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Stress, Coping, and their Prediction of Mental Health Outcomes in International Baccalaureate High School Students

Robin B. Hardesty
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Stress, Coping, and their Prediction of Mental Health Outcomes in International Baccalaureate High School Students

by

Robin B. Hardesty

A thesis submitted in partial fulfillment of the requirements for the degree of Education Specialist
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Dedication

To Nicholas, Anthony, and my parents for their continual support, love, and care throughout my educational career.
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Stress, Coping, and their Prediction of Mental Health Outcomes in International Baccalaureate High School Students

Robin B. Hardesty

ABSTRACT

This study investigated the mental health of high school students enrolled in the International Baccalaureate (IB) High School Diploma Program ($n = 139$) in a large, southeastern high school. Mental health was assessed using both positive indicators (life satisfaction, academic achievement, academic self-efficacy) and negative indicators (psychopathology) indicators of adolescent social-emotional and school functioning. Findings from this study include that IB students perceive more stress than their general education peers, yet maintain mental health that is equivalent or superior to that of their general education peers. The role of coping in predicting mental health outcomes in IB students was also investigated. Findings indicate that specific coping styles are differentially related to mental health outcomes in this sub-population of adolescents. Furthermore, coping styles moderate the influence of stress on global life satisfaction and internalizing psychopathology. These findings suggest that participation in the academically rigorous and time-intensive IB program is not harmful to the mental health of high school students, and in fact may be beneficial, as evidenced by the superior academic functioning of students in the IB program.
CHAPTER 1

Introduction

Statement of the Problem

Research with children and adolescents has revealed the potential negative impact high stress levels can have on psychological and physical health. Stress has been established as a risk factor for mental health disorders, both internalizing and externalizing, which are presently estimated to affect approximately 21% of children ages 9-17 (United States Department of Health and Human Services, 1999). In addition, stress has been linked to both substance abuse (Creed, 1993; Peyser, 1993) and physical health problems (Eysenck, 1983). Adolescence is a developmental period when children may be particularly vulnerable to the negative health effects of stress. Data from the National Youth Risk Behavior Survey, conducted by the Centers for Disease Control (2003) indicate that, of the teens surveyed, 9% had attempted suicide, 27% felt sad or hopeless, 45% had used alcohol in the last month, and 22% had used tobacco and marijuana. All of these symptoms of mental disorders have been linked to the negative effects of stress (Chassin, Ritter, Trim & King, 2003; Compas, Orosan & Grant, 1993; Little & Garber, 2004; Schmeelk-Cone & Zimmerman, 2003). If these problems are not addressed, adolescents are at risk compromised physical and mental health as adults (Loeber & Farrington, 2000).

To date, the majority of research on stress and coping strategies has focused on the role they play in the development of psychopathology for high-risk populations, such as youth living in adverse environmental conditions (Evans, Bullinger, & Hygge, 1998;
Gonzales, Tein, Sandler, & Friedman, 2001), minority populations (Alva & de Los Reyes, 1999; Schmeelk-Cone & Zimmerman, 2003), and psychiatric inpatients (Martin, Kazarian, & Breiter, 1995), with scant attention to the influence stress and coping behaviors have on mental health outcomes in high-achieving children and adolescents (Hess & Copeland, 2001).

Students who are enrolled in academically challenging curricula face a multitude of stressors related to their academic demands in addition to the developmental and biological challenges that are normative to adolescence. Notwithstanding the stress placed on them by academic demands, a large majority of students enrolled in advanced academic programs attain the high academic standards set forth for them by their parents and teachers. However little is known about the impact of these stressors on the social-emotional functioning of high-achieving students. Similarly, coping behaviors that might offset the negative influence of stress have yet to be identified.

Adolescent Mental Health

Roeser, Eccles, and Sameroff (2000) developed a comprehensive model of adolescent mental health, which includes indicators in two domains: school functioning and social-emotional development. School functioning consists of measures of academic achievement (i.e., GPA), in-school conduct (i.e., discipline referrals, cheating, attendance), and academic self-efficacy (beliefs about one’s own ability to be successful in school). Social-emotional development includes both positive and negative indicators of mental health, namely psychopathology, subjective well-being (perceived quality of life), and interpersonal relationships. Using this model, mental health is not defined
simply as the absence of pathology but also as the presence of positive indicators of optimal functioning.

The need to use a more comprehensive model of mental health has been substantiated by research that has identified sub-groups of individuals who report low levels of psychopathology yet still fail to report high levels of subjective well-being (Greenspoon & Saklofske, 2001). This confirmed Jahoda’s (1958) assertion that, “the absence of disease may constitute a necessary, but not sufficient, criterion for mental health” (p. 15). Simply stated, the absence of mental illness does not equate to the presence of mental health. To date, most studies of the relationship between stress and functioning in youth have measured negative indicators of mental health, such as substance use and mental disorders. For the purposes of this study, mental health will be defined as high academic achievement, high life satisfaction, and the absence of psychopathology.

Stress

The term “stress” has been defined in multiple ways throughout the literature (Mason, 1975). For example, stress has been defined as a state of distress in an individual in response to an environmental precipitant. This physiological response of an organism can be measured by increased heart rate, elevated blood pressure, and the presence of hormones and neurotransmitters (i.e., cortisol, adrenaline, norepinephrine) that heighten the arousal of an organism (Selye, 1993). In children and adolescents, distress has been reported in response to domestic violence (Saltzman, Holden, & Holahan, 2005), as well as aversive environmental conditions (Evans, Bullinger, & Hygge, 1998). Distress,
occurring within a normal range, is adaptive in nature; this heightened arousal prepares an organism to effectively deal with stress. However, in the long term, chronic stimulation of the stress-response system has been linked to depressed immune functions (Stein & Miller, 1993) and compromised life satisfaction (Evans, Bullinger, & Hygge, 1998).

Stress also has been defined as external to an organism, including threats of immediate harm or aversive environmental conditions. Stress of this type is typically measured using stress inventories, which are checklists of events believed to be aversive to an individual. These checklists have been commonly used throughout the literature on stress in children and adolescents. External stress has been linked to such negative outcomes as anxiety, depression, and aggression (Jaser et al., 2005), as well as academic underachievement (Alva & de los Reyes, 1999; Cunningham, Hurley, Foney, & Hayes, 2002), substance abuse (Chassin, Ritter, Trim, & King, 2003), and compromised life satisfaction (Suldo & Huebner, 2004). Although distress and external stress have both been linked to negative outcomes for adolescent populations, neither conceptualization of stress sufficiently explains why some adolescents who experience these types of stress do not experience the negative outcomes others have been found to experience.

An alternative definition of stress is that of perceived stress, which involves the interactions between an environmental precipitant (external stress), the physiological reactions of the body, and a person’s cognitive, emotional and behavioral response to this interaction. Stress is perceived when an external event causes aversive physiological and cognitive distress in an individual that exceeds his or her emotional and behavioral
repertoire designed to negate the harmful effects of external stressors. Children and adolescents who report high levels of perceived stress are at high risk for negative outcomes, such as psychopathology (Martin, Kazarian, & Breiter, 1995), substance abuse (Galaif, Sussman, Chou, & Wills, 2003), academic underachievement (Schmeelk-Cone & Zimmerman, 2003), and compromised life satisfaction (Mayberry & Graham, 2001). Perceived stress recognizes that certain individuals may possess resources, such as coping, that allow them to experience external stress without experiencing compromised functioning.

Children and adolescents encounter many external stressors in their day-to-day experiences. Certain populations of adolescents are faced with extreme stressors, such as chronic illness (Kliwer, 1997), abuse (Haugaard, Reppucci, & Feerick, 1997), parental psychopathology (Hammen, 1997), or parental divorce (Grych & Finchman, 1997); however, this is certainly not the norm. A much larger population of adolescents are faced with stress caused by academic demands (de Anda et al., 2000), friendships, romantic relationships, family interactions, and demands outside of school (Larson & Ham, 1993). Stress of this type is considered generic-normative stress, or stress from daily hassles. The coping behaviors that adolescents engage in to deal with stress may help to explain why certain adolescents experiencing stressors adapt appropriately in response to stress in their environments.

Coping

Coping is best defined as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or
exceeding the resources of the person,” whether the outcomes of such efforts are positive or negative (Lazarus & Folkman, 1984; pg. 141). There is a large body of research investigating the coping behaviors of adolescents who are faced with extreme stressors (Greenbery, Lengua, & Calderon, 1997; Peterson, Oliver, & Saldana, 1997; Worsham, Compas, & Ey, 1997); less is known about how adolescents cope with generic-normative stress.

Coping, in research on adults, is most commonly defined as either problem- or emotion-focused. In problem-focused coping, an individual engages in behaviors to specifically address the sources of stress, whereas in emotion-focused coping, an individual engages in activities to alleviate the emotional distress caused by a stressor. Although there is still a great debate as to whether adolescent coping behaviors can be dichotomized along these same two dimensions (Band & Weisz, 1988; Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001), research has linked problem- and emotion-focused coping to specific outcomes for adolescent populations. For example, Patterson and McCubbin (1987) have found that adolescents who cope with stress by seeking social support or ventilating their feelings (emotion-focused) are more likely to use cigarettes, alcohol, and marijuana than adolescents who work to solve family problems or seek spiritual guidance (problem-focused). Tolan, Gorman-Smith, Henry, Chung, and Hunt (2002) also found emotion-focused coping strategies to be linked to negative outcomes such as depression, conduct problems, and aggression. Research is needed to explain the relationships between perceived stress, coping, and mental health.
indicators (specifically, academic achievement, psychopathology, and life satisfaction) in populations of high-achieving adolescents.

*Stress, Coping and Mental Health Outcomes in Adolescent Populations*

Studies linking perceived stress and coping behaviors to mental health outcomes have found that these variables will reciprocally influence each other. For instance, Galaif, Sussman, Chou, and Wills (2003) found that perceived stress functioned as both a predictor and an outcome of depression. In turn, anger coping strategies employed to deal with stress functioned to further increase perceived stress. Adaptive coping strategies were found to predict decreasing levels of perceived stress. As perceived stress has been linked to such negative outcomes as substance abuse and psychopathology (Schmeelk-Cone & Zimmerman, 2003), coping strategies that serve to increase perceived stress may place adolescents at increased risk for experiencing such negative outcomes.

The majority of studies investigating the role stress and coping play in predicting outcomes utilize either samples of at-risk youth or focus on negative indicators of mental health. Adolescents who participate in challenging academic programs provide a unique opportunity for researchers to investigate the role that stress and coping play in predicting positive outcomes, such as academic achievement and life satisfaction, and also negative outcomes, which have been rarely researched in this population.

Adolescents frequently identify academic demands as a significant source of stress in their lives (Mailandt, 1998). Stress has been linked to compromised school functioning in adolescents (Alva & de los Reyes, 1999; Cunningham, Hurley, Foney, & Hayes, 2002; Gillock & Reyes, 1999), however most research confirming this has been
conducted in ethnic minority or at-risk populations. Students enrolled in the International Baccalaureate (IB) program, described below, are subjected to heavy academic workloads throughout their high school years, in addition to the generic-normative stressors experienced by other adolescents. Despite extraordinary academic demands, identified as a significant source of stress in adolescence, students in this program do not experience the impairments in academic functioning found in ethnic minority or at-risk adolescent populations. However, researchers have not yet investigated these students’ functioning in other domains of mental health, such as psychopathology or life satisfaction, or the role that coping may play to negate the impact of stress on their mental health.

The International Baccalaureate Program

The International Baccalaureate Organization (IBO), currently in place in approximately 1,500 schools world-wide, is a program specifically designed for academically advanced high school students. Throughout high school, students in this program are engaged in research, community service and challenging curricula, far beyond state requirements for high school graduation. While students in the International Baccalaureate (IB) program are indeed academically successful, since achievement is a requirement for obtaining program acceptance and completion, no research has been published regarding the mental health of this particular population. The IB program provides a unique opportunity to investigate the mental health of academically advanced adolescents, as the program is comprised of a population of students that maintain high academic
academic achievement while simultaneously navigating the social and developmental challenges of adolescence.

The IB program curriculum and requirements are touted as particularly appropriate for students identified as intellectually gifted (Tookey, 2000). Preliminary research suggests that gifted children may possess coping strategies superior to that of other age-matched children; it remains unclear as to whether this applies to all academically advanced students, or only those identified as intellectually gifted. Specifically, Preuss and Dubow (2004) found that elementary-aged children who were identified as intellectually gifted were more likely than their age-matched peers to use problem-focused coping strategies to deal with school-related and interpersonal stressors. Although not all students in the IB program are identified as gifted, it is conceivable that all students who are academically advanced, regardless of gifted identification, may have coping strategies that are superior to those of their general education peers.

Purpose of the Current Study

Academically advanced adolescents are an under-researched group. A primary purpose of the current study is to investigate the levels of perceived stress, as well as the mental health functioning, in such a sample. Specifically, the current study will compare the stress and mental health of students in a high school International Baccalaureate program to a sample of same-age students in a regular education curriculum. In line with calls to operationalize mental health as the presence of positive indicators of functioning, the current study will examine students’ life satisfaction and academic achievement in addition to traditional indicators of psychopathology.
A second purpose of the current study is to clarify the independent and interactional influences of stress and coping on the mental health of high-achieving youth. Specifically, coping may function as a moderator in the relationship between stress and mental health. Building on previous research demonstrating an inverse relationship between stress and academic achievement in at-risk populations, the current study aims to determine why students in the IB program do not suffer such deleterious academic consequences despite the academic stress inherent to the rigorous curriculum. Thus, a central purpose of this study is to identify coping behaviors that intervene in the relationship between stress and functioning in high-achieving students. Certain coping behaviors may buffer/protect students from the deleterious effects of stress; for instance, the negative relationship between stress and mental health may be present in only those students who lack adaptive coping behaviors.

In sum, the research questions to be answered in this study are as follows:

1. Do students in the IB program differ from students in general education in:
   a. Perceived stress?
   b. Coping styles (positive avoidance, negative avoidance, family communication, anger)?
   c. School functioning (academic achievement, academic self-efficacy)?
   d. Social-emotional functioning (life satisfaction, psychopathology)?

2. Within the sample of IB students, what are the interrelationships between:
   a. Perceived stress?
b. Coping styles (positive avoidance, negative avoidance, family communication, anger)?

c. School functioning (academic achievement, academic self-efficacy)?

d. Social-emotional functioning (life satisfaction, psychopathology)?

3. Within the sample of IB students, which coping styles are most predictive of mental health outcomes, specifically

   a. Academic achievement?

   b. Global life satisfaction?

   c. Psychopathology (internalizing behavior, externalizing behavior)?

4. Within the sample of IB students, does coping function as a moderator in the relationship between perceived stress and mental health, defined as high academic achievement, high life satisfaction, and low psychopathology?
CHAPTER 2

Review of the Literature

Recently, there has been great deal of interest in identifying the variables that contribute to healthy development in adolescence. Traditionally, healthy development has been marked by the absence of psychopathology; however modern conceptualizations of healthy development include positive indicators, such as life satisfaction and academic achievement (Greenspoon & Salkofske, 2001; Roeser, Eccles & Sameroff, 2000). The present study will utilize one such comprehensive model of adolescent mental health, based on the work of Roeser, Eccles and Sameroff (2000), as the backdrop for a comprehensive investigation of variables, namely stress and coping, that may impact adolescent functioning.

The following literature review begins with a presentation of the aforementioned comprehensive model of adolescent mental health. Then, research on stress and coping and their relationship to adolescent mental health will be reviewed. Finally, the diminutive body of literature on the International Baccalaureate Organization, including its history and development, program requirements, and outcome research will be presented.

A Comprehensive Model of Adolescent Functioning

Mental health in adolescence has historically been defined as the absence of negative outcomes (i.e., psychopathology, behavior problems, academic underachievement, substance abuse). Mental health, in this view, is defined simply as the absence of psychopathology, with little consideration of measures of optimal
development (Powers, Hauser, & Kilner, 1989). This simplistic view of mental health is troublesome, as it does not lend to the measurement of mental health; it only has the potential to confirm that a person is not currently experiencing mental sickness. In this traditional model, mental health is inferred from negative indicators of pathology. As Jahoda (1958) originally suggested, “the absence of disease may constitute a necessary, but not sufficient, criterion for mental health” (p.15). A model of mental health such as this limits the range of services mental health professionals can provide to individuals. In this paradigm, mental health professionals are relegated to fighting illness, rather than empowered to build on available resources believed to promote healthy development.

The need for a comprehensive model of mental health is supported by the identification of a sub-group of individuals who are found to score low on measures of psychopathology yet still report low levels of subjective well-being (Greenspoon & Saklofske, 2001). Thus, it is evident that the absence of pathology is not synonymous with the presence of absolute mental health (i.e., subjective well-being). Individuals who report low levels of life satisfaction are considered at high risk for the later development of depression and other disorders of mental health (Lewinsohn, Redner & Seeley, 1991), although they may not currently be reporting symptoms of such pathology.

As an alternative to a traditional medical-model definition of mental health, Roeser, Eccles and Sameroff (2000) presented a comprehensive model of adolescent mental health that includes traditional indicators of psychopathology, as well as positive indicators of mental health, such as reported happiness and academic success. Indicators
of mental health have been identified in two main domains: school functioning and social-emotional development.

