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A Longitudinal Investigation of Stress, Complete Mental Health, and Social Support among High School Students

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A Longitudinal Investigation of Stress, Complete Mental Health, and Social Support
among High School Students

by

Ashley M. Chappel

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
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Dedication

I would like to dedicate this dissertation to my supportive and loving family. To my parents and sisters, who consistently express their pride for my accomplishments, their laughter in times of need, and remind me of what can be accomplished through hard work and diligence. To my best friend, Melanie, who has become more than a cohort member throughout the past five years. Her guidance, support, motivation, and friendship throughout this experience have been invaluable. Lastly, to my fiancé Cameron, whose hard work inspires me daily to continue to excel, and who fills my life with laughter and love, giving me confidence and balance.

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Abstract

Examinations of stress in relation to adolescent mental health have not often utilized a comprehensive definition of psychological functioning. Recent literature has found support for the importance of examining optimal psychological functioning as the presence of high life satisfaction in addition to low psychopathology (Antamarian, Huebner, Hills, & Valois, 2011; Suldo & Shaffer, 2008). Most research on stress has focused on either major stressful events or chronic environmental stressors; further research is needed on the psychological model of stress, which conceptualizes stress as involving both environmental events and one's cognitive appraisals of the stressor. The current longitudinal study determined how multiple types of stress (accumulation of stressful life events, chronic stressors in social relationships, global perceived stress level) are associated with mental health (i.e., psychopathology and life satisfaction) over a one year period. Additionally, this study explored whether perceptions of social support from various sources (i.e., parents, classmates, teachers) act as a protective factor in the relationship between stress and later mental health outcomes. Data collection for Time 1 occurred in the Fall 2010, and was part of a larger on-going research project involving 500 students from grade 9 – 11. Time 2 data collection occurred during the Fall of 2011 and included 425 of those students, now in grades 10-12. Analyses included multiple regression to examine both the overall contribution of stress on mental health outcomes (life satisfaction, internalizing psychopathology, externalizing psychopathology) as well as the unique contributions of various types of stress. Additional regression analyses

explored whether social support from various sources acts as a buffer for students that experience stress from later increases in psychopathology or declines in life satisfaction. Results revealed that the combination of Time 1 mental health variables and all forms of initial stress accounted for the most amount of variance (45%) in Time 2 internalizing problems and the least amount of variance in Time 2 externalizing problems (13%). In all cases, the largest predictor of Time 2 mental health was initial levels of mental health. The only stressor that appeared as a unique predictor of Time 2 mental health was stress in the student-teacher relationship, which accounted for a significant amount of variance in Time 2 externalizing problems. Further regression analyses found that parent and peer support were critical in predicting later mental health (i.e., exerted main effects). These analyses identified trends in the data in which parent and teacher support acted as buffers in the relationships between some forms of stress and later mental health. Implications for school psychologists and future directions for research are discussed.

Chapter 1

Introduction

Statement of the Problem

Frameworks of what constitutes stress vary in their focus on primarily environmental stressors, cognitive appraisals of stress, or the interaction between the experiences of environmental stressors and one's appraisals of stress. The emphasis on the relationship between environmental events or conditions and an individual's cognitive appraisal of the event is also known as the Psychological Model (Lazarus & Folkman, 1984). Most studies of stress within adolescents have ignored the cognitive component (i.e., subjective assessment of stress) and focused mainly on the environmental conditions, known as objective stressors (Grant, Compas, Stuhlmacher, Thurm, McMahon, & Halper, 2003). In late childhood and early adolescence, the cognitive perception of stress interacts with stressful events to predict adverse outcomes (Turner & Cole, 1994), highlighting the importance of considering not only the experience of stressors (i.e., objective stressful events or chronic stressors), but adolescents' perceptions of these occurrences. The current study utilized a comprehensive definition of stress by incorporating both objective measures of stressors and subjective appraisals of distress.

