sequelae of heightened perceived stress. Findings from the current study provides further support for collecting information regarding students' complete mental health functioning (e.g., psychopathology, life satisfaction, perceived stress) in order to strengthen the short- and long-term success and well-being of students. The need for schools to assess the overall well-being of students constitutes a shift in the field of psychology to attend to not only the presence or absence of psychopathology, but to also attend to students' strengths and overall well-being (Maddux, 2005) and highlight the need and importance of effective mental health prevention programs and effective interventions aim to promote school functioning as well as overall student functioning across time. Although the multivariate results of this study suggest there is not a predictive influence of mental health on subsequent academic achievement (when indicated by GPA), additional academic outcomes (test scores, student engagement, persistence in accelerated coursework) may be tied to mental health in ways not examined in the current study.

With that in mind, school psychologists should advocate for promoting comprehensive mental health and well-being for students in accelerated curricula, including but not limited to psychopathology, SWB, perceived stress, and academic functioning. Prevention efforts such as those developed in relation to the current study, which aim to help promote positive student functioning while limiting maladaptive functioning either at the universal, small group, or individual level, may help reduce students' psychopathology symptomatology, increase SWB, decrease perceived stress, and increase academic functioning. Such positive prevention and intervention programming could reduce the short- and long-term effects of the heightened levels of perceived school-related stress that youth enrolled in advanced curricula experience as a result of the academic demands placed on them.

Such prevention efforts might begin with school-, class-, or program-wide screenings to assess students' levels of psychopathology symptomology, SWB, perceived stress, and/or academic functioning (Suldo et al., 2019). Additionally, school psychologists could partner with parents, families, and caregivers to provide an additional mechanism for a student to be identified for additional supports and/or promote a school-home partnership to improve the functioning of identified students. Intervention programing could focus on the needs of the individual student. For example, the school psychologist could consult with the parent and teacher to provide individual or group-based counseling services aimed at helping improve positive indicators of student functioning (SWB) while also decreasing negative indicators of student functioning (psychopathology symptomology, perceived stress). Intervention efforts could occur at the school-wide level, within a small group of individual students with similar presenting difficulties, or with the individual student aimed at the specific needs of this student.

Contributions to the Literature

To the author's knowledge, no studies have been conducted to examine the predictive relationships between students' initial mental health (psychopathology symptomology and life satisfaction) on students' mid-year perceived stress among students in accelerated curricula. The current study filled this gap by examining the predictive relation between psychopathology and academic achievement and the predictive relationships between academic achievement and psychopathology. Additionally, although some studies have examined relationships between psychopathology, SWB, perceived stress, and academic achievement in students in accelerated curricula, these were conducted through cross-sectional designs. As such, although these early studies highlighted the high prevalence and strong cross-sectional relationships between

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perceived stress and mental health functioning of adolescents enrolled in accelerated curricula, no published studies have examined the associations between the aforementioned variables in a sample of adolescents enrolled in accelerated curricula in a longitudinal design. As a result, the current study contributed to the literature by providing the first examination of mental health, perceived stress, and academic achievement; assessing the bivariate relationships between these variables as well as the multivariate relationships within an under researched population. In sum, this study provided empirical support for the importance in examining student's mental health functioning, perceived stress, and academic achievement and the overall predictive relationships between these variables in a sample of adolescents in accelerated curricula.

Limitations

There are number of limitations in the current study that impact the generalizability of the current study. First, all the data available for the analysis came from two high schools within the same southern school district. In addition, the data were also restricted to 9th grade students as opposed to the entire high school population. Another limitation involves the measures utilized in this study. The instrument used to measure students' internalizing behaviors and externalizing behaviors (BPM-Y) has not been extensively validated in the literature, but the lengthier measure from which it is derived (the YSR of the ASEBA) is widely used in mental health research and practice. Likewise, the measure of academic achievement, GPA, can be subjective at times since teachers are involved in the assignment of grades; however, researchers have found that GPA predicts later academic achievement (DeBearard, Spielmans, & Julka, 2004), and was significantly correlated with higher order thinking skills (e.g., critical and creative think skills;

Tanujava, Mumu, & Margono, 2017) and students' problem-solving skills (D'Zurilla & Sheedy, 1992).