School Functioning

School functioning consists of measures of academic achievement, in-school conduct, and academic self-efficacy, all of which have been found to reciprocally influence each other. Academic achievement is commonly measured by grade point average (GPA), a mathematical average of grades earned in all subjects. In-school conduct includes discipline referrals, class attendance, cheating, and other problematic behaviors occurring on school grounds. Academic self-efficacy refers to the beliefs that an adolescent holds regarding his or her ability to successfully complete school-related tasks and includes perceptions of ability in academic subjects as well as self-perceived ability to meet standards set by teachers and parents for expected performance (Roeser, Eccles, & Sameroff, 2000). Students with high academic self-efficacy are more likely to maintain a higher GPA, whereas low academic self-efficacy has been linked to lower levels of academic achievement (Aunola, Stattin, & Nurmi, 2000). Additionally, Roeser, Eccles and Sameroff (2000) found a negative correlation between academic self-efficacy and school conduct problems. Overall, it appears that students with low academic self-efficacy tend to have lower GPAs and higher rates of disciplinary infractions in school. The present study will use GPA and academic self-efficacy as indicators of school functioning.
Social-Emotional Functioning

Social-emotional functioning includes psychopathology, subjective well-being (perceived quality of life) and relationships with peers (Roeser, Eccles & Sameroff, 2000). Regarding subjective well-being, quality of life (QOL) has typically been measured along two dimensions: objective and perceived/subjective (Evans, 1994). Objective assessments of adolescent QOL consider social indicators, such as quality of education, parental income, and access to resources; however research studies utilizing social indicators have not consistently linked them to perceived QOL (Evans, 1994). Subjective indicators of QOL consist of self-reported measures of subjective well-being (SWB). SWB is comprised of three constructs, namely life satisfaction, negative affect and positive affect (Diener, 2000). The concept of SWB is directly aligned with the need for a comprehensive model of mental health identified by Jahoda (1958), Greenspoon and Saklofske (2001), and Roeser, Eccles, and Sameroff (2000), as SWB includes both positive (life satisfaction, positive affect) and negative indicators (negative affect) of functioning. Subjective measures of QOL may be of particular importance to study when designing interventions for adolescents, as they may be a more viable target for intervention, as opposed to the external variables typically captured in an objective definition. For the purposes of this study, life satisfaction will be used as the indicator of subjective well-being.

Life satisfaction. Life satisfaction (LS) is best defined as a personal judgment about life circumstances. LS can be defined globally, as an overall indicator of one’s feelings about their life in general, or domain specific, including judgments surrounding
school, work, family relationships, or living environment (Diener, 2000). Self-reported life satisfaction has been linked to a number of outcomes particularly salient to adolescent populations. For instance, Valois, Zullig, Huebner, and Drane (2004) established a link between low levels of reported life satisfaction in adolescents, poor mental health, suicide ideation and suicidal behavior in both Caucasian and minority male and female adolescents. Life satisfaction was measured via the Brief Multidimensional Students’ Life Satisfaction Scale (BMSLSS: Seligson, Huebner, & Valois, 2003), a 6-item scale measuring satisfaction in specific domains (i.e., family, friends, school, self, living environment), as well as a global indicator of satisfaction with their lives as a whole. Valois and colleagues (2004) postulated that engagement in ineffective coping strategies to address stress related to the developmental challenges of adolescence may act as a mediator between life satisfaction and negative outcomes, specifically suicidal behavior.

Substance abuse, another salient issue in adolescence, is also related to LS. In conjunction with an ongoing large scale survey ($N = 5032$) of adolescent risky behaviors, Zullig, Valois, Huebner, Oeltmann, and Drane (2001) explored the relationship between LS and drug abuse. Low levels of LS, assessed via the BMSLSS, were significantly correlated with increased drug use in both male and female Caucasian and minority populations. As this study was cross-sectional in nature, it is difficult to establish whether drug abuse may hamper LS or if students engage in drug abuse as a result of low levels of LS.
Longitudinal research on LS and negative outcomes addresses the aforementioned methodological limitations of cross-sectional research and demonstrates that LS predicts behavioral outcomes. Suldo and Huebner (2004) found that adolescents who initially reported low levels of life satisfaction were at higher risk for later externalizing behavior disorders. Additionally, the experience of stressful life events was found to moderate the relationship between LS and such behavior problems, with students who initially reported low levels of life satisfaction at greater risk for developing externalizing behavior problems after the experience of stressful events than students who initially reported higher levels of life satisfaction. The relationship between life satisfaction and negative outcomes, as well as the negative correlation between stress and reports of life satisfaction, point to the need to further explore the role that stress, and coping (as a related concept), may play in adolescent mental health.

In sum, in order to address some of the limitations of a medical-model definition of mental health, the present study intends to adapt the Roeser, Eccles and Sameroff (2000) model of adolescent functioning. This model’s inclusion of positive and negative indictors of mental health is in line with the call for more research on positive mental health (Zaff, Calkins, Bridges, & Margie, 2002). Adolescent mental health, in the current study, will be operationalized as academic achievement, life satisfaction, and psychopathology (i.e., internalizing and externalizing behavior problems). Adolescents who are found to have high levels of academic achievement, high levels of life satisfaction, and low levels of psychopathology fit this new model of a mentally healthy adolescent.
Stress

Perhaps because of the negative outcomes associated with stress in adolescent populations (e.g., depression, anxiety, suicidality), research on stress in youth has become increasingly common (Aneshensel & Gore, 1991). The term “stress” has been conceptualized in multiple ways. Mason (1975) identified three ways in which stress has been identified and researched. The first definition of stress refers to the internal state of the organism which involves arousal of the autonomic nervous system producing a physical and emotional response. The second defines stress as an external event (stimulus) which can include both threats of immediate harm or aversive environmental conditions. While there is extensive research documenting the effect of environmental stressors and internal stress responses, neither conceptualization fully explains why two people can experience similar circumstances yet adapt differently. The third definition of stress refers to an experience that arises from a transaction between a person and the environment. A person experiences stress when his or her environment places demands on him/her, either positive or negative, that exceed his/her resources (e.g., coping, social support). This third definition is frequently referred to as a transactional model of stress, defined as an environmental precipitant creating strain on an individual, but with equal weight also given to the cognitive, emotional, and behavioral responses of the individual acting in concert to create perceived stress (Lazarus, 1999).

First, research on stress as an internal state will briefly be reviewed. This section is included as it is important to note many of the physiological responses caused by events in the environment, although physiological responses to stress is not a central
focus of the present study. Next, external stressors will be defined, focusing on those external stressors that are specific to adolescents. This section is included as it is worthwhile to indicate many of the events and conditions adolescents may be experiencing that cause them to perceive higher levels of stress. Finally, a transactional model of stress, which is adopted for use in the present study, will be presented, along with findings on the relationship between perceived stress and pathology.

**Conceptualization of Stress: Internal State**

Stress conceptualized as an internal state of an organism involves many changes within the body. During times of stress, elevated levels of corticoids, hormones that are known to suppress the immune system, can be detected in the body. Additionally, catecholamines are released, most notably adrenaline, which serves to increase an organism’s levels of alertness and energy by increasing heart rate, elevating blood pressure and circulation, and stimulation of the central nervous system (Selye, 1993). In the short-term, these physiological responses are necessary and beneficial to an individual, however persistent elevated levels of corticoids and catecholamines in the body may be deleterious.

Children and adolescents who are exposed to chronic stressors in the environment provide an opportunity for researchers to investigate the long-term biological impact of stress on development. For example, Saltzman, Holden, and Holahan (2005) examined the physiological functioning of 21 children recently exposed to domestic violence and its relationship to psychological functioning as compared to a clinical comparison group ($n = 27$). Children who were currently victims or witnesses of domestic violence were
excluded from participation in the study due to ethical reporting concerns. The comparison group was comprised of children and parent dyads seeking mental health services for the child related to anxiety, depression, and disruptive behaviors but had no exposure to violence in the home. Measures of physiological functioning included heart rate, blood pressure, and salivary levels of cortisol and were measured prior to and following an interview regarding violence they had witnessed or experienced in the home. Prior to the interview, children who had been exposed to marital violence had significantly higher resting heart rates and salivary cortisol levels than children in the control group who had not witnessed or experienced domestic violence. Following the interview, blood pressure levels were found to be significantly elevated above their normal, resting levels in violence-exposed children only. Violence-exposed children were also found to exhibit significantly more trauma symptoms than the clinical comparison group.

Indeed, one interpretation of these findings is that children who are exposed to violence may inherit elevated arousal systems from their parents, the perpetrators of violence, and as a result, both parties may be predisposed to pathology, expressed as aggression in the parent and trauma symptoms in the child. As it is difficult and unethical to determine a priori children who will be exposed to violence and withhold intervention to study which event may precede the other, it is unclear whether such differences in physiology from comparison groups precede or follow exposure to violence in the home. Nevertheless, Saltzman and colleagues hypothesized that repeated exposure to violence
in the home was responsible for the bodily reactions. Thus chronic stress may lead to
durable changes in the physiological functioning of children.

*Conceptualization of Stress: External Stressors*

Adolescents encounter a variety of external stressors in their peer groups,
families, work environments and schools (Burnett & Fanshawe, 1997; Compas, Malcarne
& Fondacaro, 1988; Mates & Allison, 1992), in addition to biological stressors related to
their maturation and development (Blyth, Simmons & Carlton-Ford, 1983). Research has
indicated that the transition to middle school (i.e., a time marking the beginning of the
adolescent years) may be associated with the experience of appreciably more stressful
events than pre-adolescence. Larson and Ham (1993) compared the average number of
stressful events experienced by 483 fifth to ninth graders to delineate an age when
students may begin to experience increasing numbers of stressful, negative life events.
Events related to family, dating, school, extracurricular activities and peers were
included. After grade seven, a time at which the researchers felt coincided with the
beginning of adolescence, students reported a significantly greater number of negative
events in every domain than students in grades five and six. Parent reports also were
obtained for each participant and identical trends were found, with a notable exception;
students perceived an increase in the number of negative events occurring in the family
while parents did not. In sum, developmental tasks traditionally associated with the
transition to middle school, such as the increasing autonomy from parents, initiation of
romantic relationships, and increasing academic demands, contribute to a greater number
of external stressful experiences for the developing adolescent.
Measurement of external stressors. External stressors are most frequently measured using stress inventories, also referred to frequently as life events checklists. On these stress inventories, respondents are typically asked to indicate, from a predefined list, which events they have personally experienced within a given timeframe. Items included on the list are drawn from the existing research on stress in adolescents; however, implicit to this type of stress measure is the belief that inherent qualities of particular events directly cause distress. A researcher using this type of inventory would also need to include measures of the cognitive appraisal of the stressful events, or otherwise leave their data open to multiple interpretations for consumers of their research. Stress inventories of this type also may fail to include many of the stressful experiences that are exclusive to particular populations, such as high school students, or minorities, and those stressors that may be limited to particular geographical regions. As a result, comprehensive stress inventories, that are socially and culturally sensitive, may be too lengthy to have practical utility in research on adolescents (Miller, 1993).

Compas, Orosan, and Grant (1993) identified the stressors included on stress inventories in three ways: severe-acute stress, severe-chronic stress, and generic-normative stress (also referred to as daily hassles). Severe-acute stress includes major traumatic events, such as a parental divorce, death of friends or family, and serious injury to the self or loved ones. Stress of this type is generally unexpected, of high, immediate impact, and subsides over time. Severe-chronic stress encompasses such things as poverty, domestic violence, and parental psychopathology. Stress of this type persists for a significant amount of time, and may go unresolved throughout the course of
development. Generic-normative stress involves experiences encountered in everyday life, such as stress imposed by school, homework, chores, dating, and the like.

**Severe-acute external stressors.** Studies of adolescents experiencing severe-acute stress, such as parental divorce, have found mixed results. A meta-analysis of studies on children experiencing parental divorce/marital conflict found that approximately half of the studies reported that children are more likely to experience externalizing disorders, while the other half indicated that children are more likely to experience internalizing disorders (McMahon, Grant, Compas, Thurm & Ey, 2003). Although the initial period of parent separation may be emotionally distressing for children, the negative long-term effects (elevated levels of pathology and behavior disorders) of parental divorce that resounded in the literature in past decades seem to be mostly unfounded (Kelly, 2003). Grych and Fincham (1997) suggested that the characteristics of the individual child experiencing parental divorce, such as personality and availability of social support, seem to play a far more important role in the adaptation to family transitions than the simple fact that they belong to a group characterized only by having parents experiencing a divorce. Although children experiencing parental divorce be at high-risk for the development of internalizing and externalizing disorders immediately following parental divorce, symptoms typically subside as the family adjusts to their new arrangements (Grych & Fincham, 1997; McMahon, et al. 2003).

**Severe-chronic external stressors.** Adolescents experiencing severe-chronic stress, such as those with parents having diagnosed pathology, may be at high risk for negative outcomes. In a study on the stress experienced by adolescents coping with
parental depression, Jaser and colleagues (2005) found that adolescents who reported that their mothers were “upset, tense, grouchy, angry, easily frustrated, and over-worried about negative things” (all behavioral symptoms of depression) reported elevated levels of anxiety, depression, and aggression. It is possible that biological factors that may be passed from parent to offspring may predispose the adolescent to the development of such disorders. However, the authors suggested that the stress caused by living with a parent exhibiting behaviors characteristic of depression increases the risk of pathology in these youth.

Exposure to domestic violence and abuse, another severe-chronic stressor, also may negatively impact the domains of mental health identified by Roeser, Eccles, and Sameroff (2000), such as relationships with peers and psychopathology. Adolescents who are witnesses and/or victims of violence in the home are less satisfied with the relationships with peers and are more likely to experience violence in romantic relationships. In addition, these adolescents report more trauma symptoms and depression (Levendosky, Huth-Bocks, & Semel, 2002). Sexual abuse is also consistently been found to correlate with internalizing disorders, PTSD symptoms and risky sexual practices (McMahon et al., 2003).

Poor living conditions, also identified as a severe-chronic stressor, also may impact adolescent mental health. In a study of 217 elementary-aged children with geographical proximity to an airport producing high levels of chronic noise, Evans, Bullinger, and Hygge (1998) found that the chronic exposure to the noise produced by airport traffic was related to higher blood pressure and elevated levels of epinephrine,
norepinephrine, and cortisol (physiological stress measures), as compared to a sample of students living in quiet comparison communities, matched for demographics. These physiological responses provided medical evidence that students living in close proximity to the airport experienced elevated levels of stress. Notably, these same students experiencing chronic external stress also perceived a lower quality of life (life satisfaction) than the control group in physical, psychological, social, and daily life domains. Research such as this provides further evidence of a negative correlation between high levels of stress and LS, a component of adolescent mental health (Roeser, Eccles, & Sameroff, 2000).

Generic-normative stressors. The majority of adolescents are not exposed to chronic or severe stressors in the environment but instead experience generic-normative stress in their day-to-day living experiences. Despite this, most research to date has focused on the impact of severe and chronic stressors on developmental outcomes (McMahon, Grant, Compas, Thurm & Ey, 2003). A large body of research demonstrates the negative impact accumulation of chronic and stress has on the psychosocial adjustment of adolescents, (Larson & Ham, 1993; Mosley and Lex, 1990; Printz, Shermis & Webb, 1999; Rice, Herman & Peterson, 1993; Sim, 2000). However, more research is needed to determine the impact generic-normative stressors may have on adolescents (Armacost, 1989; Sandler, Wolchik, MacKinnon, Ayers & Roosa, 1997; Thoresen and Eagleston, 1983), specifically the relationship between generic-normative stress, academic achievement, and mental health.
A number of studies on the external stressors experienced by adolescents identify generic-normative stress as the type of stress they most frequently experience or find most stressful. For example, in a survey of 333 American high school students residing in California, de Anda and colleagues (2000) found that very few students reported experiencing severe or chronic stress, despite living in an urban environment. Although cited by a minority of students, the most commonly cited stressors that would fall under the domains of chronic or severe stress were the fear of natural disasters (42.9%: earthquakes, which is realistic given the region and time in which the data were collected), fear of violence (21.1%: community and gangs), and fear of AIDS (42.6%: chronic health concerns). However, the majority of students identified frequently experiencing stressors related to academic and developmental demands. Over 65% of those surveyed indicated that planning for the future and their career was stressful, while over 50% of those surveyed identified school-specific stressors, such as studying for tests, getting good grades, completing homework, and not having enough time to complete all responsibilities.

Other research confirms that adolescents identify generic-normative stressors as the most significant source of stress in their lives. Lohman and Jarvis (2000) asked 42 students attending three Midwestern high schools to generate and rank order up to 10 stressors that they had experienced in the two months prior to the study. They found that adolescents in their study consistently cited stress related to school and family demands as their most significant sources of stress. There is also evidence that this holds true across cultures. For example, Moulds (2003) found that Australian high school students,
when asked to identify the main source of stress during the current school year named school, peer, and family stressors as most significant, with additional stress caused by concern over their physical features (i.e., appearance, developmental changes).

As the mastery of academic demands is a central task for adolescents, it is not surprising that students frequently cite school-related stressors as a significant source of stress in their lives. Mailandt (1998), in response to a school’s request to identify and address the mental health needs of their students, surveyed 450 adolescents in grades seven to nine to determine the major stressors experienced by these students. Students in this study identified testing and homework as particularly stressful. They indicated that they did not feel adequately prepared for the heavy academic workload placed on them by teachers and did not feel that they had adequate time to complete all of their homework and personal demands. They did not perceive that adults in their life (teachers, parents) were sensitive to their challenges, and conveyed their frustration with feeling that most stressors were beyond their control.

Students experiencing varying levels of academic success report some similarities, but also some differences, in the type of generic-normative stressors they experience. Mates and Allison (1992) conducted focus groups with high school students in Canada who attended different schools based on their academic performance. The researchers independently interviewed three groups of students from low (termed basic), average, and advanced academic tracks to determine if students who experience varying climates of academic challenges experience unique stressors. Students at all academic levels reported experiencing stress stemming from family, work experiences, and peer
relations, suggesting that adolescents experience stress related to these areas independent of their educational challenges. Students in the average and advanced schools reported stress related to school and extracurricular activities, while students on the low track did not. Academic pressures often involved finding time to complete a heavy academic workload and tense relationships with teachers who were not perceived as sensitive to demands placed on them by other areas of their life, such as maintaining a job. Students attending the basic school reported pressures to use drugs and join gangs as a unique source of stress. Students at the advanced school reported that family relationships were tense because their parents often compelled them to perform well in school and pressured them about plans for the future. This conflict often impaired other family communications. Despite the aforementioned studies indicating that the main sources of stress for teens are normal, everyday stressors, a majority of research continues to focus on the impact of extreme or chronic stressors in the environment.

**Conceptualization of Stress: Transactional Model**

A transactional model of stress acknowledges both the impact of environment and the unique characteristics of the individual, such as personality and coping strategies. In a transactional model of stress, a person first encounters an environmental stressor, then appraises the stressor and finally, if the stressor is believed to exceed their available resources, reacts with a stress response. In this model, the person and specific stressor interact to create perceived stress. A transactional model of stress has great utility for researchers interested in investigating psychosocial stressors and how individuals adapt (Aldwin, 1994).
Measurement of perceived stress. Cohen, Kamarck, and Mermelstein (1983) developed a tool congruent with a transactional model of stress to measure how individuals appraise stress, (i.e., the Perceived Stress Scale: PSS). Prior to the development of the PSS, most available stress measures were inventories of events that were thought to be stressful for individuals, as previously described. The Perceived Stress Scale (PSS) was designed to assess stress that occurred when an individual experienced challenges that exceeded their personal coping resources. This measure recognizes that stress is the cognitively mediated emotional response to an objective event and is not based on inherent qualities of an event. In addition, the PSS can capture stress caused by chronic or acute stress, as well as generic, normative stress caused by daily hassles. Such a measure can help to circumvent some of the issues identified previously associated with using stressful life event inventories in research on multi-cultural, geographically diverse adolescent populations.

The Perceived Stress Scale was utilized in a study conducted by Martin, Kazarian, and Breiter (1995) to examine the relationship between perceived stress and depression in a sample of 203 adolescent psychiatric patients ranging in age from 12 to 17. Higher scores on the PSS were significantly and positively correlated with higher scores on the Children’s Depression Inventory (Kovacs, 1981) for both males ($r = .55$) and females ($r = .48$). Stress also was measured using a life events checklist; but no significant correlations were found between stressful life events and self-reported depression. The authors concluded that for adolescents, perceived stress was a more accurate link between stress and negative outcomes than stress measured by life events checklists.
Perceived stress and mental health. In non-clinical samples of adolescents, perceived stress has been linked to negative outcomes such as psychopathology, academic underachievement, and delinquency. Schmeelk-Cone and Zimmerman (2003) sampled 421 African-American low and average achieving high school students in a five year longitudinal study. Students found to have high or increasing levels of perceived stress (40% of the sample) reported significantly more anxiety and depression than low or decreasing stress peers. Students in the increasing stress group reported more violent and delinquent behavior. In addition, high stress was related to lower GPA. As pathology, delinquent behavior, and academic achievement are all indicators of mental health in adolescents (Roeser, Eccles, & Sameroff, 2000), it is notable that higher levels of perceived stress caused impairments in each domain of functioning.

Galaif, Sussman, Chou and Wills (2003) investigated the role of perceived stress in predicting negative outcomes such as substance use and depression in 931 adolescents ages 14-19. Students in this study were enrolled at alternative high schools that specialize in teaching students have not proven to be successful academically or socially in a regular education environment. A 3-item version of the Perceived Stress Scale was used to indicate levels of perceived stress. Using structural equation modeling, Galaif and colleagues found perceived stress functioned as both a predictor and an outcome of depression across ages, ethnicities and gender. In other words, initial higher levels of stress caused depression, and depression, in turn, predisposed individuals to perceiving higher levels of stress.
Perceived stress has also been found to have a negative impact on life satisfaction. In a sample of 123 Australian adolescents and adults (ranging in age from 17 to 58 years old), Mayberry and Graham (2001) found a strong negative correlation ($r = -0.59$) between perceived stress and life satisfaction. This provides preliminary evidence that higher levels of perceived stress in youth may negatively affect their life satisfaction, another domain of functioning in adolescent mental health.

*Relationships between Stress and Mental Health*

Adolescence is a developmental period in which children may be particularly vulnerable to the negative effects of stress; research confirms relationships between stress and a host of undesirable outcomes. For example, perceived stress is a significant risk factor for disorders such as depression (Compas, Orosan & Grant, 1993; Little & Garber, 2004), anxiety (Schmeelk-Cone & Zimmerman, 2003), and substance abuse (Chassin, Ritter, Trim & King, 2003) in adolescents. Longitudinal studies find that psychosocial stress experienced in adolescence may lead to psychopathology and problematic adjustments in adulthood (Compas, Connor-Smith, Saltzamn, Harding-Thomsen, & Wadsworth, 2001; Grant, Compas, Thurm, McMahon & Gipson, 2004; Werner, 1989). In addition to psychopathology, stress is linked to academic underachievement (Alva & de los Reyes, 1999) and school failure (Hess and Copeland, 2001), as well as higher numbers of physical health complaints (Torsheim & Wold, 2001).

*School functioning.* Cunningham, Hurley, Foney, and Hayes (2002) investigated the impact that external stressors have on the academic achievement of African-American males living in a large, urban area. Using a modified version of the Life Events
Questionnaire (LEQ: Coddington, 1972), 84 high school students were asked to indicate from a checklist of events those that had occurred within the last year. The modified LEQ included 45 possible negative events such as victimization and death of friends and family members. It was found that students who reported a high number of stressful life events had a lower grade point average. This indicates that stress may cause impairments in school functioning in certain sub-groups of adolescents.

Gillock and Reyes (1999) found similar results in investigating the impact of severe-acute and severe-chronic stressors on Mexican-American adolescents living in a large urban northeastern city. Stress was measured using the Major Life Events Checklist (MLEC: Johnson & McCutcheon, 1980) and a slightly modified version of the Chronic Stress Inventory (CSI: Cole, 1992). The MLEC is a 44-item stressful life events inventory, on which respondents are asked to indicate with a yes or no response whether an event has occurred in personal, family, friend, or school domains in the past year. The CSI also is a stressful life events inventory, consisting of 37 events in these same four domains eliciting a yes or no response. In the subsample of female students, GPA was inversely related to the experience of major and chronic stressful events within the friend, school, and personal domains. Specifically, GPA was negatively correlated with major life events concerning friends ($r = -.29$), personal chronic stressors ($r = -.34$) and chronic school stressors ($r = -.34$). Similar results were found in the subsample of male students, where GPA was negatively correlated with chronic stressful events related to school ($r = -.46$) and major life events concerning friendships ($r = -.35$) but not personal chronic stressors. Of note, for males, GPA was also negatively correlated with chronic stressors.
related to family ($r = -.26$). Although the majority of the sample also experienced a significant number of severe chronic stressors (e.g., poverty, community violence), these small to moderate negative correlations were still found between school-stressors and academic achievement, with male and female students alike with lower GPAs experiencing a greater number of stressful experiences than their peers with higher achievement. Of note, males and females in this sample reported different school stressors; males were more likely to report negative experiences at school, such as disciplinary action and not liking classes and females reported more stress related to the need to attain high grades and make honor roll.

Other studies also confirm the link between stressful life events and impairments in school functioning in adolescents. Alva and de Los Reyes (1999), in a sample of 171 Hispanic- high school students living in the United States, found that stressful life events were negatively correlated with grades ($r = -.20$). Along with this, strong, positive correlations were found between psychosocial stress and symptoms of anxiety ($r = .58$) and depression ($r = .50$). This suggests that psychosocial stress may not only impair students’ academic achievement but also impairs other domains of mental health. In sum, research supports a link between stressful life events and reduced academic achievement, however more research is needed to investigate the relationship between perceived stress and academic performance.

*School functioning and high achieving students.* Stress has not always been linked to impaired school functioning for all adolescent populations. Studies on resiliency of at-risk youth populations have identified students who, due to their adverse environmental
surroundings, were predicted to experience compromised school functioning, yet were found to demonstrate high academic functioning. Kenny, Gallagher, Alvarez-Salvat, and Silsby (2002) found that despite the stress caused by living in an inner-city, the 16 students in their study on resiliency (all enrolled in an enrichment program to prepare them for college admission) maintained high GPAs, attended school regularly, and were rated as outstanding achievers by teachers in their schools. Results such as these indicate that chronic stress is not definitively linked to poor academic outcomes for students. Extra supports, such as the enrichment program, may serve to protect students from academic underachievement. It is important to note that three students who fared best in their study (i.e., highest achievement, lowest reported symptoms of psychopathology) reported fewer stressful life events than students in the sample who were found to have symptoms of psychopathology.

According to Roeser, Eccles, and Sameroff (2000), GPA is only one measure of school functioning. Indeed, stress may cause impairments in other domains of school functioning, such as in-school conduct. Qualitative interviews conducted by Taylor, Pogrebin, and Dodge (2002) revealed that the pressures to achieve in academically advanced high school programs (i.e. advanced placement and the International Baccalaureate programs) may lead to academic dishonesty. Interestingly, students did not view their behaviors as cheating; however their descriptions of academic behaviors would constitute most definitions of academic dishonesty, such as looking onto a classmates test, stealing copies of a test to study, or copying another student’s homework. Students cited the stress caused by high expectations held by teachers and parents, time
constraints associated with completing immense workloads, and the desire to earn grades higher than their peers in the program as the cause of cheating behaviors. These pressures may also be linked to impairments in social-emotional functioning.

Social-emotional functioning. Adolescents experiencing stressful life events also may be at risk for experiencing negative affect, a component of SWB. Larson and Ham (1993) found that negative events were a moderate predictor of negative affect, namely feelings of depression ($r = .40$). Students who had experienced a higher number of stressful events (i.e., more than 7) were at greater risk for experiencing high rates of negative affect than students who had experienced fewer stressful events. These findings supported a preliminary link between stress and SWB in adolescent populations.

Later, McKnight, Huebner, and Suldo (2002) identified a relationship between stressful life events and life satisfaction, a component of SWB. In a study of 1,201 students in grades 6-12, McKnight and colleagues investigated the relationship between stressful life events, life satisfaction, and internalizing and externalizing behavior. A moderate, negative correlation was found between stressful life events and global life satisfaction ($r = -.23$), meaning that students who experienced more stressful events reported lower levels of life satisfaction. Additionally, moderate correlations were found between stressful life events and externalizing ($r = .28$) and internalizing ($r = .23$) behavior; the experience of more stressful life events positively predicted internalizing and externalizing behaviors. Life satisfaction was found to mediate the relationship between stressful life events and both internalizing and externalizing behavior. In other
words, the relationship between stressful life events and internalizing and externalizing behaviors was attenuated by positive appraisals of life circumstances.

In summary, stress, whether measured as the internal state of an organism or, more commonly, as external events, has been linked to impairments in academic achievement, SWB, and psychopathology in adolescent populations. As noted before, in a transactional model of stress the occurrence of an external event is mediated by several variables, to create the perception of stress for an individual. Coping is one such factor that may mitigate or exacerbate the relationship between environmental precipitants and negative outcomes.

Coping

The most frequently utilized definition of coping is that of Lazarus and Folkman (1984). Coping is defined as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). Any purposeful efforts undertaken to manage stress, regardless of the positive or negative outcomes of the coping behavior, are considered coping. Although a large body of research exists investigating how children cope with severe and chronic stressors such as chronic illness (Greenberg, Lengua & Calderon, 1997; Kliwer, 1997; Peterson, Oliver & Saldana, 1997), parental divorce (Grych & Fincham, 1997), chronic maltreatment (Haugaard, Reppucci & Feerick, 1997) and parental psychopathology (Hammen, 1997; Worsham, Compas & Ey, 1997), there is a paucity of research on how children cope with generic-normative stress. Specifically, more research is needed to determine how adolescents cope with stress encountered in
their everyday experiences, such as that caused by school and relationships with peers (Skinner & Wellborn, 1997). Other topics in coping research in need of further study included the unique coping style of youth, and problems inherent to using different labels for similar coping behaviors (for example, some studies combine different behaviors into coping styles with the same label). Regarding the latter limitation, the lack of consensus among researchers has made it difficult to aggregate findings across studies or draw general conclusions regarding the relationships between coping styles and outcomes (Compas et al., 2001).

The current section on coping begins with a review of the ways in which coping is measured, addressing the potential strengths and weaknesses of each assessment method. Next, the identification of particular styles of coping will be discussed, with particular attention to the differences found in the literature between adolescent and adult coping styles. Last, the role that coping plays in predicting stress and negative outcomes will be discussed, along with empirical studies investigating the mental health outcomes specific to the Roeser, Eccles, and Sameroff (2000) model of adolescent functioning.

**Measurement of Coping**

The four most common methods of assessment used to gather information about coping styles in children and adolescents include semi-structured interviews, observations, parent or teacher reports, and self-report questionnaires; each possesses potential strengths and weaknesses (Compas et al., 2001; Coyne & Gottlieb, 1996). For instance, interviews provide researchers with a deeper understanding of coping, such as the motivations for coping behaviors, and the situations that may elicit particular coping
responses. However, interviews are often riddled with measurement errors due to variable coding procedures. Also, adolescents tend to generate a limited number of coping responses in interviews; therefore it is difficult to tell if this assessment method accurately captures the full range of possible coping behaviors. The time and expense associated with collecting this depth of data often prohibits their practical use in large-scale research studies (Crockett, Schulenberg, & Peterson, 1987). Perhaps due to these limitations, semi-structured interviews are not frequently utilized in coping research.

Observations, another coping assessment technique, are usually carried out in analogue situations, such as a laboratory, and provide researchers with an opportunity to observe coping behaviors in action. However, analogue situations may not accurately capture the coping behaviors that would occur in the natural environment as it is difficult to mimic the range of stressors that can possibly be encountered in the environment. In addition, it is difficult to authentically, or ethically, replicate the intensity of stressors encountered on a daily basis. Observations may be more useful to confirm information gathered through other assessment techniques (Compas et al. 2001).

Reports of significant adults, such as teachers or parents allow for comparisons of responses made by observers in different environments. Using the information gathered through this method, a researcher can develop hypotheses about environmental contingencies that may elicit particular coping behaviors. However, information from adult informants is limited to the knowledge that each agent gains through interactions with the child (Compas et al., 2001). Without obtaining reports from multiple informants, a researcher would be limited in conclusions they could draw, as each informant is only
privy to information from their observations of the child under specific environmental conditions. Reports of significant adults may have more utility in single-case research design.

Self-report questionnaires are one of the most widely used tools in child and adolescent coping research. A notable strength of this assessment method is that self-reports query a single agent (the respondent) who is capable of reporting the entire range of coping responses that may be used across multiple environments. Adolescents are developmentally and cognitively capable of providing reliable and valid reports of their behaviors across environments (Ayers et al., 1996; Crockett, Schulenberg, Petersen, 1987; Causey & Dubow, 1992). Despite this, Compas, et al. (2001) has identified several problems with the use of self-report questionnaires in general. Items, since they are defined a priori, may combine more than one coping strategy into a single response item which can over or underestimate the use of particular strategies. Motivations to engage in coping behaviors may differ for each individual (e.g., exercising may be a distracting behavior for one and an effort to improve oneself for another). There may also be a high overlap between coping strategies and behavioral symptoms of pathology, such as crying and depression, which potentially inflates correlations between coping strategies and psychological disorders.

When research questions are focused on the relationship between coping and adaptation to the environment, general coping style self-report questionnaires have great utility in predicting outcomes caused by the accumulation of stress (Ayers et al., 1996). One commonly used self-report measures of coping appropriate for use in adolescent
populations is the Adolescent Coping Scale (ACS; Frydenberg and Lewis, 1993), an 80-item self-report scale assessing 18 coping strategies found to be used by adolescents. The 18 scales comprising the ACS assess the same behaviors frequently found in other self-report coping style measures with fewer items. In a sample of 829 adolescents ranging in age from 11 to 18, the ACS coping strategies most frequently used were relaxing and working hard. Respondents also endorsed items related to engaging in physical recreation, dealing with problems, investing in close friends, wishful thinking, and focusing on the positive, although less frequently. The least used strategies were seeking professional help, social action, and spiritual support.

Gender differences in the use of coping strategies assessed by the ACS were found, with females more frequently report seeking social support, tension-reduction, self-blame, and worry to cope with stress. Males were more likely to engage in physical recreation, ignore the problem, or keep problems to themselves. Age also played a role in the coping strategies reported by adolescents on the ACS. Specifically, older adolescents (older than 14) were more likely to blame themselves and use tension reduction strategies, and less likely to problem solve, work hard, seek spiritual support, or focus on the positive (Frydenberg & Lewis, 1999).

The Adolescent Coping Orientation for Problem Experiences (A-COPE: Patterson & McCubbin, 1981) is another frequently used self-report coping scale designed to identify behaviors in which adolescents may engage in order to negate the effects of stressful events. The A-COPE consists of 12 patterns of coping behavior: a) ventilating feelings, b) seeking diversions, c) developing self-reliance, d) developing social support,
e) solving family problems, f) avoiding problems, g) seeking spiritual support, h) investing in close friends, i) seeking professional support, j) engaging in demanding activities, j) being humorous, and k) relaxing. Not all coping behaviors are related to positive outcomes. Patterson and McCubbin, the authors of the A-COPE (1987), found the coping styles ventilating feelings, investing in close friends, and developing social support are related to the increased abuse of cigarettes, alcohol, and marijuana.

Conversely, the coping behaviors solving family problems, seeking spiritual support, and engaging in demanding activities have been found to all be negatively related to substance abuse. This suggests that certain styles of coping may compete with high-risk behaviors, while coping patterns involving engagement with peers, who may also be using harmful substances, appears to exacerbate the negative effects of stress.

Tolan, Gorman-Smith, Henry, Chung and Hunt (2002), studying a sample of inner-city adolescents (N=372), also established a link between coping styles captured by the A-COPE and negative outcomes. Negative outcomes (externalizing and internalizing behavior disorders) were measured using Achenbach’s Youth Self Report Form (YSR: Achenbach, 1991). Preliminary cross-sectional analyses revealed that adolescents who reported seeking support and guidance obtained the lowest scores for internalizing behaviors (i.e., depression). Students who endorsed substance use and emotion-focused coping strategies were more likely to be identified as having externalizing behavior disorders (i.e., conduct problems, aggression). Longitudinal analyses revealed that students who endorsed substance abuse as a coping strategy were at greater risk for both
internalizing and externalizing disorders, increasing with time, particularly when they endorsed a limited number of additional coping behaviors.