Another limitation is the measurement of the SWB construct, which was only assessed through life satisfaction rather than also fully considering positive affect and negative affect (i.e., experiencing positive and negative emotions in daily life, respectively). Although this is a limitation of the current study, the majority of studies that examined youth SWB focused on the most stable component of SWB, specifically, the cognitive appraisal of perceived quality of life, or students' self-reported levels of satisfaction with their current life (i.e., life satisfaction).

Since the author of the current study was not able to control for the content of questionnaires or variables assessed at various type points, the associations between the constructs assessed were limited. For example, it would have been ideal to be able to fully assess the relationship between psychopathology, SWB, perceived stress, and academic achievement if data on each construct would have been assessed at each time point. However, GPA was not available at T1 or T3; SWB and psychopathology were not assessed at T2, and perceived stress was not assessed at T1 or T3.

A final limitation of this study relates to the study design. The sample of AP and IB students in the current study took part in a unique newly developed intervention that focused on stress and emotional wellness. All participants took part in the universal 10-12-week SEL programing which may have influenced scores on measures at T2 and/or T3 (which occurred after the 10-12 SEL programing). Some students also received additional supports as part of the study. Students identified for the selective interventions received one to two motivational interviewing coaching session(s) which may have improved their scores on later measures collected at time T3 (i.e., psychopathology and life satisfaction), if no intervention was provided.

That is, there could have been intervention effects as part of the larger study that could have influenced the data analyzed in the current study.

Summary and Future Directions

The current study added to the literature by providing the first examination of longitudinal relationships between psychopathology, life satisfaction, academic achievement, and perceived stress. Although longitudinal relationships exploring psychopathology, life satisfaction, academic achievement, and/or perceived stress are prevalent in the literature, the majority of these studies were conducted with general education students. Instead, the current study focused on the relationships between psychopathology, life satisfaction, perceived stress, and academic achievement in a sample of students in accelerated curricula, namely AP and IB students. The current study identified important trends in the relationships between these variables. Specifically, findings support that students' psychopathology (internalizing and externalizing behaviors) and life satisfaction are predictive of later students' perceived stress; and that students' perceived stress is predictive of students' internalizing behaviors, externalizing behaviors, and life satisfaction. In addition, the findings of the current study also indicated that student achievement (GPA) may not be predictive of students' mental health; however, this finding could have been specific to this sample or to students enrolled in accelerated curriculum as the may not be not be consistent with previous research with general education students.

In order to gain a better understanding of how to best understand the relationships between students' mental health, academic achievement, and perceived stress, and provide the most impactful services to youth, there are several natural directions for future research. First, additional measures assessing students' mental health and academic achievement may be

beneficial. Specifically, it would be interesting to examine indicators of all three components of SWB (i.e., global satisfaction with life, positive and negative affect) in order to get a more complete picture of the relationships between SWB and other constructs. This could also provide researchers the ability to explore which aspects of SWB tend to be associated with better outcomes for students enrolled in accelerated curricula. For instance, is positive affect, negative affect, or life satisfaction associated more with desirable academic and/or mental health functioning? In addition, other academic outcomes could be examined in order to gain a more complete understanding of the predictive relationships between mental health and academic functioning (e.g., attitudes towards school, attitudes towards teachers, school connectedness, test scores, attendance, engagement in class). Findings from these studies would provide more information to be able to fully understand these relationships for students enrolled in accelerated curricula.

Another direction would be to assess all variables at each time point within a longitudinal design. For example, is perceived stress predictive of academic achievement (e.g., GPA)? This would provide information that could lead to a better understanding of the functioning of students enrolled in accelerated curricula regarding the predictive effects of perceived stress. Another direction would be to examine the predictive relationships in a sample of AP and IB students that were not part of a universal SEL program and/or received individualized supports. Also, future research with a larger sample of schools with AP and IB programs could help determine if there are differences between the type of programing (AP vs. IB) on student outcomes (i.e., psychopathology, life satisfaction, perceived stress, and academic achievement). Another direction would be to explore these associations using measures that specified similar time frames. For example, the SLSS asks students their thoughts about life in the past several

weeks, whereas the PSS asks students to think about their feelings and thoughts during the last month. Although it is unlikely that these minute differences impacted student responses on these measures in the current study, examining differences in time frame specified in these measures' directions could be explored empirically. Additionally, future research could also explore qualitatively the processes that students use to answer items on each measure.