Coping Styles

In the body of literature on coping in adults, the most common distinction between styles of coping is that of problem and emotion-focused coping. In emotion-focused coping, an individual may engage in such behaviors as avoidance, reappraisal or minimization, whereas in problem-focused coping, an individual engages in an active problem solving process to ameliorate the problem (Lazarus & Folkman, 1984). Conclusions drawn from coping research on adult and child populations may not accurately reflect the coping strategies typically used by adolescent groups (Band & Weisz, 1988; Compas et al., 2001), as the particular coping strategies used by adolescents may differ due to the unique social and biological changes characteristic of this age group (Williams & McGillicuddy-De Lisi, 2000). To determine if a two factor model of coping, such as that proposed by Lazarus and Folkman (1984) was appropriate for use with children, Ayers, Sandler, West and Roosa (1996) tested the fit using a commonly used measure of coping behaviors specific to children, The Children’s Coping Strategies Checklist (CCSC; Program for Prevention Research, 1991) in a sample of 217 school-aged children. A two-factor model did not adequately fit the data for this population. Rather, a four-factor structure of coping emerged, labeled a) active coping strategies (decision making, direct problem solving, seeking understanding, positive cognitive restructuring), b) distraction strategies (distracting actions, physical release of emotion),
c) avoidance strategies (cognitive avoidance, avoidant actions), and d) support seeking strategies (problem-focused and emotion-focused support).

Cross-cultural studies confirm that a two-factor model is not sufficient to fully explain coping patterns of youth. For instance, Lee, Chan and Yik (1992), studied the coping styles of 832 high school students in Hong Kong using the Adolescent Coping Scale (ACS). The 25 items of the ACS were derived from other coping measures, including those used regularly in research on American youth, and also included items believed to be unique to the Chinese culture. Similar to coping style measures used in research conducted in the United States, respondents were asked to indicate on a 5-point Likert scale how frequently they use each coping response for problems related to academics, elders (parents, teachers), interpersonal relationships, and future plans. A four-factor structure of coping emerged: a) avoidance, b) self-reliance/problem-solving, c) religiosity, and d) emotional regulation, and adolescents reported using similar coping strategies regardless of the nature of the problem. Although the coping behaviors reported by the Chinese adolescents may not be congruent with those utilized by American youth, it is further evidence that research on adult coping may have limited generalizability to child and adolescent populations.

Factors Influencing Coping Styles

Age. As noted, the unique and rapid developmental changes experienced by adolescents may lend to the observed differences in coping strategies employed by adolescents. Williams and McGillicuddy-De Lisi (2000) selected a total of 109 adolescents from middle school (n=34), high school (n=37) and college (n=38), and
asked them to complete the Adolescent Perceived Life Events Scale (Compas, 1987) as a measure of the number of major stressors and daily hassles experienced by each individual in the preceding six months. Mean ages of participants from each school determined their categorization as either early ($M = 12.0$), middle ($M = 15.6$), or older ($M = 19.1$) adolescents. Most students reported dealing with an average of 15 daily hassles and 10 major events. Coping was measured using the Ways of Coping Checklist (WCC: Folkman & Lazarus, 1988), a 66-item measure of eight coping behaviors. Participants were asked to indicate on a 4-point likert scale the frequency with which they used particular coping strategies when faced with their most stressful daily hassle and major event, as previously reported on the Adolescent Perceived Life Events Scale.

Although age was not related to the number of stressors reported, participants’ age played a role in the number of coping strategies adolescents reported using to deal with their problems. Older adolescents used a greater number of coping strategies ($M = 1.41$) than middle ($M = 1.27$) or early adolescents ($M = 1.16$). Across groups, participants used more planful problem solving (example item: “I made a plan of action and followed it”) and positive reappraisal (“The experience helped make me a better person”) than escape-avoidance (“Avoided being with people in general”), distancing (“Didn’t let it get to me”), or confrontative coping (“Tried to get the person responsible to change their mind”). The use of planful problem solving, accepting responsibility (“Realized I brought the problem on myself”) and self-control (“Kept my feelings from interfering”) increased with age. Younger adolescents most frequently used cognitive reappraisal techniques,
although they still did not use this coping strategy at the same rate as middle or older adolescents. The type of stress also influenced the coping strategies used. Across age groups, participants were more likely to use planful problem solving to deal with daily hassles and escape-avoidance or seeking social support (“Accepted sympathy and understanding from others”) to deal with major events. Is sum, results suggest that as adolescents mature cognitively and emotionally that they are likely to undertake more action to address the stressors they encounter in their environment.

**Gender.** There is also evidence that gender may play a role in reported coping styles, as previously described in Frydenberg and Lewis’ (1999) study. Griffith, Dubow and Ippolito (2000) sampled 375 seventh, ninth and twelfth grades using the Coping Responses Inventory-Youth Form (CRI-Y: Moos, 1990), a 48-item self-report measure designed to yield domain-specific coping for stressors stemming from family, school, and peer relations. The CRI-Y consists of eight subscales, which fit a two-factor model of coping, labeled approach and avoidance coping. Females reported experiencing a greater number of stressors in each domain, and a greater feeling of distress in response to these stressors. Females reported higher levels of approach coping than males for all three stressor types and used more avoidance coping to deal with family and peer stressors. Overall, females reported engaging in a greater number of both approach and avoidance strategies. It is likely that females reported using more coping strategies as a defense to the increased number of stressors and feelings of distress they were experiencing.

**Stress levels.** In addition to developmental changes and gender, the levels of stress (i.e., high, moderate, low) experienced by an adolescent may dictate whether they engage
in effective coping behaviors. de Anda and colleagues (2000) used the Adolescent Stress, Stressor and Coping Measure (ASSCM: Bradley et al., 1990), a lengthy questionnaire measuring stress and coping strategies as well as perceptions of strategy effectiveness, in a study of tenth and eleventh grade high schools students (N=333). This specific high school-aged population was selected in an attempt to control for the effect of school transitions, such as those experienced by beginning or graduating from high school. The coping methods measured by the ASSCM were categorized as adaptive (relaxation, distraction, cognitive control, help seeking and affective release) and maladaptive (denial, withdrawal, confrontation, aggressive behavior and substance abuse) behaviors, a two-factor structure. Although all students employed more adaptive than maladaptive coping strategies, students who experienced higher levels of stress used a greater number of maladaptive coping strategies (M=2.19) than their moderate or low stress peers (M=1.93). Across stress levels, adaptive coping strategies were perceived by participants as more effective than the use of maladaptive strategies, although this distinction was less pronounced for high stress students.

**Academic achievement.** In addition to the differences in the coping behaviors used by adults and adolescents, adolescent populations with varying levels of academic achievement may have coping styles that are unique to their peer group. Mates and Allison (1992) found both similarities and differences in the coping styles of low, moderate, and high achieving high school students through focus group interviewing. Students at all academic levels reported using diversionary tactic (sports, listening to music), rebellion against authority (parents, teachers, rules) and substance use (ranging
from cigarettes to recreational drugs) to cope with stress. Students in the advanced academic track cited different ways to rebel against authority; for this group, rebelling against authority was defined as not doing what parents/teachers wanted, or going out with friends against a parents’ request. For students in the low and moderate achieving schools, rebelling against parents/teachers was also cited, but breaking laws (e.g., getting in fights, vandalizing) and smashing things was added. Other differences were found. A student in the moderately achieving group cited efforts to improve the self as a coping response, which was not reported in the other groups. Suicide was mentioned only once, and this was by an advanced level student. It is difficult to draw any conclusions regarding the endorsement of this coping strategy by other academically advanced students, as the sample size was small (N=23) and only a single student reporting suicide as a coping response. Additionally, this study was conducted in Australia; therefore, it is difficult to know if these findings would generalize to high-achieving American students.

Gifted populations. Students who are identified as intellectually gifted potentially provide one population in which to conduct research on the coping styles of students who are academically advanced; however there is a dearth of literature on the coping styles of this population. In an effort to address this problem, Preuss and Dubow (2004) compared the coping behaviors of gifted and “typical” elementary school students in relation to school and peer stressors. A sample of 52 gifted and 55 typical (i.e., not identified as gifted) students were asked to indicate how they would react, using the 44-item Self-Report Coping Scale (SRCS: Causey & Dubow, 1992), to getting into a fight with a friend and getting a bad grade in school. Students completed the SRCS in response to
each possible scenario. Students identified as intellectually gifted reported using more problem-solving strategies to address both types of stressors than the typical peer comparisons. Both groups indicated that they would be more likely to use problem-solving strategies to cope with a peer stressor, and were more likely to use distancing strategies (e.g., forget the whole thing) to cope with a school stressor. These findings provide preliminary evidence that children who are identified as intellectually gifted many cope with stress in unique ways, compared to typical peers. It remains unclear as to whether these same differences would be found for adolescent populations, as this study was conducted on an elementary-aged sample. It is also unknown as to whether these findings would remain true for all academically advanced students, or if these findings are unique to gifted populations.

Relationships between Stress, Coping, and Mental Health

Studies of stress frequently include measures of coping, as the nature of coping strategies (i.e. adaptive, maladaptive) are believed to mitigate or exacerbate the levels of stress experienced by an individual. Integrated studies of stress and coping offer valuable insight into the role each play, independently and conjointly, in the course of adolescent development, as the way that children cope with stress has repeatedly been identified as a predictor of psychological adjustment (Compas, Orosan, & Grant, 1993; Compas et al., 2001). Using cross-sectional research designs, the direction of the relationship between coping and emotional distress cannot be determined. Maladaptive coping may elevate the levels of stress experienced by an individual; however it is equally likely that emotional distress, such as that caused by psychopathology, may disrupt the application of adaptive
coping behaviors (Compas et al., 2001). Notwithstanding, cross-sectional research can identify the strength of correlations between stress, coping styles, and outcomes, and thus identify areas that can further be investigated with more stringent research designs. More research is needed to determine the coping behaviors most unique to adolescents, and the relationship these behaviors have to psychosocial stress, as they may greatly impact the ability of an adolescent to successfully navigate important developmental tasks (Compas, Connor-Smith, Saltzman, Thomsen & Wadsworth, 2001).

Coping as an Intervening Variable

The reciprocal influences of stress and coping on mental health outcomes may best be explained through path models, in which coping functions as an intervening variables (i.e., mediator) between stress and outcomes. To establish whether a variable, such as coping, acts as a mediator between stress and mental health outcomes for a specific population, several conditions must be met. Baron and Kenny (1986) have identified four conditions to test for mediation, namely a) the independent variable of interest must be significantly related to the mediator, b) the independent variable must be related to the dependent variable of interest, c) the mediator must be significantly related to the dependent variable, and d) the strength of the relation between the independent and dependent variables must decrease after controlling for the mediator. In sum, a mediator is a variable that is found to explain the relationship between an independent and dependent variable.

Another way of conceptualizing the role of coping is to view it as a moderator in the relationship between stress and mental health outcomes. A moderator variable
changes the direction or strength between an independent and dependent variable. A moderator is identified when the effect of one variable depends on the levels of another, or simply stated, an interaction effect is found (Baron & Kenny, 1986). Of note, the majority of studies to date have not clarified the pathways through which stress and coping effect mental health, but rather have reported the interrelationships among these three sets of variables.

_Social-emotional Functioning_

The majority of studies on stress and coping have focused on their relationships to negative outcomes, such as anxiety, depression, substance abuse, compromised physical health and dropping out of school, with very few focusing on positive indicators of mental health. Using a two-factor structure of adolescent coping, labeled problem- and emotion-focused coping, Compas, Malcarne and Fondacaro (1988) sampled 130 young adolescents to determine the way they reported coping with interpersonal and academic stressors, and how this was linked to psychopathology. Subjects were asked to consider one situation they had dealt with recently in each domain and then asked to generate a list of possible behaviors in which they could have engaged to deal with the situation. Subjects were also asked to indicate which of these behaviors they had actually used in response to the specific academic and interpersonal stressors they had previously identified. Responses were coded along two dimensions, problem-focused coping, defined as effort to act on the source of stress and change it, and emotion-focused coping, defined as efforts to regulate the emotional states stemming from a stressful event. Subjects also completed the Youth Self Report (YSR: Achenbach & Edelbrock, 1987),
while their parents were asked to complete the Child Behavior Checklist (CBCL: Achenbach & Edelbrock, 1987) as measures of mental health, in line with a traditional view of mental health as the absence of pathology.

A preliminary aim of the study was to evaluate the consistency of coping strategies across situations (i.e. academic stressors, interpersonal stressors). When faced with either academic or interpersonal stressors, both males and females reported using a similar number of emotion- or problem-focused coping to address the stressor. Then, Compas and colleagues correlated coping styles with psychopathology. For females, the use of emotion-focused coping behaviors was positively correlated with the YSR subscales labeled depressed ($r=.24$) and delinquent ($r=.24$). The use of emotion-focused strategies by males was significantly correlated with the YSR subscale labeled aggressive ($r = .24$). Across genders, the use of problem focused strategies appeared to be more adaptive, as they showed significant negative correlations with many of the same YSR subscales. Specifically, problem-focused coping was significantly negatively correlated with the YSR subscales labeled depressed ($r = -.23$) and delinquent ($r = -.23$) for females, and negatively correlated with the YSR subscales labeled delinquent ($r = -.25$) for males. Additionally, age differences in coping styles were found in this sample, with emotion-focused responses increasing with age, and problem-focused responses decreasing.

Findings such as these could help to explain the higher prevalence of pathology in adolescents as compared to elementary-aged children.

Other studies support the finding that particular coping styles may be related to negative indicators of mental health, such as depression and substance abuse (Galaif,
Sussman, Chou, & Wills, 2003). A large sample of high school students (N=931) participated in a study investigating the relationships among perceived stress, coping behaviors, depression and substance abuse. Anger coping strategies (e.g., seeking revenge, getting mad) significantly predicted increasing depression ($r = .14$), substance use ($r = .13$), and perceived stress ($r = .19$), while seeking social support, a more adaptive coping strategy predicted more positive outcomes, specifically decreased levels of perceived stress ($r = -.10$). A multitude of other studies support the link between stress, maladaptive coping strategies, and negative indicators of mental health, such as depression (Herman-Stahl & Peterson, 1996; Seiffge-Krenke & Klessinger, 2000), alcohol abuse (Windle & Windle, 1996), psychopathology (Tolan, Gorman-Smith, Henry, Chung, & Hunt, 2002), academic underachievement (Gonzales, Tein, Sandler, & Friedman, 2001), and conflicted interpersonal relationships (Lee, Chan, & Yik, 1992).

**School Functioning**

In a study exploring the relationship between stress, coping and school completion, Hess and Copeland (2001) used a modified version of the A-COPE (Copeland & Hess, 1995) and tracked 94 high school students from the start of ninth grade through their projected graduation date. Students who reported experiencing higher levels of stress were more likely to drop out of school before graduation (drop-outs) than students (completers) who reported less stressful experiences. Drop-outs were more likely than completers to use the coping strategies of engaging in social activities, physical diversions, and seeking professional support. Although none of the aforementioned coping strategies appear dysfunctional in nature, they may not serve the
needs of high-risk students appropriately. For instance, if students who are highly
stressed engage in social activities involving deviant, drug-abusing peers, they may be
more likely to use drugs themselves. Additionally, students who report seeking
professional support may be experiencing multiple problems; professional support may
be confounded by problem severity.

It is unclear whether the relationship between elevated stress and negative
outcomes such as pathology and academic underachievement exists for all subgroups of
adolescents. As aforementioned, high school students often cite school and time
commitments as potential sources of stress. Adolescents who choose to take on additional
tasks, such as engaging in a challenging curriculum or participating extensively in school
and community activities may inadvertently expose themselves to higher levels of stress
as each additional demand requires a significant time commitment. However, such high-
achieving and engaged students do not seem to experience the school failures cited in
many of the abovementioned studies. Students who are enrolled in the International
Baccalaureate Program, an advanced high school program designed for high-achieving
students, are one such population of adolescents suitable for study regarding the co-
ocurrence of stress and achievement. Moreover, the examination of coping strategies
employed by this population may shed light on effective and ineffective ways of dealing
with stress. These particular coping styles may function as mediators between stress and
mental health outcomes.
The International Baccalaureate Program

*History of the International Baccalaureate Organization*

The International Baccalaureate (IB) Organization was founded in 1968 by a group of educators in an effort to provide a curriculum for students who frequently moved internationally. Currently, the IB program is implemented in approximately 1,433 schools internationally, serving a total of 200,000 students (International Baccalaureate Organization, 2002). The curriculum is based on three principles “(a) the need for a broad general education, (b) the need to develop an international understanding, and (c) the need for flexibility in programs of study (International Baccalaureate Organization, 2002, p. 3.)” The core of the International Baccalaureate (IB) program consists of the Theory of Knowledge (cross-cultural philosophy), extended essay (independent research) and creativity, action, and service components (CAS: engagement in service at the community, national, or global level). In addition, students are instructed in their native language, a foreign language, science, fine arts, mathematics, computer science, experimental science and individuals and societies (multi-cultural history). Although students in the IB program receive instruction in all subject areas, students select three to four of these subject areas in which they desire to receive more intense instruction. In order to earn an IB diploma, a student must successfully complete all components of the core curriculum and also demonstrate competency by passing rigorous tests in each area of instruction (International Baccalaureate Organization, 2002; Nugent & Karnes, 2002).

Bailey and Karp (2003) classify the IB program as a credit-based transition program. Credit-based transition programs allow high school students to earn college
credit while they are still in high school. In the IB program, students take most or all of their classes in advanced curriculum. The majority of the students in the program are academically advanced and college-bound. Graduates of the program may enter college with up to two years of college credits.

The IB program, as it was conceived by its founders, aims to develop students, “motivationally, personally, intellectually, and academically” (Tookey, 2000, p. 53). This suggests that IB students are expected to be both academically and socially competent, as well as active participants in the local and global communities. The challenges set forth by the IB program for its students have been touted as well suited to the needs of students who are identified as intellectually gifted.

**Gifted Students and the International Baccalaureate Program**

Gifted adolescents may have unique needs to develop academically and socially to their fullest potential, as compared to that of their general education peers. Tookey (2000) suggests that the IB program has the potential to address the needs gifted students present in education. Specifically, gifted adolescents are in need of an academic environment that challenges them, provides a similarly high-achieving peer group to avoid the social isolation associated with academic success, rates academic excellence based on personal goals for performance (rather than competition amongst peers), and encourages creative thinking. According to Tookey, the IB program, when implemented with integrity, values hard-work, fosters collaborative learning, and aims to develop the diverse abilities of students, and therefore is well suited to the needs of a student identified as intellectually gifted. Poelzer and Feldhusen (1997) add that creativity is
highly valued in the IB program, and a major component of grades awarded in the studio-
art and CAS curricula. To date, no published empirical studies exist to confirm whether
the IB program fully achieves the ideals it set forth to develop in program graduates,
regardless of gifted identification.

Outcomes of the International Baccalaureate Program

Bailey and Karp (2003) sharply criticize the body of research on the IB program,
as most studies of this program focus on parent or student opinion on the benefits of
participation. For example, Gazda-Grace (2002) published a personal evaluation of the IB
program terming the program “the best kept secret in education (p.84),” however as an
associate principle in a school that has adopted the curriculum, one would have to
question her potential bias. She provides no data on student outcomes to support her
position. There have been few empirical studies designed to measure the effects of
participation in the IB program.

Of the studies that have linked participation in the IB program to outcomes other
than academic achievement, participation in the IB program appears to be beneficial. For
instance, Amuedo-Dorantes, Mach, and Clapp (2004), using data from the National
Longitudinal Survey of Youth, found a strong, negative correlation between participation
in the IB program and tobacco use ($r = -.75$). The negative correlations between
participation in the IB program and alcohol or marijuana use did not reach statistical
significance. A study such as this supports the need to more fully investigate the impact
participation in the IB program may have on students, using both positive and negative
indicators of mental health.
In the IB program, students are faced with the same challenges as their general education peers, with the added challenge of having to learn how to “balance many challenging courses with other activities, organize their time wisely to complete all of their work, and act in ways that are commensurate with the behavioral expectations of a fully matriculated college student” (Bailey & Karp, 2003, p.19). The skills needed to meet these additional expectations are not explicitly taught to students; therefore they may be immersed in a curriculum for which they are not adequately prepared. Research has indicated that students who feel compelled to succeed may feel the need to cheat in order to meet high academic demands, or are left feeling overwhelmed and stressed by the immensity of work they must accomplish (Taylor, Pogrebin, & Dodge, 2002). More research is needed to help determine if IB students are adequately prepared for the demands that are placed upon them, and the impact of their unique demands on their emotional health. A study that focuses on the outcomes of academic achievement, psychopathology, and life satisfaction provides a more complete picture of the mental health outcomes, positive and negative, experienced by students in the IB program. Moreover, research is needed on the stress perceived by students in this program, as well as coping strategies that may predict mental health outcomes.

Conclusions

Throughout the literature on stress and coping, stress has been linked to a multitude of negative indicators of mental health, including depression (Galaif, Sussman, Chou, & Wills, 2003; Little & Garber, 2004; Martin, Kazarian, & Breiter, 1995), substance abuse (Chassin, Ritter, Trim & King, 2003; Windle & Windle, 1996), and
academic underachievement (Gillock & Reyes, 1999). As the majority of the research linking stress and coping to these negative outcomes have been conducted with at-risk adolescent populations, it is important to confirm whether this same relationship between stress, coping, and negative outcomes holds true for high-achieving adolescent populations. Stress and coping research in high-achieving populations has many potential benefits. Assuming high-achieving students perceive their lives as more stressful than students in general education curricula, given the high-achieving students’ academic pressures, research on the high-achieving students’ coping behaviors and mental health functioning may offer valuable insight. Obviously, students in rigorous curricula have better school grades; however academic achievement is only one indicator of healthy development in adolescence (Roeser, Eccles & Sameroff, 2000).

As noted by Roeser, Eccles, and Sameroff (2000), it is not sufficient to focus solely on negative indicators to determine the state of an adolescent’s mental health. Rather, a comprehensive definition of mental heath, encompassing life satisfaction, academic achievement, and psychopathology, is most appropriate for use with this population. As of yet, no published empirical research exists examining the mental health of high achieving adolescents utilizing a comprehensive model of mental health. It is possible that pressure stemming from intense academic engagement may contribute to psychopathology in these populations, or compromise reported life satisfaction. Studies of American students have not found relationships between life satisfaction and academic achievement (Huebner & Alderman, 1993; Huebner, 1991; McCullough & Huebner, 2003), however cross-cultural studies have found negative correlations between high
academic achievement and life satisfaction, with students attending schools with high achievement test scores reporting low levels of life satisfaction (Marks, Shah, & Westall, 2004). Findings such as these would support the assertion that students in rigorous curricula need additional supports that may be integrated into the curriculum in order to aide in their social-emotional development and reduce these risk factors for the development of pathology. On the contrary, if it appears that high-achieving students are experiencing elevated levels of stress, yet do not display the negative outcomes found in studies on stress in high-risk populations, then it is possible that their available coping resources may mitigate the impact of stressors on symptomatology (Printz, Shermis & Webb, 1999). Identifying coping styles unique to high achieving populations may ultimately aide in the design of interventions for a number of adolescent sub-groups (Williams & McGillicuddy-De-Lisi, 2001).
CHAPTER 3

Method

Participants

Participants for this study consisted of students enrolled in the International Baccalaureate (IB) program at Brown High School, and their general education schoolmates. The IB diploma program at Brown High School is one of 45 programs in the southeastern state where it is located and among 610 in the United States. The school under study houses both an IB high school and a general education high school in a single school building. In addition to sharing facilities, the students share faculty, as most teachers are assigned classes in both curriculums. Of note, there are two separate principals and administrative staff at BHS, one for each curriculum. During their 8th grade year, students from the entire county surrounding the school who have obtained at least a 3.0 grade point average are invited to apply for admittance to the IB program at Brown. Students who apply are required to take a standardized test and complete a 5-paragraph essay (topics vary). Students are then selected based on their prior academic performance, scores on the standardized test, and writing evaluations. Once admitted, students in the IB program must meet the graduation requirements set forth by their state while concurrently completing the IBO requirements (see Appendix A). Students in the general education program are only expected to meet the graduation requirements set forth by their state, although high achieving students are free to enroll in advanced placement classes that exceed these basic requirements.
The archival dataset used in the current study was derived from an ongoing study investigating the mental health of high school students in the IB program and their general education peers. Data were collected in December of 2004 by two faculty members in a large urban university in the southeastern United States, and their research team, which included the author of this thesis. In order to participate in the study, students were required to be enrolled full-time at the Brown High School, obtain parental informed consent, and sign a student assent form. Students who were receiving substantial school support services through exceptional student education (i.e., placement in self-contained classes), with the exception of those identified as gifted, were excluded from participation in the study. Students who met these requirements but were absent on the dates of data collection were not included in this study.

Selection of Participants

A letter of informed consent (see Appendix B) was sent home to parents of all students attending Brown High school (N = 1150) prior to data collection. Student assent (see Appendix C) was later sought from all students who returned signed parent consent forms to their first period teacher. While students were not paid for participation, incentives were offered to increase the rate of participation. Specifically, return of parent consent forms was encouraged through offering four $50 gift certificates to the local shopping mall; all students who returned consent forms were included in the drawings. A total of 322 students were recruited in the Fall of 2004 from Brown High School. A higher percentage of IB students (59%) than general education students (16%) secured
parent consent to participate. A total of 13 subjects were removed from the dataset after they were identified as outliers, leaving a final sample of 309 students.

The majority of the students in the study are Caucasian, female, and of average/high socioeconomic status. There is a lower percentage of African American students and a higher percentage of Asian students in the IB program compared to the general education population. Descriptive statistics of study participants are provided in Table 1. Participants were representative of the schools’ reported demographics. Additionally, the demographics are similar to that of students at other high schools in the school district (Polk County Public Schools, 2005).

Procedures

A list of students who had obtained parental consent for participation was compiled prior to data collection. These students were called, by grade level, to complete their questionnaires in groups of approximately 50-100 students. Prior to the administration of the questionnaires, the student assent form was read aloud to the students. Students were free to withdraw from the study at any time during the course of data collection. While the principal investigator read the demographic questionnaire aloud, students completed questions assessing their age, grade, curriculum (IB/general education) and socio-economic status (SES). SES was assessed using a single item (“do you receive free or reduced-cost lunch?”). Students were also trained in how to answer Likert questions using an example of a frequency (“I go to the beach”) and agreement (“Going to the beach if fun”) item. Measures in the questionnaire packet were counterbalanced to control for order effects. Researchers were on hand through the
Table 1.

Descriptive statistics

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administration of the questionnaires to assist students with questions. Upon each student’s completion of the questionnaire packet, a member of the research team skimmed through the packet to check for skipped questions and errors. Students who made errors were asked to complete or correct the items. The entire questionnaire packet took approximately 30-45 minutes to complete. Data were entered during the Winter of 2004. During the Spring of 2005, 15% of the data were randomly checked for entry errors and corrected.

Ethical Considerations

Several precautions were taken to protect students who enrolled in this study. First, a parental consent form was sent home with the student which outlined for parents all of the potential risks and benefits associated with their child’s participation. A student assent form was also included outlining the risks and benefits, so that the students themselves were able to decline or agree to participate. Prior to commencement of the study, the principal investigators of the larger study obtained approval from the University Institutional Review Board (IRB) at the university. The investigators had to demonstrate to the IRB that all possible precautions were taken to protect human research participants before the study was able to commence.

Measures

Perceived Stress Scale (PSS: Cohen, Kamarack & Mermelstein, 1983). The PSS (see Appendix D) is a 14-item questionnaire designed to measure how stressful the respondent rates their current state of affairs. Seven of the PSS items are related to coping and were not administered in the current study, as a more comprehensive measure of
coping was included. Respondents are asked to indicate, on a 5-point Likert scale (0= never to 4= very often) the degree to which they “found their lives unpredictable, uncontrollable and overloading” (Cohen et al., 1983, p. 387). After reverse scoring positive items (denoted in the appendix by an asterisk), items are averaged to obtain a mean PSS score. In addition to measuring levels of experienced stress caused by the respondent’s current life events, the PSS is also thought to capture reactions to life events and stress caused by future events. The authors purport that a measure of perceived stress is superior to life-events scales because the latter may not be inclusive of all events that the respondent is experiencing.

The PSS reflects the transactional nature of stress. Objective measures assume that the intensity or quality of stress in the environment is linked to negative outcomes. Several studies have demonstrated that the negative outcomes associated with stress are determined by the way a person perceives the stressor, and not on any inherent quality of the stressor itself (Galaif et al., 2003). The PSS has been used with adolescents, both in clinical and normal populations, to predict such outcomes as depression, anxiety and underachievement (Martin et al., 1995; Schmeelk-Cone & Zimmerman, 2003).

During validation studies on college students and community populations, the authors report that the PSS obtained coefficient alpha reliability ranging from .84 - .86. Johnson and Christensen (2004) note that coefficient alpha should be greater than .70 for research purposes. Test-retest reliability was obtained for the PSS at .85 for a 2 day retest and .55 for a 2 week retest. The PSS is designed to determine the extent to which a person currently feels stressed; therefore one should expect scores to be temporally bound.
The PSS was also correlated with global objective stress measures. The correlation with the number of events indicated was small (.17 - .39), however the strength of the correlation increased when respondents were asked to rate the impact of an event (.24-.49). Additionally, the predictive validity of the PSS was compared with objective stress measures. Cohen et al. (1983) found that the PSS more accurately predicted rates of depression and health problems (.65-.76) compared to that of objective stress measures (.14-.18).

An exploratory factor analysis was conducted on the seven items of the PSS. Results suggested a single factor reflecting perceived stress was loaded on satisfactorily by six items. Due to an unacceptable factor loading, one item (#7) was dropped. The mean of the six remaining items was used to reflect perceived stress. A Cronbach’s alpha of .91 was obtained for the current study, indicating high internal consistency.

*Adolescent Coping Orientation for Problem Experiences* (ACOPE: Patterson & McCubbin, 1981). The Adolescent Coping Orientation for Problem Experiences (see Appendix E) is a 54-item self-report coping inventory designed to identify the behaviors that adolescents use most frequently to manage problems of difficult situations. The items were developed through structured interviews with high school students, followed by a factor analysis with a population of 467 high school students. Cronbach’s alphas for the 12 scales ranged from .50 to .76 in this sample. Items are presented on a 5-point Likert scale (1 = never to 5 = most of the time). The ACOPE identifies 12 coping patterns: (a) ventilating feelings (yelling, blaming others, saying mean things), (b) seeking diversions (efforts to keep busy, sleeping, watching TV, reading), (c) developing self-reliance and
optimism (organizing life, making decisions), (d) developing social support (talking to a friend, helping others solve their problems), (e) solving family problems (talking to mother/father about problem, doing things with family), (f) avoiding problems (drinking beer, avoiding person causing problem), (g) seeking spiritual support (praying, going to church), (h) investing in close friends (seeking closeness from peer, be with romantic partner), (i) seeking professional support (counselor, psychologist), (j) engaging in demanding activity (excelling at something, achieving goal), (k) being humorous (joking, making light of situation), and (l) relaxing (daydreaming, listening to music).

Different factor structures of the ACOPE have been found throughout the literature (Copeland & Hess, 1995; Howard & Medway, 2004), therefore an exploratory factor analysis was conducted using the current sample to determine the factor structure most appropriate for use; a four-factor model consistent with the findings of Fanshawe and Burnett (1991) emerged, reflecting the coping styles of positive avoidance, negative avoidance, family communication, and anger. Cronbach’s alpha for each variable was obtained within acceptable levels, indicating high internal consistency (.76, .73, .69, .69 respectively).

Positive avoidance coping consisted of five items: a) try to think about the good things in your life, b) try to see the good things in a difficult situation, c) try to keep up friendships or make new friends, d) say nice things to others, and e) be close with someone you care about. These items were pulled from three different factors on the original ACOPE, specifically the factors labeled “developing self-reliance,” “developing social support,” and “investing in close friends.” It appears that the items comprising
positive avoidance coping involve strategies designed to positively appraise stressful situations or solicit the support of others in times of stress.

Negative avoidance coping consisted of four items: a) use drugs prescribed by a doctor, b) use drugs not prescribed by a doctor, c) drink beer, wine, or liquor, and d) smoke. All of the items were pulled from the original ACOPE scale labeled “avoiding problems,” with the exception of “use drugs prescribed by a doctor,” which loaded onto “seeking diversions” in the original factor structure of the ACOPE. Negative avoidance coping items all involve the use of substances to cope in the face of stress.

The five items comprising the family communication subscale were: a) talk to your father about what bothers you, b) talk to your mother about what bothers you, c) do things with your family, d) try to reason with parents and talk things out; compromise, and e) go along with parents’ requests and rules. All of these items were pulled from the original ACOPE subscale labeled “solving family problems.” All family communication items involve relying on family members for social support in times of stress.

Anger coping consisted of five items: a) get angry and yell at people, b) blame others for what’s going wrong, c) say mean things to people; be sarcastic d) let off steam by complaining to your friends, and e) let off steam by complaining to family members. All of these items were pulled from the original ACOPE subscale labeled “ventilating feelings” and involve ways of expressing emotions outwardly, either directly (e.g., let off steam by complaining) or indirectly (e.g., say mean things to others).

The Youth Self Report (YSR) form of the Child Behavior Checklist (YSR: Achenbach & Rescorla, 2001). The YSR (see Appendix F) is a 112-item questionnaire
designed for use with adolescent populations ranging in age from 11-18. The YSR assess eight areas of problem behavior: anxious/depressed, withdrawn/depressed, delinquent behavior, somatic complaints, aggressive behavior, social problems, thought problems, and attention problems. Composite scores indexing internalizing behavior, externalizing behavior, and total problems can also be obtained. Items are presented using 3-point scale (0 = "not true," 1 = "somewhat or sometimes true," 2 = "very true of often true") and respondents are asked to assess how true each item is for them currently (i.e., within the past six months). For the purposes of this study, a shortened 85-item version was used, excluding the items loading on the scales attention problems and thought problems. For data analysis, the internalizing and externalizing subscales were utilized. The internalizing scale consists of items loading on the subscales anxious/depressed, withdrawn/depressed, and somatic complaints. The externalizing scale consists of delinquent and aggressive behaviors.

The YSR is useful in identifying children with symptoms of psychopathology. For instance, all items on the YSR have been found to discriminate between clinical populations of adolescents and nonreferred samples (Achenbach & Rescorla, 2001). Reliability of this measure is high. Split-half reliability has been found to range between .55 and .75. Test-retest reliability at 8-days obtained coefficient alphas ranging from .80 to .90. The 63 items reflecting externalizing and internalizing behavior were retained for the present study. Reliability was high, with Cronbach’s alpha above .90 for both scales.

*Students' Life Satisfaction Scale* (SLSS: Huebner, 1991). The SLSS consists of 7 items (see Appendix G) assessing global life satisfaction in children. Respondents are
asked to indicate on a 6-point scale (1 = strongly disagree to 6 = strongly agree) the degree to which they endorse statements about their life. Scores are obtained by reverse coding negatively-phrased items, then summing the responses and dividing by seven (i.e., the mean of all items). Higher scores represent higher levels of life satisfaction. The SLSS has been used with both child and adolescent populations (Gilman & Huebner, 1997; Huebner, 1991). Test-retest reliability has been reported to range from .70-.80. Internal consistency has been found to range from the .70s to the .90s, suggesting that the SLSS has acceptable reliability for research purposes. Validity of this scale has been established by correlating it parent reports and self-reports of well-being (Huebner, 1991). For the present study, a Cronbach’s alpha of .88 was obtained, indicating high reliability.

*Self-Efficacy Questionnaire for Children* (SEQ-C: Muris, 2001). The SEQ-C (see Appendix H) is a 24-item self-report scale designed to assess three domains of self-efficacy: a) social self-efficacy, b) academic self-efficacy, and c) emotional self-efficacy. A total composite score can also be obtained. Respondents are asked to indicate on a 5-point scale (1= not at all, 5 = very well) their perceived capabilities on each item. Factor analysis revealed alpha coefficients for each item ranging from the high .60s to the mid .80s. Scores on the SEQ-C have been negatively correlated with symptoms of depression \( (r = -.57) \) and anxiety \( (r = -.62) \), with students reporting low self-efficacy reporting higher levels of depressive and anxious symptomology (Muris, 2001; Muris, 2002). The SEQ-C has been used with adolescent populations ranging from 12 to 19 years of age, suggesting that this instrument is appropriate for use with high school students. The 7 items
capturing academic self-efficacy (denoted in the appendix by an asterisk) were used in the present study; a Cronbach’s alpha of .86 was obtained for these items.