Another direction for future research involves exploring differences between lower SES students and higher SES students. More specifically, in the current sample, higher student SES (as indicated by mother's education level) was associated with better mental health functioning (lower levels of internalizing and externalizing psychopathology and higher life satisfaction), lower perceived stress, and higher GPA when compared to their lower SES peers. It is possible that other factors (e.g., resiliency) may influence lower SES students' abilities to achieve at the same levels as their higher SES peers. That is, students of lower SES who are in AP/IB are already demonstrating a form of resiliency through mere enrollment in these programs for high-achieving youth. A final direction would be to examine these variables in an extended longitudinal study across multiple years. For the current study, assessment periods were roughly 4 months apart across one academic school year; however, it would be interesting to see if the findings from this study are consistent across a longer observation periods (e.g., one year, two years) and/or in different school years (e.g., 10th grade students) to determine if the findings from this study are consistent across their high school careers. For instance, are the findings from this study similar for students enrolled in 10th grade, 11th grade, or 12th grade? Which construct has the greatest impact on student achievement and stress across high school years for students in accelerated curricula?

These questions are especially important considering that adolescence is a critical stage of development and this time period is especially important to prevent the development of negative mental health outcomes in later life (Colarossi & Eccles, 2003). Thus, the continued exploration on the impact of psychopathology, life satisfaction, perceived stress, and academic achievement in this critical developmental period will be especially important as researchers continue to research and develop prevention efforts in schools for students in accelerated curricula.

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APPENDICES

Appendix A: Parent Consent Form

Parent Consent Form

Study ID:CR2_Pro00022787 Date Approved: 7/14/2017

Dear Parent or Caregiver:

This letter provides information about a research study that will be conducted at your child's school by professors and graduate students from the University of South Florida (USF). Our goal in conducting the study is to develop an educational program to teach AP and IB students evidence-based strategies for managing stress inherent to their rigorous courses. This program is intended to improve students' emotional well-being and academic outcomes.

✓ Who We Are: We are Shannon Suldo, Ph.D., and Elizabeth Shaunessy-Dedrick, Ph.D., Professors in the College of Education at the University of South Florida. We are planning the study in cooperation with district and school administrators to ensure the study provides information that will be helpful to the school.

✓ Why We are Requesting Your Child's Participation: This study is part of a project entitled, "Supporting High School Students in College-Level Classes." Your child is being asked to participate because he or she is enrolled in an accelerated curricular program—International Baccalaureate (IB) or Advanced Placement (AP).

✓ Why Your Child Should Participate: Schools need evidence-based programs to help high school students navigate the academic rigor of college-level courses, in order to help them stay emotionally well and academically successful. To address this need, we are developing an informational program intended to facilitate all AP and IB students' coping skills and strong connections to their school. We are also developing brief, individualized supports for students who experience particular challenges managing stress associated with academic demands. The information that we collect from students will be used to improve our program materials. This refinement process will ensure the program is highly usable with future AP and IB students. Please note neither you nor your child will be paid for your child's participation in the study. However, all students who participate by completing a packet of surveys on personal well-being, or take part in an interview conducted to further improve parts of the program, will receive a $10 gift card on each occasion. Also, all students who return this completed form (whether or not you grant your child permission to participate) will be entered in a drawing for a $50 gift card.

✓ What Participation Requires: All 9th grade students in AP courses or the IB program at this school are going to participate in an educational program designed to help AP and IB students manage stress related to their schoolwork. All teachers and parents of 9th grade AP and IB students will be offered information intended to help support students' development of skills in managing stress through using effective coping and engagement strategies. We would like input from students on program materials in order to improve them. Your child

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is being asked to participate in the research study that is being conducted to evaluate and improve the program because he or she is a student in an AP or IB class. Students with permission to participate will provide feedback on the content of the program. At the end of each weekly presentation, participants in this study will be asked questions about the value and quality of program materials through completing brief rating scales about the information presented. It will take about 5 minutes to complete the brief forms, on each occasion. In addition, before and after the program begins, students will be asked to complete a packet of surveys asking questions about their academic demands and emotional well-being. It will take about 45 minutes to complete the survey packet, on each occasion. Some students will be asked to take part in interviews, in order to gather additional information related to aspects of the program that may need further development. It will take about 45-60 minutes to complete an interview. All activities will occur during regular school hours, scheduled to be minimally disruptive to your child's academic course schedule. All discussions during interviews will be digitally audio recorded for later review and transcription. Consenting for your child to participate in this research project indicates your consent for your child to be audio recorded. In total, participation will take no more than five hours of your child's time during the 2016-2017 school year.

- ✓ <u>Confidentiality of Your Child's Responses</u>: This research is considered to be minimal risk. That means that the risks associated with this study are the same as what your child faces every day. There are no known additional risks to those who take part in this study. Your child will receive no benefits by participating in this research study. Your child's privacy and research records will be kept confidential to the extent of the law. Authorized research personnel, employees of the Department of Health and Human Services, the USF Institutional Review Board and its staff, and other individuals acting on behalf of USF may inspect the records from this research project, but we will not share your child's individual responses with school system personnel or anyone other than us and our research assistants. Your child's responses during interviews will be digitally audio recorded, and then assigned a code number to protect the confidentiality of his or her statements. Only we will have access to the locked file cabinet stored at USF that will contain all records linking code numbers to participants' names. All records from the study (e.g., transcribed interviews) will be destroyed in five years. Please note that although your child's specific responses will not be shared with school staff, if your child indicates that he or she intends to harm him or herself or someone else, we will contact district mental health counselors to ensure the safety of your child and others.

- ✓ <u>Please Note</u>: Your decision to allow your child to participate in this research study must be completely voluntary. You are free to allow your child to participate in this research study or to withdraw him or her at any time. Any decision to participate, not to participate, or to withdraw participation at any point during the study will in no way affect your child's student status, his or her grades, or your relationship with your high school, school district, USF, or any other party. Your child does not have to participate in this research study.

- ✓ <u>What We'll Do With Your Child's Responses</u>: We plan to use the information from students to further develop and improve informational materials aimed at facilitating academic

success and emotional well-being among AP and IB students. Results from data collected during this study may be published. However, the data obtained from your child will be combined with data from other people in the publication. The published results will not include your child's name or any other information that would in any way personally identify your child.

✓ Questions? If you have any questions about this research study, please contact us at (813) 974-2223 (Dr. Suldo) or (813) 974-7007 (Dr. Shaunessy-Dedrick). If you have questions about your child's rights as a person who is taking part in a research study, you may contact a member of The Office of Research Integrity and Compliance at the University of South Florida at 813-974-5638, and refer to eIRB # 22787.

✓ Want Your Child to Participate? To permit your child to participate in this study, complete the consent form below
(titled "Consent to Take Part in this Research Study"). Have your child return the green paper with the completed form to his or her designated teacher. Please keep the other copy of this letter (printed on gold paper) for your records.

Sincerely,

Shannon Suldo, Ph.D.   Elizabeth Shaunessy-Dedrick, Ph.D.
Professor of School Psychology   Professor of Gifted Education
Department of Educational and Psychological Studies   Department of Teaching and Learning

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Consent for Child to Take Part in this Research Study
I freely give my permission to let my child take part in this study. I understand that this is research. I have received a copy of this letter and consent form for my records.

_____   _____   _____
Printed name of child   Grade level of child   Parent's email address

_____   _____   _____
Signature of parent of child   Printed name of parent   Date
taking part in the study

Statement of Person Obtaining Informed Consent
I certify that participants have been provided with an informed consent form that has been approved by the University of South Florida's Institutional Review Board and that explains the nature, demands, risks, and benefits involved in participating in this study. I further certify that a phone number has been provided in the event of additional questions.

_____   _____
Signature of person Printed name of person Date obtaining consent obtaining consent

Appendix B: Student Assent Form

Student Assent Form

Study ID:CR2_Pro00022787 Date Approved: 7/14/201

Dear Student:

You are being asked to take part in a research study. This study is part of a larger project we are conducting. The goal of the project is to develop an educational program to help AP and IB students manage stress tied to their rigorous courses. This program is intended to improve students' academic outcomes and emotional well-being.

- ✓ Who We Are: We are Shannon Suldo, Ph.D., and Elizabeth Shaunessy-Dedrick, Ph.D., Professors in the College of Education at the University of South Florida (USF). We are working with your school's leadership to make sure this study provides information that will be helpful to your school.