*Grade Point Average* (GPA). Grade point average is a frequently used measure of academic achievement for high school students. Grade point average is calculated by summing numerical values assigned to letter grades earned for academic performance (e.g., A = 4.0, B = 3.0) and dividing by the total number of credit hours attempted. Higher grade point averages indicate higher levels of academic achievement. In the present study, grade point average was obtained from school records. It should be noted that students who take advanced courses (i.e., IB courses, advanced placement) may earn a grade point average higher than 4.0, as they receive additional credit for attempting more difficult coursework. This weighting procedure is responsible for why the maximum value for GPA in the current study exceeds 4.0.

*Analyses*

A series of statistical analyses were performed to answer the research questions addressed in this study.

*Descriptive analyses.* Means, standard deviations, and additional descriptive data (i.e. skew, kurtosis, etc.) for the entire sample, as well as for the IB and general education subsamples, were obtained for all variables of interest, which included: perceived stress (6-item PSS), coping styles (four determine from a factor analysis of the ACOPE), global life satisfaction (SLSS), academic self-efficacy (subscale of the SEQ-C), GPA, and psychopathology (externalizing and internalizing factors of the YSR).

*Group differences.* To determine if students in the IB program differed from
students in general education in perceived stress, coping styles, school functioning (GPA, academic self-efficacy), and social-emotional functioning (life satisfaction, psychopathology), independent samples t-tests were conducted with IB status as the grouping variable. An independent samples t-test compares the group means for each variable to determine if the groups’ means differ by a statistically significant amount, using a .05 alpha level to establish statistical significance.

**Correlational analyses.** To determine the relationships between perceived stress, coping styles, school functioning, and social-emotional functioning within general education and IB students, correlation coefficients were calculated between each variable for the entire sample, and then for the IB and general education samples independently. A correlation coefficient (ranging from -1 to +1) provides information about the strength and direction of the relationship between two variables. An alpha level of .05 was used to determine statistical significance.

**Regression analyses.** To determine which coping styles were most predictive of mental health outcomes in IB students, data from the sub-sample of IB students were subjected to a series of five simultaneous multiple regression analyses; separate regression analyses were conducted for each outcome variable (GPA, academic self-efficacy, global life satisfaction, internalizing behavior, and externalizing behavior). In each regression analysis, coping styles (as derived from the A-COPE) were entered as the predictor variables. In simultaneous regression, all variables are entered into a regression equation concurrently to determine the proportion of the variance in the criterion variable for which each predictor variable is uniquely accountable. An alpha level of .05 was used
to determine statistical significance of beta weights. Beta weights, also termed standardized regression coefficients (to denote $z$-scale), show the predicted change in the dependent variable given a one-unit standard deviation change in the independent variable while controlling for the other independent variables in the equation. The size of beta weights reflects the relative importance of the various predictor variables.

**Moderator tests.** To determine if coping functions as a moderator in the relationship between perceived stress and mental health (i.e., high GPA, high academic self-efficacy, high life satisfaction, and low psychopathology) in IB students, a series of multiple regression analyses that included interaction terms were conducted using the data from the subsample of IB students. A moderator variable changes the direction or strength between an independent variable (in this case, perceived stress) and dependent variable (in this case, mental health). A moderator is identified when the effect of one variable depends on the levels of another, or simply stated, an interaction effect is found (Baron & Kenny, 1986). To test for moderation, a series of five separate regression analyses were conducted using the indicators of mental health (academic achievement, life satisfaction, psychopathology) as the dependent/criterion variable and perceived stress, coping styles, and the interaction of stress and coping styles as the predictors/independent variables. An alpha level of .05 was used to identify statistically significant beta weights. The results of all analyses are presented in Chapter 4.
CHAPTER 4

Results

Treatment of the Data

All data were entered into an SPSS spreadsheet during the Winter of 2004-2005 by the researcher and two graduate assistants. Following data entry, every 10th protocol was checked for errors; if errors were found on a protocol, the protocols immediately preceding and following the protocol in question were also checked, with the process repeating until an error-free protocol was identified. Data were also checked for scores out of range. This resulted in approximately 15% of the protocols being checked for accuracy; of the protocols checked, approximately 9% contained errors. The modal number of errors was one. Following this, the data were analyzed to detect the presence of both univariate and multivariate outliers. Univariate outliers were defined as a participant scoring more than three standard deviations from the mean on any variable. Multivariate outliers were defined as subjects scoring higher than 29.59, the criterion determined by Mahalanobis distance. A total of 13 subjects were removed and were excluded from further analyses.

Descriptive Analyses

Descriptive statistics were first computed for the entire sample (N = 309), and then independently for the IB (n = 139) and general education (n = 168) samples on perceived stress, coping styles (i.e., positive avoidance, negative avoidance, anger, family communication), academic self-efficacy, grade point average, internalizing and externalizing behavior, and global life satisfaction. The results of the descriptive analyses
are presented in Tables 2 and 3. For each variable, higher scores reflect increased levels of the construct indicated by the variable name. To further assess univariate normality, skew and kurtosis of each of the six measures were calculated. All obtained values, with the exception of negative avoidance coping (skew = 1.67, kurtosis = 2.74), were between -1.0 and +1.0, demonstrating acceptable levels of skew and kurtosis and, therefore, a normal distribution of scores on each of the target variables. The negative avoidance coping variable was transformed by taking the logarithm of the variable; although skew and kurtosis obtained acceptable levels upon transformation (skew = 1.04, kurtosis = .15), the pattern and magnitude of the correlations between the logarithm of negative avoidance and other variables of interest did not change when the non-transformed variable was substituted for the logarithm of negative avoidance. Therefore, although the skew and kurtosis of the negative avoidance variable indicated a slight non-normal distribution, the original form of the variable was retained and used for further data analyses.

**Group Differences**

To determine if students in the IB program differed from students in the general education program in perceived stress, coping styles, school functioning (GPA, academic self-efficacy), and social-emotional functioning (life satisfaction, psychopathology), independent samples t-tests were conducted, using IB status as the grouping variable. Because of the multiple comparisons, a .01 alpha level was used to establish statistical significance for each t-test. The F-tests for equality of variances were not statistically significant for perceived stress, positive avoidance and anger coping, externalizing
Table 2.

Means, Standard Deviations, and Ranges of Predictor Variables.

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Note. Significant differences between group means are indicated by different letters. Means having the same subscript are not significantly different. Cohen’s d is provided for variables with statistically significant differences. .20 = small, .50 = medium, .80 = large.
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</table>

*Note.* Significant differences between group means are indicated by different letters. Means having the same subscript are not significantly different. Cohen’s *d* is provided for variables with statistically significant differences. .20 = small, .50 = medium, .80 = large.
behavior, and academic self efficacy, therefore the t-test statistics are reported using pooled variances. The F-tests for equality of variances for negative avoidance ($F = 2.74, p < .01$) and grade point average ($F = 3.11, p < .01$) were both statistically significant, therefore the Satterthwaite t-test statistics are reported. Cohen’s $d$ was calculated for all significant t-tests to determine the effect size (see Tables 2 and 3).

**Predictor variables.** Group differences were found in levels of perceived stress and preferred coping styles. Specifically, students in the IB program reported significantly higher levels of perceived stress than students not enrolled in the IB program ($t = -2.77, p < .01$). Students in the IB program also reported using more anger coping ($t = -3.17, p < .01$). Students enrolled in general education were more likely to use positive avoidance ($t = 3.57, p < .01$) and negative avoidance ($t = 5.35, p < .01$) coping strategies than students in the IB program. All effect sizes were small, with the exception of negative avoidance coping ($d = .82$), which was found to have a large effect size. No statistically significant differences were found between IB and general education students with respect to frequency of use of family communication coping. All descriptive statistics for predictor variables are displayed in Table 2.

**Outcome variables.** IB students’ scores on the school functioning variables were superior to that of the general education students on all indicators. Specifically, IB students reported higher levels of academic self efficacy ($t = -4.48, p < .01$) and higher grade point averages ($t = -18.10, p < .01$) than students in general education. The effect size of these differences were moderate to large ($d = .51; d = 1.98$, respectively). With respect to social-emotional functioning, IB students and general education students only
differed on externalizing behavior ($t = 3.50, p < .01$) where a moderate effect size was found ($d = .40$). Specifically, IB students reported less externalizing psychopathology than students in regular education. The two groups did not differ with respect to global life satisfaction or internalizing behavior. All descriptive statistics for outcome variables are displayed in Table 3.

**Correlational Analyses**

Pearson product-moment correlations among all continuous variables included in analyses are presented for the entire sample, as well as for each independent group (IB, general education), in Table 4.

**Group differences.** As can be seen in the table, the magnitude and direction of the correlations between all variables of interest follow the same patterns for both the IB and general education groups. A Fisher’s Z transformation was performed for all correlations to assess for significant differences between the IB and general education groups; only one significant difference was found (family communication and life satisfaction, $p < .05$) although the same pattern of correlation was found between the two groups on this variable. A small effect size ($d = .21$) was found for this difference. With respect to the remaining 45 bivariate correlations, the relationship between the two variables in each pair was similar across the two groups. In sum, despite differences between the groups on mean levels of variables, the groups were almost identical in terms of how variables were inter-correlated.

**Patterns of relationships.** All significant correlations occurred in the expected directions for both groups. Specifically, perceived stress was positively correlated with
Table 4.
Intercorrelations between Variables in IB, General Education, and Combined Sample.

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<tr>
<th>Variable</th>
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<th>3.</th>
<th>4.</th>
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IB Students (n = 139)

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General Education Students (n = 168)

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Note. *p = <.05, **p = <.01
psychopathology (internalizing and externalizing) and negatively correlated with positive indicators of mental health (i.e., academic self-efficacy and life satisfaction); in other words, higher levels of stress co-occurred with compromised mental health. The relatively small correlations between most coping styles (i.e., \( r = -.19 \) - \( r = .29 \)) indicate that the coping variables can be used in regression analyses without risking multicollinearity. Notably, the moderate correlation between family communication coping and positive avoidance coping \( (r = .44) \) will make it difficult for these variables to contribute much unique variance to equations in which they are both included. As the relationships between perceived stress, coping styles, and mental health in IB students were the primary focus of this study, data for the IB students only were retained for further regression analyses. Using only the data from the IB students will increase the specificity of the population to which results are generalizable.

Regression Analyses

To determine the extent to which particular coping styles were predictive of mental health outcomes in IB students, a series of multiple regression analyses were conducted for each outcome variable of interest (i.e., GPA, academic self efficacy, life satisfaction, internalizing behavior, externalizing behavior). An alpha level of .05 was used to determine statistical significance. The beta weights for each variable in each regression analysis are presented in Table 5.

*Social-emotional functioning.* To determine the extent to which coping styles predicted life satisfaction, all four coping styles (i.e., positive and negative avoidance, family communication, anger) were entered into a simultaneous multiple regression
Table 5.

Summary of Simultaneous Regression Analyses for Variables Predicting Mental Health Outcomes.

<table>
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<tr>
<th>Predictors</th>
<th>Parameter Estimates</th>
<th>Uniqueness Indices</th>
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<td>3. Family Communication</td>
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<td>.11</td>
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<tr>
<td>4. Anger</td>
<td>-.19</td>
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</tbody>
</table>

*Note.* *p*<.05, **p**<.01
equation. Coping explained 31% of the variance in global life satisfaction ($R^2 = .31$). Each of the four coping styles uniquely predicted LS. In other words, after controlling for the shared variance among these four coping styles, each was independently related to differences in students’ global LS. Specifically, positive avoidance coping ($\beta = .17$) and family communication ($\beta = .38$) were related to increased global life satisfaction, while the negative direction of the beta weights for negative avoidance ($\beta = -.30$) and anger coping ($\beta = -.18$) indicated that more frequent use of these coping styles is related to diminished life satisfaction. The magnitude of the beta weights associated with family communication and negative avoidance suggest that these two coping styles are stronger predictors of life satisfaction than positive avoidance or anger coping. Uniqueness indices were also obtained to determine the relative contribution each coping style made, after controlling for the variance accounted for by the three other coping styles. After controlling for the contributions of other coping styles, family communication alone accounted for 12% of the variance in LS ($sr^2 = .12$). All other uniqueness indices are presented in Table 5.

Two separate regression equations were computed for internalizing and externalizing psychopathology. Coping styles accounted for 17% of the variance in internalizing behavior and 40% of the variance in externalizing behavior. Negative avoidance coping was the strongest predictor of internalizing behavior ($\beta = .30$), while anger coping was the strongest predictor for externalizing behavior ($\beta = .47$). Family communication was strongly inversely related to externalizing behavior ($\beta = -.44$), while negative avoidance was moderately positively related to externalizing behavior ($\beta = .22$).
Family communication accounted for 15% and anger coping accounted for 22% of the variance in externalizing behavior, after controlling for the contributions of other coping styles in predicting this outcome (see Table 5). After controlling for the contributions of other coping styles, anger and negative avoidance coping \((sr^2 = .06, sr^2 = .09,\) respectively) both made unique contributions in predicting internalizing behavior; positive avoidance coping and family communication were not related to internalizing.

*School functioning.* The regression equation using coping styles to predict grade point average was not statistically significant. Coping styles did predict academic self-efficacy \((R^2 = .19)\). Specifically, family communication emerged as the strongest predictor of academic self-efficacy \((\beta = .39, sr^2 = .12)\). No other coping styles independently predicted academic self-efficacy. This suggests that students in the IB program who used family support to cope are more likely to perceive themselves as academically capable.

* Moderator Tests

To determine if coping functioned as a moderator in the relationship between perceived stress and mental health (i.e., high GPA, high life satisfaction, and low psychopathology) in IB students, a series of multiple regression analyses were conducted that included interaction terms between each coping style and stress (e.g., stress*positive avoidance, stress*negative avoidance, stress*family communication, stress*anger) using the data from the subsample of 139 IB students. A moderator variable changes the direction or strength between an independent variable (in this case, perceived stress) and dependent variable (in this case, mental health). A moderator is identified when the effect
of one variable depends on the levels of another, or simply stated, an interaction effect is found (Baron & Kenny, 1986). To test for moderation, a series of five separate regression analyses were conducted using the indicators of mental health (academic achievement, life satisfaction, psychopathology) as the dependent/criterion variable and perceived stress, coping styles, and the interaction of stress and coping styles as the predictors/independent variables. All predictor variables were centered by subtracting the group mean from each predictor variable. An alpha level of .05 was used to identify statistically significant interaction terms. Results of regression analyses are presented in Tables 6 and 7.

To first detect an overall effect of coping as moderators in the relationship between stress and mental health, the \( R^2 \) values for each full regression model that included stress, coping and the interaction terms (stress*positive avoidance, stress*negative avoidance, stress*family communication, stress*anger) were compared with the base model (e.g., each mental health variable predicted by stress and coping styles, \textit{excluding} interaction terms). This change in \( R^2 \) (i.e., full model - base model) was calculated to detect a significant change in the proportion of variance accounted for by the interaction terms. Of the five \( R^2 \) change tests (i.e., one test for each mental health variable), two significant changes in \( R^2 \) were found: life satisfaction (\( R^2 = .59, F = 4.17, p<.05 \)) and internalizing behavior (\( R^2 = .60, F = 2.5, p<.05 \)).

To determine which interaction was driving each effect, the beta weights and corresponding t-test for each interaction term were examined. For life satisfaction, the interaction between stress and positive avoidance coping was significant (\( t = 2.20, p<.05 \)).
Table 6.
*School Functioning Variables Predicted by Perceived Stress and Coping (n = 139)*

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*Note.* *p*<.05
Table 7.
Social-Emotional Functioning Variables Predicted by Perceived Stress and Coping (n = 139)

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*Note. *p<.05
### Table 7, cont’d.

**Social-Emotional Functioning Variables Predicted by Perceived Stress and Coping (n = 139)**

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*Note.* *p<.05*
For internalizing behavior, the interaction between stress and anger coping was significant ($t = 2.68, p < .05$). No other interaction terms were significant in either full model so the regression equations were simplified by dropping non-significant interaction terms from the equation and re-running each regression using the base model (i.e., stress and the 4 coping variables to predict life satisfaction and internalizing behavior, respectively). The coping variables that were significant in the interaction terms were dichotomized into high and low frequency of use coping styles and used as a grouping variable to illustrate the interaction in each regression equation.

**Internalizing behavior.** To interpret the interaction effect, anger coping scores were used to assign IB students to the high anger coping group and comparison subsample. The high anger coping group ($n = 78$) consisted of IB students who reported anger coping scored at or above the sample median ($x = 2.8$). The low anger coping group ($n = 61$) consisted of IB students who scored below the median for the IB sample. Hierarchical linear regression was used to predict internalizing behavior by entering the four coping styles first (Step 1), followed by perceived stress (Step 2). The slope of the association between perceived stress and internalizing behavior was steeper for IB students with high anger coping ($b = 8.36, p < .001$), meaning that as perceived stress increases, students who use more anger coping are more likely to experience internalizing disorders (see Figure 1). On the other hand, for the low anger coping group, stress was not as strongly related to internalizing behavior ($b = 4.78, p < .001$).
Life satisfaction. To interpret the interaction effect, positive avoidance coping scores were used to assign IB students to the high positive avoidance coping group and comparison subsample. The high positive avoidance coping group \((n = 72)\) consisted of IB students who reported positive avoidance coping at or above the sample median \((x = 3.4)\). The low positive avoidance coping group \((n = 67)\) consisted of IB students who scored below the median for the IB sample. Hierarchical linear regression was used to predict life satisfaction by entering the four coping styles first (Step 1), followed by perceived stress (Step 2). The slope of the association between perceived stress and life satisfaction was steeper for IB students with low positive avoidance coping \((b = -.70, p < .01)\). Specifically, IB students who use positive avoidance behaviors to cope less frequently experience sharper declines in life satisfaction as stress increases (see Figure 1).
XX). On the other hand, for the high positive avoidance coping group, stress was not as strongly related to life satisfaction ($b = -.44$, $p < .01$).