- ✓ Why We're Asking You to Take Part in the Study: This study is part of a project titled, "Supporting High
  School Students in College-Level Classes." You are being asked to take part because you are a student in either the International Baccalaureate Program or an Advanced Placement class.

- ✓ Why You Should Take Part in the Study: We are in the process of creating an informational program to build all AP and IB students' coping skills and strong connections to their school. We are also developing brief, individualized supports for students who experience particular challenges managing school stress. The information that we collect from students will be used to create and improve our program materials. Please note you will not receive money in exchange for taking part in the study. However, all students who participate will receive a $10 gift card each time they complete a packet of surveys on their well-being or take part in an interview conducted to improve the program.

- ✓ Taking Part in the Program Evaluation: All 9th grade students in AP courses or the IB program at this school will participate in an educational program designed to help AP and IB students manage stress related to their schoolwork. You are being asked to take part in a voluntary evaluation of this program. In the program evaluation, students in this study will provide feedback on the program materials in order to improve them. At the end of each weekly presentation, you will complete brief rating scales that ask your opinion of the information presented. It will take about 5 minutes to complete the brief forms, on each occasion. Before and after the program begins, you will complete a packet of surveys about your academic demands and emotional well-being. It will take about 45 minutes to complete the survey packet, on each occasion. Some students will be asked to take part in interviews, in order to gather more information related to aspects of the program that may need further development. It will take about 45-60 minutes to complete an interview. All activities will occur during regular school hours. We will schedule them to be least

disruptive to your academic course schedule. All discussions during interviews will be digitally audio recorded. In total, participation will take no more than five hours of your time during the 2016-2017 school year.

✓ Confidentiality of Your Responses: This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study. You will receive no benefits by participating in this research study. Your privacy and research records will be kept confidential (private, secret) to the extent of the law. People approved to do research at USF, people who work for the Department of Health and Human Services, and the USF Institutional Review Board may look at the records from this research project, but your individual responses will not be shared with people in the school system or anyone other than us and our research assistants. Your responses will be given a code number to protect the privacy of your responses. Only we will have access to the locked file cabinet stored at USF that will contain all records linking code numbers to names. Please note that although your specific responses will not be shared with school staff, if you indicate you plan to harm yourself or someone else, we will let district mental health counselors know in order to make sure you and others are safe.

✓ Please Note: Your involvement in this research study is completely voluntary. By signing this form, you are agreeing to take part. If you choose not to participate, or if you wish to stop taking part in the study at any time, you will not be punished in any way. If you choose not to participate, it will not affect your grades or your relationship with your high school, USF, or anyone else. You do not have to participate in this study.

✓ What We'll Do With Your Responses: We plan to use the information from this study to further develop and improve materials for a program aimed at facilitating academic success and emotional well-being among AP and IB students. The results of this study may be published. However, your responses will be combined with responses from other people in the publication. The published results will not include your name or any other information that would in any way personally identify you.

✓ Questions? If you have any questions about this research study, please raise your hand now or ask us at any time. Also, you may contact us later at (813) 974-2223 (Dr. Suldo) or (813) 974-7007 (Dr. ShaunessyDedrick). If you have questions about your rights as a person who is taking part in a research study, you may contact a member of the Office of Research Integrity and Compliance at the University of South Florida at 813-974-5638, and refer to eIRB # 22787.

Sincerely,

Shannon Suldo, Ph.D.   Elizabeth Shaunessy-Dedrick, Ph.D.
Professor of School Psychology   Professor of Gifted Education
Department of Educational and Psychological Studies   Department of Teaching and Learning

Assent to Take Part in this Research Study

I freely give my permission to take part in this study. I understand that this is research. I have received a copy of this letter and assent form for my records.

_____   _____   _____
Signature of child   Printed name of child   Date
taking part in the study

Statement of Person Obtaining Informed Assent

I certify that participants have been provided with an informed assent form that has been approved by the University of South Florida's Institutional Review Board and that explains the nature, demands, risks, and benefits involved in participating in this study. I further certify that a phone number has been provided in the event of additional questions.

_____   _____   _____
Signature of person   Printed name of person   Date
obtaining assent   obtaining assent

Appendix C: Demographics Form

Demographics Form

2016-17   School:_____   Version:_____   Code #:_____
AP or IB?

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1. Birthdate: _____-_____-_____
          (month) (day) (year)

2. I am in grade: 9   10   11   12

3. My age is: 13   14   15   16   17   18   19   20

4. My gender is: Male   Female

5. <u>In middle school</u>, were you:
    a. in an IB school (MYP)?   No   Yes   Which school?_____
    b. in a magnet program?   No   Yes   Which program?_____
    c. in Honors/advanced classes? No   Yes

6. Have you attended your current high school since the start of 9th grade?
    a. Yes
    b. No   c. If no, what grade were you in when you transferred to this high school? 9 10 11 12

7. Are you of Hispanic, Latino, or Spanish origin?
    a. No, not of Hispanic, Latino, or Spanish origin
    b. Yes, Puerto Rican   d. Yes, Mexican, Mexican American, Chicano
    c. Yes, Cuban   e. Yes, another Hispanic, Latino, or Spanish origin
        (specify):_____

8. My race/ethnic identity is: (*circle all that apply*)
    a. White   d. American Indian/Alaska Native
    b. Black or African American   e. Native Hawaiian or Other Pacific Islander
    c. Asian   f. Other (*specify*):_____

9. My parents are:
    a. Married   d. Never married
    b. Divorced   e. Never married but living together
    c. Separated   f. Widowed

10. Which adult(s) do you live with most of the time?
    a. Mother and Father   e. Father and Step-mother (or partner)
    b. Mother only   f. Grandparent(s)

c. Father only   g. Other relative (*please specify*):
_____

d. Mother and Step-father (or partner)   h: Other (*please specify*):
_____

11. My father's highest education level is:
   a. 8th grade or less   e. College/university degree
   b. Some high school, did not complete   f. Master's degree
   c. High school diploma/GED   g. Doctoral level degree (Ph.D, M.D.) or other
      degree
   d. Some college, did not complete   beyond Master's level

12. My mother's highest education level is:
   a. 8th grade or less   e. College/university degree
   b. Some high school, did not complete   f. Master's degree
   c. High school diploma/GED   g. Doctoral level degree (Ph.D, M.D.) or other
      degree
   d. Some college, did not complete   beyond Master's level

PRACTICE ITEMS

Think about the <u>current school year</u>. When you are (or have been) **faced with school-related challenges or stress**, how often do you:	Never	Rarely	Sometimes	Frequently	Almost Always
1. Write about problems and feelings	1	2	3	4	5
2. Pursue a hobby or interest, such as cooking, drawing, playing an instrument, etc.	1	2	3	4	5

Appendix D: Students' Life Satisfaction Scale

Students' Life Satisfaction Scale (Huebner, 1991)

Directions: We would like to know what thoughts about life you've had <u>during the past several weeks</u>. Think about how you spend each day and night and then think about how your life has been during most of this time. Here are some questions that ask you to indicate your satisfaction with life. In answering each statement, circle a number from (**1**) to (**6**) where (**1**) indicates you **strongly <u>disagree</u>** with the statement and (**6**) indicates you **strongly agree** with the statement.

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1. My life is going well	1	2	3	4	5	6
2. My life is just right	1	2	3	4	5	6
3. I would like to change many things in my life	1	2	3	4	5	6
4. I wish I had a different kind of life	1	2	3	4	5	6
5. I have a good life	1	2	3	4	5	6
6. I have what I want in life	1	2	3	4	5	6
7. My life is better than most kids'	1	2	3	4	5	6

Appendix E: Perceived Stress Scale

Perceived Stress Scale (PSS; Cohen et al. 1983)

Directions: The next questions ask you about your feelings and thoughts during <u>the last month</u>. In each case, you will be asked to indicate *how often* you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly.

In the last month, how often have you…	Never	Almost never	Sometimes	Fairly often	Very often
1. …been upset because of something that happened unexpectedly?	1	2	3	4	5
2. …felt that you were unable to control the important things in your life?	1	2	3	4	5
3. …felt nervous and "stressed"?	1	2	3	4	5
4. …found that you could not cope with all the things that you had to do?	1	2	3	4	5
5. …been angered because of things that happened that were outside of your control?	1	2	3	4	5
6. …felt difficulties were piling up so high that you could not overcome them?	1	2	3	4	5