*Figure 2.* Predicted life satisfaction for high and low positive avoidance coping IB students.
CHAPTER 5

Discussion

Summary of the Study

The present study aimed to investigate the mental health of academically advanced adolescents, specifically adolescents enrolled in the International Baccalaureate (IB) program, a program designed for highly motivated, high-achieving high school students. This study was novel in nature because it was the first study to examine the mental health of IB students. Additionally, by using both positive (i.e., life satisfaction, academic achievement, academic self-efficacy) and negative (i.e., psychopathology) indicators of mental health, a more comprehensive picture of the mental health of IB students was obtained. Findings from this study suggest that students in the IB program have mental health that is commensurate with that of general education students. IB students are able to achieve higher levels of academic success (e.g., higher grade point averages) despite the fact that they report higher levels of stress than students in general education. Additionally, it was determined that how students in the IB program cope with stress has a differential effect on important mental health outcomes, specifically those related to their social-emotional functioning. This chapter will summarize the results from Chapter 4, discuss the implications of the results, identify limitations of the study, and suggest directions for future research.

Examination of Results

Prior to examining the findings from Chapter 4, it is important to note several decisions made in the present study. First, students in the IB program share building
facilities and faculty with students in the general education curriculum. Therefore, it is the assumption of the researcher that group differences are related to enrollment in the specific curriculum unique to each group of students. Additionally, although similar patterns of correlations emerged between students in the IB and general education curriculum, only the data for students enrolled in the IB curriculum were retained to investigate the influence of perceived stress and coping on mental health. This decision was made as the aim of the present study was to investigate the mental health of a sub-population (i.e., IB students) of adolescents, rather than adolescents in general.

Notable group differences. Overall, students in the IB program perceived more stress than students in the general education curriculum. This is in line with logical hypotheses, as students in the IB program are immersed in an extremely challenging, demanding curriculum in addition to the academic and developmental challenges faced by all adolescents. de Anda and colleagues (2003) found that the majority of the adolescents surveyed in their study reported experiencing stress related to studying for tests, getting good grades, completing homework, and balancing responsibilities. As IB students are frequently tested (students must pass advanced examinations in their junior year), maintain extremely high grade point averages ($M = 4.14$), and carry heavy homework loads, it was expected that they would experience more stress than students enrolled in a more typical high school curriculum. The additional responsibilities associated with enrollment in the IB program (e.g., community service, independent research project, participation in extra-curricular activities) may serve to increase the stress levels of these students beyond that of general education students.
Despite the stress students in the IB program experience, the academic functioning of students in the IB program is superior to that of students in the general education curriculum. This finding contrasts the findings of Cunningham and colleagues (2003), Gillock and Reyes (1999), and Alva and de Los Ryes (1999) who all found that increased stress was negatively correlated with grade point average. Overall, the average GPA of students in the IB program was over one letter grade higher (4.14 compared to 3.05) than general education students. Additionally, IB students reported higher academic self-efficacy than general education students. Thus, not only do students in the IB program perform better academically, they also maintain the belief that they are more academically capable than general education students. The moderate correlation found between academic self-efficacy and grade point average may help to explain why IB students are able to achieve more than their general education peers in spite of the stress; perceiving oneself as more academically capable may contribute to persevering to the point of obtaining high academic achievement, specifically maintaining a higher grade point average. Pre-existing group differences in academic achievement may also buffer students in the IB program from the effects of stress. Specifically, to gain admittance to the IB program, students must demonstrate academic achievement superior to that of their peers starting in middle school. This historical pattern of achievement may explain why IB students continue to outperform their general education peers academically.

There are other notable differences between the studies conducted by Cunningham and colleagues, Gillock and Reyes, and Alva and de Los Ryes and the present research project in terms of design and sample. The aforementioned studies all
focused on the relationship between stress and academic achievement using objective measures of stress (i.e., stressful life event checklists), while the present study utilized a subjective measure of stress (i.e., Perceived Stress Scale). It is unclear from the data in the three studies if their participants actually perceived more stress than the IB students sampled in the present study. Although IB students in the present study perceived more stress than their general education peers, because of measurement differences, it is impossible to make direct comparisons of stress between the IB students in the current study and the samples in the three aforementioned studies. All three studies also sampled adolescents from minority backgrounds (i.e., African-American and Hispanic) living in urban settings, and did not specifically include students in an IB program. The majority of the students in this study were Caucasian and all were enrolled in an IB program. Additionally, all students in the present study, due to the location of the IB high school, reside in rural areas. It may be that stress has differential effects on students from varying ethnic or cultural backgrounds.

*Notable findings regarding interrelationships between variables.* Within the group of IB students, as well as within the group of general education students, perceived stress was positively correlated with psychopathology (internalizing and externalizing) and negatively correlated with positive indicators of mental health (i.e., academic self-efficacy and life satisfaction); in other words, higher levels of stress co-occurred with compromised mental health. This suggests that increased perceptions of stress interfere with optimal social-emotional development in adolescents. This finding is consistent with the large body of research demonstrating the negative impact stress has on mental health.
(e.g., Martin, Kazarian, & Breiter, 1995; Mayberry & Graham, 2001). Additionally, perceived stress was positively correlated with anger coping. As perceived stress was positively correlated with negative indicators of mental health (i.e., internalizing and externalizing psychopathology), coping strategies that are positively correlated with perceived stress may place adolescents at increased risk for experiencing negative outcomes. This interpretation is consistent with the findings of Galaif, Sussman, Chou, and Wills (2003) who also found a positive correlation between perceived stress and anger coping strategies, as well as positive correlations between perceived stress and internalizing psychopathology (i.e., depression). Family communication was negatively correlated with perceived stress, suggesting that family communication may be a more adaptive coping strategy for IB students. Positive avoidance and negative avoidance coping were not significantly related to perceived stress, suggesting that these coping behaviors neither mitigate nor exacerbate perceptions of stress for IB students.

It is important to note that, in comparing correlations between groups), only one significant difference (strength of the relationship between family communication and life satisfaction) emerged between the IB and general education subsamples. Notably, the same pattern of the relationship was found across samples and the effect size for the difference was small. For IB students, family communication was not as strongly correlated with life satisfaction as it was for general education students. This may be an artifact of sample size; almost 30 fewer IB students were sampled than general education students, which may have lead to a greater sampling error in the IB subsample.
Notable findings in predicting mental health outcomes from coping. Coping was found to account for a significant portion of the variance in mental health outcomes for both academic and social-emotional functioning for IB students. For instance, coping accounted for almost one-third of the variance in global life satisfaction. Positive avoidance and family communication helped to bolster life satisfaction while anger coping and negative avoidance were negatively associated with life satisfaction. Negative avoidance coping is primarily comprised of items related to substance abuse (e.g., smoking, drinking, illicit drug use); the finding that negative avoidance coping may serve to compromise life satisfaction is consistent with the findings of Zullig and colleagues (2001), who determined that the regular use of tobacco and alcohol products was significantly associated with reduced life satisfaction in adolescents. These findings suggest that students who are able to find positive outlets when faced with stress (e.g., talking with family members, thinking positively, spending time with close friends/family members) are happier with their lives.

Coping also accounted for a large portion of the variance in psychopathology, particularly with respect to externalizing behavior. Negative avoidance coping emerged as a strong predictor for internalizing behavior; IB students who use substances such as alcohol or drugs to cope with stress are more likely to experience problems on the internalizing spectrum (e.g., depression, anxiety), while IB students who use anger coping strategies (e.g., blaming others, yelling) are more likely to experience problems on the externalizing spectrum (e.g., aggression, conduct disorder). Galaif and colleagues
(2003) also found that the use of maladaptive coping strategies (e.g., seeking revenge, getting mad, using drugs) elevates the risk for psychopathology.

Interestingly, coping accounted for a significant portion of the variance in academic self-efficacy but was not associated with academic achievement. IB students who are able to communicate with their families perceive themselves as much more academically competent. No other coping styles were significantly related to academic self-efficacy. Coping style did not relate to grade point average, suggesting that the ways in which IB students cope is not related to their ability to perform well academically.

_Notable findings with respect to interactions between stress and coping._ The use of particular coping styles serves to exacerbate the effect of stress on students’ social-emotional well-being. In other words, in addition to the general inverse relationship between stress and optimal mental health, using some coping behaviors (specifically, frequent anger or infrequent positive avoidance) placed students with elevated perceived stress at even higher risk of experiencing co-occurring declines in global life satisfaction and increases in psychopathology. Specifically, as stress increases, IB students who use anger coping are more likely to experience internalizing disorders (e.g., depression, anxiety, somatic complaints). This suggests that the anger coping behaviors captured by the modified ACOPE (e.g., blaming others, saying mean things to others) are not effective strategies to deal with increasing stress, as this coping style is predictive of poor mental health outcomes for IB students. This is consistent with the findings of Galaif and colleagues (2003) who also found a small, positive correlation between anger coping strategies (e.g., seeking revenge, getting mad) and depression in an adolescent population.
and with the findings of Tolan and colleagues (2002) who linked emotion-focused coping strategies (e.g., venting feelings) to internalizing psychopathology. Interestingly, the study conducted by Galiaf and colleagues sampled at-risk adolescents (i.e., those attending dropout prevention programs), while Tolan and colleagues sampled inner-city youth; the current study provides preliminary support for the hypothesis that the use of anger coping may be correlated with diminished social-emotional functioning for all adolescents, despite their academic achievements.

The use of adaptive coping strategies, such as positive avoidance coping, may serve to buffer the impact stress has on positive indicators of mental health, namely life satisfaction. Consistent with the findings of McKnight, Huebner, and Suldo (2002) stress was found to decrease life satisfaction among all IB students. Interestingly, IB students who were reported using fewer positive avoidance coping behaviors (e.g., thinking about the good things in life) showed much sharper declines in life satisfaction as perceived stress increased compared to IB students who reported using this coping strategy more frequently. In other words, the detrimental impact of stress on LS was more exaggerated for students who engaged in relatively few positive avoidance behaviors. On the other hand, those students who thought positively (e.g., try to see the good things in a difficult situation) or solicited social support (e.g., try to keep up friendships or make new friends) were less affected by stress. This would suggest that the use of positive avoidance coping serves to buffer the impact stress has on subjective well-being.

*Other notable findings.* As previously noted, there is much debate in the literature regarding distinctions between coping styles in children, adolescent, and adult
populations. In the body of literature on adults, the most common distinction between styles of coping is that of problem-focused (e.g., active problem solving) and emotion-focused (e.g., positive reappraisals/minimization, avoidance, seeking social support) coping (Lazarus & Folkman, 1984). Band and Weisz (1988) and Compas and colleagues (2001) both assert that this distinction may not be appropriate for use in research on children and adolescents. Some researchers (e.g., Ayers and colleagues, 1996) have found that, for school-aged children, a four-factor model of coping is more appropriate. Ayers and colleagues’ four-factor model includes the coping styles of: a) active coping strategies (e.g., decision making, problem solving, positive cognitive restructuring), b) distraction strategies (e.g., physical release of emotion), c) avoidance strategies (e.g., cognitive avoidance, avoidant actions), and d) support-seeking strategies (e.g., seeking help from others). The results of this study are more consistent with that of Ayers and colleagues than the distinction between problem-focused and emotion-focused coping found in the literature on coping in adult populations. In the present study, positive avoidance coping includes behaviors such as “seeing the good things in a difficult situation” and “trying to see the good things in life,” which aligns with the active coping strategies defined by Ayers and colleagues. Also, the behaviors comprising anger coping in the present study all involve the physical release of emotion, termed distraction strategies by Ayers and colleagues. In the present study, the items comprising negative avoidance (i.e., substance abuse) overlap the behaviors identified by Ayers and colleagues as avoidance strategies, whereas family communication (i.e., talk to mom or dad about what is bothering you) aligns with Ayers and colleagues’ support-seeking
strategies. This points to the need for more consensus among researchers when researching coping in child and adolescent populations; the lack of consensus makes it difficult to draw conclusions that incorporate findings from previous research.

Implications of Results for School Psychologists

This study was the first study to evaluate the mental health of students in the International Baccalaureate program using both positive and negative indicators of mental health. Overall, it would appear that participation in the IB program is beneficial; in this study, students enrolled in the program demonstrated superior academic functioning (e.g., grade point average, academic self-efficacy) compared to general education students. Additionally, participation in the IB program does not appear to negatively impact social-emotional functioning in high school students. Despite increased levels of stress, IB students are able to successfully navigate their responsibilities without manifesting elevated psychopathology or diminished life satisfaction. In fact, in this study, general education students were more likely to experience externalizing psychopathology than IB students. Thus, this study supports the notion that school psychologists should not discourage students from participating in rigorous curricula that are appropriate for students’ ability levels. It is important to note that the results of this study do not conclude that participation in the IB curriculum is responsible for the lower levels externalizing behavior found among IB students in the present sample. Rather, it is plausible that the IB program may attract students who initially experience lower levels of psychopathology on the externalizing spectrum. The presence of externalizing
behaviors in elementary or middle school may preclude students from achieving at a level necessary to gain admittance to the IB program.

The ways in which students choose to cope with stress may lead to differential outcomes. As it was found that participation in the IB program leads to increased perceptions of stress in the environment, it is important to note that how students cope with this stress may be related to their emotional well-being. As stress increases, students should be discouraged from adopting an external locus of control (i.e., blaming others, yelling at others) in order to minimize internalizing behavior problems. Teachers, administrators, and support staff (e.g., guidance counselors, school psychologists) working with IB students who witness students using anger coping to deal with stress should intervene and teach these students to use more adaptive coping strategies.

It is also extremely important to note that as stress increases, life satisfaction decreases for all IB students. It may be beneficial to teach IB students to address imminent stress with adaptive coping strategies, such as thinking positively and maintaining close friendships. Faculty who work with IB students should encourage students to think positively and encourage activities and coursework that help students interact with their peers.

Several times, it was noted that the support of families is particularly beneficial for IB students. Specifically, students who cope by communicating with and relying on family members decrease their risk for negative mental health outcomes. Involving parents and siblings in the education of IB students may increase the overall well-being of students in this program. Home-school communication methods that inform parents of
upcoming stressful events (e.g., testing, large homework assignments) may benefit
students by preparing families to be more available to their adolescents during highly
stressful times. Additionally, students should be encouraged to communicate with their
parents in times of stress, which may be counterintuitive to students who may have easier
access to peers.

Limitations of the Current Study

As with any research study, it was the desire of the researcher to obtain valid
conclusions; therefore during the collection of the data for this study, several precautions
were taken to address potential threats to validity. During administration, measures in the
questionnaire packet were counterbalanced to control for order effects. Additionally, the
research team collecting data was trained to answer questions from students in a uniform
manner to control for errors in administration. Procedures such as these helped to control
for errors. In fact, of the data checked, only 9% contained errors (i.e., data entry errors).

Not all threats to validity can be controlled for prior to data analysis, therefore the
researcher took some precautions when interpreting the results; the threats to validity,
along with the precautions taken to address these threats are outlined here. Some threats
to the validity of quantitative research include population validity, ecological validity,
and temporal validity.

Population validity. Population validity is the ability to generalize results from the
sample to a larger population. Johnson and Christensen (2004) caution researchers to
identify characteristics of participants that may distinguish them before research
commences. These unique characteristics of study participants may limit the populations
to which the researchers can generalize results too. The type of sampling employed for this study was a convenience sample; therefore students who agreed to participate in the research study may differ from students who declined to participate. The researcher compared the descriptive statistics of the study sample to school demographics and did not find sub-populations of students who systematically declined participation.

Also, as noted by Compas and colleagues (2001), it is difficult to aggregate findings across studies or draw general conclusions regarding the relationships between coping styles and outcomes because of the lack of consensus among researchers regarding coping behaviors. Throughout the coping literature, studies combine different behaviors into coping styles with the same label. This limitation has not been addressed even in studies using the same measure of coping. For example, the original ACOPE can be broken down into twelve coping styles; for the present study, only 20 items reflecting four factors were utilized. This lack of consensus among researchers study coping limits the interpretability of results in light of previous findings and the generalizability of results to other samples.

Temporal validity. Temporal validity is defined as the ability to generalize findings across time. Throughout the Fall of 2004, during which the data for this study were collected, several natural disasters (i.e., hurricanes) affected the area in which students in this study lived. Therefore, generalizations about the stress levels of students in this study compared to student populations at this school in the future were made cautiously. As there is no reason to believe that students in the general education and IB curricula were not equally affected by the hurricanes, it is reasonable to attribute any
differences found between the groups to real group differences rather than effects of the natural disasters. However, findings may be unique to this particular school. Also, in an effort to minimize the effects of the hurricanes on the mental health of students, the researchers allowed approximately five weeks between the last hurricane and data collection.

*Ecological validity.* Ecological validity is the ability of the researcher to generalize the results of a study across settings. When ecological validity is threatened, the researcher must be careful to specify the setting from which participants were drawn so that erroneous conclusions are not made. The aforementioned natural disasters may have posed a threat to ecological validity; therefore this study may have limited generalizability to other populations, such as those not presently affected by hurricanes or other natural disasters. Additionally, Brown High School is located within a rural community, therefore, it is difficult to ascertain the mental health of students enrolled in the IB program in more urban and suburban settings.

*Suggestions for Future Research*

As this study was the first to investigate the mental health of International Baccalaureate students, it is necessary to replicate these findings before broader generalizations can be made about the impact of the IB curriculum on its participants. The cross-sectional design of this study limits the ability of the researcher to draw conclusions regarding the additive effect each year in the program may have on the stress and mental health of adolescents. It is suggested that a longitudinal research design may more effectively isolate the impact of continued exposure to the program on mental
health. By surveying students prior to entering the program and following them over the course of their academic career, a clearer picture can be obtained to address this question.

Additionally, this study assumed that the samples (i.e., IB and general education) were equal on all other variables because they attended the same school and lived in the same rural school district. In future research, it is important to control for pre-existing group differences, such as personality, valuing of school, need for achievement, socioeconomic status, parent support, and other variables that may be impacting academic achievement and social-emotional functioning. Also, although the use of a subjective measure of stress (i.e., the Perceived Stress Scale) is a considerable strength in evaluating the impact of stressful life events on adolescents, it is unclear without an objective measure (e.g., a stressful life events checklist) what the perceptions of stress can be attributed to. Future research should utilize both a subjective and an objective measure of stress to determine both the impact and sources of stress on adolescents.

Furthermore, this study was conducted at a single site. Students who attend this school may not be representative of students who attend all IB schools. Replication of these findings in students who attend IB schools in urban and suburban environments would confirm that participation in the IB program is beneficial for all students, not just those living in a rural community. The IB program is in place in over 600 high schools in the United States alone; it is important not to over-generalize these results to all IB students until these findings can be replicated in other IB samples.

This study also did not evaluate how well students in the program are able to negotiate other developmental challenges associated with adolescence, such as forming
romantic relationships and seeking employment opportunities. Although IB students were found to have mental health commensurate with general education peers despite their heavy academic workloads, it is unclear what other developmental challenges may be neglected. By including measures addressing such issues, specific developmental milestones IB students may be missing as a result of their participation such a rigorous curriculum can be identified.

*Final Thoughts*

This study has provided a preliminary look at the mental health of students in the International Baccalaureate program. The results of this study did not support that participating in the IB program has negative effects on the mental health of its students. In fact, the findings of this study consistently found that IB students perform extremely well academically, which may help to prepare high school students for success at the collegiate level. Despite the overall positive outcomes for students, it was found that the ways in which students cope with the stress associated with participation in a rigorous high school curriculum is important. Specifically, teaching students to use positive coping strategies, such as engaging in positive avoidance behaviors (e.g., forming close friendships) and talking to parents, may help buffer any negative impact stress has on mental health outcomes.
References


Schwartz (Eds.), *Subjective well-being* (pp. 193-212). New York: Plenum Press.


problems and with academic functioning. *Journal of Abnormal Psychology*, 105(4), 551-560.


APPENDIX A
State of Florida Graduation Requirements

Requirements for all High School Diplomas

Graduation Requirements
- The minimum number of credits required for graduation from a high school is twenty-four (24) in the six period schedule high school and twenty-nine (29) in the 4x4 schedule high school. Students may also select the three-year eighteen (18) credit standard college preparatory program or three-year eighteen (18) credit career preparatory program.
- All graduating students must successfully complete the requirements of the Statewide Assessment Program. Students have to pass FCAT as defined by the State of Florida.

Required Subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Science</td>
<td>3</td>
</tr>
<tr>
<td>Social Studies</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>Health Education</td>
<td>1/2</td>
</tr>
<tr>
<td>Fine Arts/Practical Arts</td>
<td>1/2 or 1</td>
</tr>
</tbody>
</table>

A. English - 4 credits
Students must take (one credit each) English I, II, III, and IV or their equivalents.

B. Mathematics - 3 credits
Students must earn one credit in Algebra I, a series of equivalent courses or a higher level mathematics course, as part of this requirement: i.e., an Algebra II or a level 3 mathematics course, if Algebra I was taken prior to ninth grade but high school credit was not awarded.

C. Science - 3 credits
At least two credits must have a laboratory component.

D. Social Studies - 3 credits
American Government 1/2 credit
World History 1 credit
American History 1 credit
Economics 1/2 credit

E. Physical Education - 1 credit
1. Student can satisfy the 1 credit physical education requirement by participating in an interscholastic sport approved by FHSAA for two full seasons at the junior varsity or varsity level and passing a competency test on personal fitness with a score of “C” or better.
2. Satisfying the personal fitness or physical education requirement in this manner does not decrease the minimum number of credits needed for graduation since no course credit or grade is earned through participation in interscholastic sports. Required forms must be submitted in order to exercise this option.

F. Health Education - 1/2 credit in Life Management Skills

G. Fine Arts/Practical Arts - 1/2 credit of each or 1 credit of either

Notes:
• Students entering a state-supported university must have two sequential credits in a foreign language.
• Elective subjects may not include more than a total of nine credits of remedial and compensatory courses, one-half credit of exploratory vocational courses, or three credits in practical home economics courses.

Requirements for the IB diploma

Language A - 4 years
Grade 9: Pre-IB English I
Grade 10: Pre-IB English II
Grade 11: IB English III/AP Language and Comp
Grade 12: IB English IV/AP Literature and Comp

Language B - 5 years of study in one foreign language (Students who have not received credit for Spanish I or French I in middle school are required to take either Spanish I or French I in summer school prior to the start of the 9th grade Pre-IB Program)
Grade 9: Pre-IB Foreign Language II
Grade 10: Pre-IB Foreign Language III
Grade 11: IB Foreign Language IV
Grade 12: IB Foreign Language V

Individual and Societies
Grade 9: Pre-IB American Government and Pre-IB Economics
Grade 10: Pre-IB World History
Grade 11: IB/AP American History
Grade 12: IB History of the Americas
**Experimental Sciences:** (Summer School for Physics I is required of all students. Students choose one science for a two year study beginning in 11th grade.)

Grade 9: Pre-IB Biology I and Pre-IB Earth Science  
Summer School after Grade 9: Pre-IB Physics  
Grade 10: Pre-IB Chemistry I  
Grade 11: IB Biology II, or IB Chemistry II, or IB Physics II  
Grade 12: IB Biology III, or IB Chemistry III, or IB Physics III

**Math**  
Grade 9: Pre-IB Algebra I (for students who did not earn this credit in middle school) or Pre-IB Geometry  
Grade 10: Pre-IB Geometry and Algebra II for students who took Algebra I in the 9th grade or Algebra II  
Grade 11: IB Trig/Analytical Geometry or Math Analysis or, with approval AP Statistics  
Grade 12: IB Math Studies or IB Math Methods

**Sixth Subject IB Art or Psychology**  
Grade 9: Pre-IB Art/Design I  
Grade 10: Pre-IB Art/Design II  
Grade 11: IB Psychology or IB Art/Design III  
Grade 12: Art/Design IV

**Other Courses:**  
Grade 9: Pre-IB Inquiry Skills and elective from BHS course offerings (if not taking Pre-IB Art/Design I)  
Grade 10: elective 1 from BHS course offerings (if not taking Pre-IB Geometry) and elective 2 (if not taking Pre-IB Art/Design II)  
Grade 11: elective-1st semester, Theory of Knowledge-2nd semester  
Grade 12: Theory of Knowledge-1st semester, elective-2nd semester and 1 elective (if not taking IB Art/Design IV)

**Other Diploma Requirements:** In order to earn the International Baccalaureate Diploma, students must earn passing scores on their six IB exams (3 taken at the standard level and 3 taken at the higher level.) Students must also complete 150 hours of Creative, Action and Service activities prior to the deadline in their senior year. IB students are required to conduct an independent research study which is described in the required 4000 word IB Extended Essay due in their senior year.
APPENDIX B
Informed Consent to Parents

Dear Parent or Caregiver:

This letter provides information about a research study that will be conducted at Brown High School and the International Baccalaureate School by professors from the University of South Florida. Our goal in conducting the study is to determine the effect of students’ participation in various high school classes, such as Advanced Placement, the International Baccalaureate Program, and general courses, on their mental health and psychological wellness.

✓ **Who We Are:** We are Elizabeth Shaunessy, Ph.D., and Shannon Suldo, Ph.D., professors in the College of Education at the University of South Florida (USF). We are planning the study in cooperation with the principals and administrators of Brown High School (BHS) and the International Baccalaureate School (IBS) at BHS to ensure the study provides information that will be helpful to the schools.

✓ **Why We are Requesting Your Child’s Participation:** This study is being conducted as part of a project entitled, “The Mental Health of Secondary Students in Florida.” Your child is being asked to participate because he or she is a student at BHS/IBS.

✓ **Why Your Child Should Participate:** We need to learn more about what leads to happiness and health during the teenage years! The information that we collect from students may help increase our overall knowledge of risk and protective factors that lead to psychological wellness during high school. In addition, information from the study will be shared with the teachers and administrators at BHS/IBS in order to increase their knowledge of what students consider to be the strengths and weaknesses of their schooling and other life experiences. Information from this study will provide a foundation from which to improve the schooling experiences and mental health of students at BHS/IBS. Please note neither you nor your child will be paid for your child’s participation in the study. However, all students who participate in the study will be entered into a drawing for one of several gift certificates.

✓ **What Participation Requires:** If your child is given permission to participate in the study, he or she will be asked to complete several paper-and-pencil questionnaires. These surveys will ask about your child’s thoughts, behaviors, and attitudes towards school, teachers, classmates, family, and life in general. Completion is expected to take your child between 30 and 60 minutes. We will personally administer the questionnaires at BHS/IBS, during regular school hours, to large groups of students who have parent permission to participate. Participation will occur during one class period each Fall semester for the next four years (or until your child completes high school, whichever comes first). In total, participation will take about one hour of your child’s time each year for the next four years. **Another part of participation**
involves a review of your child’s school records. Specifically, under the supervision of school administrators, we will access information about your child’s grade point average, history of discipline referrals, and participation in special classes such as Advanced Placement, the International Baccalaureate Program, or special education (for example, Gifted education).

✓ Please Note: 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. If you choose not to participate, or if you withdraw at any point during the study, this will in no way affect your relationship with BHS/IBS, USF, or any other party.

✓ Confidentiality of Your Child’s Responses: There is minimal risk to your child for participating in this research. We will be present during administration of the questionnaires in order to provide assistance to your child if he or she has any questions or concerns. Additionally, school guidance counselors will be available to students in the unlikely event that your child becomes emotionally distressed while completing the measures. 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, and the USF Institutional Review Board may inspect the records from this research project, but your child’s individual responses will not be shared with school system personnel or anyone other than us and our research assistants. Your child’s completed questionnaires will be assigned a code number to protect the confidentiality of his or her responses. Only we will have access to the locked file cabinet stored at USF that will contain: 1) all records linking code numbers to participants’ names, and 2) all information gathered from school records. Please note that although your child’s specific responses on the questionnaires will not be shared with school staff, if your child indicates that he or she intends to harm him or herself, we will contact district mental health counselors to ensure your child’s safety.

✓ What We’ll Do With Your Child’s Responses: We plan to use the information from this study to inform educators and psychologists about the effects of various high school academic programs on students’ mental health, as well as to construct a plan for improving the schooling experiences that impact mental health during adolescence. The results of 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). 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 Division of Research Compliance of the University of South Florida at 813-974-9343.

✔ Want Your Child to Participate? To permit your child to participate in this study, complete the attached consent form and have your child turn it in to his or her first period teacher.

Sincerely,

Elizabeth Shaunessy, Ph.D.                                            Shannon Suldo, Ph.D.
Assistant Professor of Special Education  Assistant Professor of
School Psychology                                               Department of Psychological
Department of Special Education                                     and Social Foundation

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

Signature of parent       Printed name of parent
Date
of child 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
obtaining consent     Date
obtaining consent
APPENDIX C
Student Assent Form

Today you will be asked to take part in a research study by filling out several surveys. We are doing the study to find out how taking different high school classes, such as Advanced Placement, the International Baccalaureate Program, and general courses, is related to students’ mental health.

✓ Who We Are: We are Elizabeth Shaunessy, Ph.D., and Shannon Suldo, Ph.D., professors in the College of Education at the University of South Florida. We are working with your principals 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, “The Mental Health of Secondary Students in Florida.” You are being asked to take part in it because you are a student at Brown High.

✓ Why You Should Take Part in the Study: We need to learn more about what leads to happiness and health during the teenage years! The information that we gather may help us better understand which attitudes within teens as well as which experiences at school lead to emotional wellness during high school. Also, information from this study will be shared with the school staff at Brown High School to help them understand what students consider to be the strengths and weaknesses of their experiences at school and in life. Please note you will not be paid for taking part in the study.

✓ Filling Out the Surveys: These surveys will ask about your thoughts, behaviors, and attitudes towards school, teachers, classmates, family, and life in general. You may skip any question that you do not desire to answer. We expect it will take between 30 and 60 minutes to fill out all the surveys.

✓ What Else Will Happen if You Are in the Study: If you choose to take part in the study, we will look at some of your school records. Under the supervision of school administrators, we will access information about your grade point average, discipline record, and whether or not you take special classes such as Advanced Placement, the International Baccalaureate Program, or special education (for example, Gifted).

✓ Please Note: Your involvement in this study is completely voluntary. By signing this form, you are agreeing to take part in this research. 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 relationship with Brown High School, USF, or anyone else.

✓ Confidentiality (Privacy) of Your Responses: We do not expect that there will be more than minimal risk to you for taking part in this research. We will be here to help the entire time you are filling out the surveys in case you have any questions or concerns. Your school guidance counselors are also on hand in case you become upset. 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 completed surveys 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: 1) all records linking code numbers to names, and 2) all information gathered from school records. Please note that although your specific responses will not be shared with school staff, if you indicate you plan to harm yourself, we will let district mental health counselors know in order to make sure you are safe.

- **What We’ll Do With Your Responses:** We plan to use the information from this study to let others know the effects of different high school classes on students’ mental health, and to make a plan for improving schooling experiences during the high school years. 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 identify you.

- **Questions?** If you have any questions about this research study, please raise your hand now or at any point during the study. Also, you may contact us later at (813) 974-2225 (Dr. Suldo) or (813) 974-7007 (Dr. Shaunessy). 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 Division of Research Compliance of the University of South Florida at 813-974-5638 or the Florida Department of Health, Review Council for Human Subjects at 1-850-245-4585 or toll free at 1-866-433-2775.

Thank you for taking the time to take part in this study.

Sincerely,

Elizabeth Shaunessy, Ph.D.                     Shannon Suldo, Ph.D.
Assistant Professor of Special Education        Assistant Professor of School Psychology
Department of Special Education                  Dept. of Psychological and Social Foundations

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**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

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APPENDIX D
Perceived Stress Scale (Cohen, Kamarack, & Merzelstein, 1983)

These questions ask you about your feelings and thoughts during the last month. 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.

<table>
<thead>
<tr>
<th>In the last month, how often have you…</th>
<th>Never</th>
<th>Almost never</th>
<th>Sometimes</th>
<th>Fairly often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. …been upset because of something that happened unexpectedly?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. …felt that you were unable to control the important things in your life?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. …felt nervous and “stressed”?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. …found that you could not cope with all the things that you had to do?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. …been angered because of things that happened that were outside of your control?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. …felt difficulties were piling up so high that you could not overcome them?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>*7. …felt that things were going your way</td>
<td>*reverse scored item</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E
Adolescent Coping Orientation for Problem Experiences (Patterson & McCubbin, 1981)

Read each of the statements below that describes a behavior for coping with problems. Decide how often you do each of the described behaviors when you are faced with difficulties or feel tense. Even though you may do some of these things just for fun, please indicate ONLY how often you do each behavior as a way to cope with problems. Circle one of the following responses for each statement:

1 = Never  2 = Hardly Ever  3 = Sometimes  4 = Often  5 = Most of the Time

Note the words parent, mother, father, brother or sister also mean step-parent, step-mother, etc.

<table>
<thead>
<tr>
<th>When you face difficulties or feel tense, how often do you:</th>
<th>Never</th>
<th>Hardly Ever</th>
<th>Sometimes</th>
<th>Often</th>
<th>Most of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Go along with parents’ requests and rules (F)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Use drugs prescribed by a doctor (N)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Try to reason with parents and talk things out; compromise (F)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Try to think of the good things in your life (P)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Say nice things to others (P)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Get angry and yell at people (A)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Let off steam by complaining to family members (A)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Use drugs (not prescribed by a doctor) (N)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Blame others for what’s going wrong (A)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Be close with someone you care about (P)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. Talk to your mother about what bothers you (F)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. Try to keep up friendships or make new friends (P)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. Do things with your family (F)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. Smoke (N)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. Try to see the good things in a difficult situation (P)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. Drink beer, wine, liquor (N)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. Say mean things to people; be sarcastic (A)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. Talk to your father about what bothers you (F)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. Let off steam by complaining to your friends (A)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Note. Letter denotes coping style. P = positive avoidance, N = negative avoidance, A = anger, F = family communication.
APPENDIX G

STUDENTS’ LIFE SATISFACTION SCALE (SLSS)

We would like to know what thoughts about life you’ve had during the past several weeks. 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. Circle the number (from 1 to 6) next to each statement that indicates the extent to which you agree or disagree with each statement. It is important to know what you REALLY think, so please answer the question the way you really feel, not how you think you should. This in NOT a test. There are NO right or wrong answers. Your answers will NOT affect your grades, and no one will be told your answers.

Circle 1 if you **STONGLY DISAGREE** with the sentence
Circle 2 if you **MODERATELY DISAGREE** with the sentence
Circle 3 if you **MILDLY DISAGREE** with the sentence
Circle 4 if you **MILDLY AGREE** with the sentence
Circle 5 if you **MODERATELY AGREE** with the sentence
Circle 6 if you **STRONGLY AGREE** with the sentence

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My life is going well</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>2. My life is just right</td>
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<td>3. I would like to change many things in my life</td>
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<tr>
<td>4. I wish I had a different kind of life</td>
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<tr>
<td>5. I have a good life</td>
<td></td>
<td></td>
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<tr>
<td>6. I have what I want in life</td>
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<tr>
<td>7. My life is better than most kids'</td>
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</tbody>
</table>
APPENDIX H
Self-Efficacy Questionnaire for Children (Muris, 2001)

Please rate your answers to these questions that ask how well (good) you think you can do things. Read each question, then circle a number from (1) to (5), where (1) indicates “Not at All” and (5) indicates “Very Well.”

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How well can you express your opinions when other classmates disagree with you?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>How well do you succeed in cheering yourself up when an unpleasant event has happened?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>How well can you study when there are other interesting things to do?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>How well do you succeed in becoming calm again when you are very scared?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>How well can you become friends with other young people?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>How well can you study a chapter for a test?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>How well can you have a chat with an unfamiliar person?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>How well can you prevent yourself from becoming nervous?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>How well do you succeed in finishing all your homework every day?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>How well can you get along with your classmates while working together?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>How well can you control your feelings?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>How well can you pay attention during every class?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>How well can you tell other young people that they are doing something that you don’t like?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>How well can you give yourself a peptalk when you feel low?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>How well do you succeed in passing all school subjects?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>How well can you tell a funny story to a group of young people?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>How well do you succeed in satisfying your parents with your schoolwork?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>How well are you able to remain friends with other young people?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19</td>
<td>How well do you succeed in holding back unpleasant thoughts?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20</td>
<td>How well do you succeed in passing a test?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21</td>
<td>How well do you succeed in not worrying about things that might happen?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

*items loading on academic self-efficacy subscale