Literature on stress has elucidated several environmental factors that cause stress within the developmental period of adolescence and in turn have been shown to lead to adverse outcomes in youth. These factors include but are not limited to major life events and chronic stress within social relationships. Specific social relationships that are

particularly relevant to adolescents include parent-child relationships, peer relationships, and teacher-student relationships.

Research on adolescent development has explored how stress impacts one salient factor of development, psychological functioning, or mental health. Adolescents' psychological functioning is a major concern to educators in part due to its associations with academic achievement (Duchesne, Vitaro, Larose, & Tremblay, 2008; Fergusson & Woodward, 2002; Suldo & Shaffer, 2008). Most research examining associations between stress and adolescent mental health has primarily focused on negative indicators of mental health, namely forms of psychopathology. However, in recent years, researchers have called for an increased focus on the study of psychological wellness (Diener, 2005). This paradigm shift that focuses on examining indicators of optimal functioning and prevention is referred to as positive psychology. One such indicator of optimal functioning is subjective well-being (SWB), coined as the scientific term for happiness. SWB can be defined as an individual's subjective assessment of his or her life and includes an emotional component (i.e., high levels of positive affect, low levels of negative affect), and a cognitive component (i.e., satisfaction with life; Gilman & Huebner, 2003). The current study focused on life satisfaction as it is largely stable over time, but also varies along with life circumstances (Park, 2004). Studies within the field of positive psychology have provided support for conceptualizing optimal psychological functioning as comprised of both positive and negative indicators, in that complete mental health (as determined by a dual factor model that considers high levels of SWB in tandem with the absence of psychopathology) better predicts students' academic, social,

and behavioral outcomes (Antaramian, Huebner, Hills, & Valois, 2011; Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008).

Although there is abundant research establishing links between stress and psychopathology in youth, especially environmental stressors such as major life events and chronic social stressors, less is known about how stress is associated with students' wellness. Only a handful of studies has examined an indicator of stress and its association with both positive and negative indicators of mental health. Studies have concluded that experiencing major life events (e.g., death of a family member, parental divorce) put adolescents at risk for concurrent and later psychopathology (Conger, Conger, Matthews & Elder, 1999; Morales & Guerra, 2006). Research also indicates an inverse relationship between stressful life events and wellness (Ash & Huebner, 2001; McCullough et al., 2000; Suh et al., 1996). In a study of major life events and comprehensive mental health (i.e., psychopathology and life satisfaction), major life events were more strongly linked to psychopathology than wellness; however correlations with both types of mental health indicators were significant (Suldo & Huebner, 2004).

Although conflict within social relationships can be a normal occurrence throughout adolescence, chronic conflict has been linked to negative academic, behavioral, and social-emotional outcomes. Regarding the parent-child relationship, studies have examined several aspects such as conflict, parenting style, and communication/connectedness. Although more is known on the links between parenting style and adolescent outcomes, extant research has indicated that parent-child conflict can lead to increased internalizing and externalizing problems in adolescents (Klahr et. al., 2010; Silk, Morris, Kanaya, & Steinberg, 2003). The few studies that have examined

parent-child conflict and wellness in youth indicate that conflict is concurrently associated with lower levels of happiness, and conflict (particularly with fathers) predicts later life satisfaction in youth (Shek, 1998; Wong et al., 2010).

Characteristics of peer interactions that contribute to conflict include peer rejection and aggression. Many cross-sectional and longitudinal studies have established that victimized youth, and those who experience both relational and overt aggression, are more likely to suffer from internalizing and externalizing problems than non-victimized youth (Bosacki, Dane, & Marini, 2007; Reijntjes, 2010). Although the number of studies from a positive psychology perspective typically pale in comparison to research on mental illness, several studies to date indicate that bully-victims report lower life satisfaction than non-victims (Flaspohler, Elfstrom, Vanderzee, & Sink, 2009; You, Furlong, Felix, Sharkey, & Tanigawa, 2008). When comparing overt and relational victimization, cross-sectional research suggests that overt aggression is a stronger predictor of lower life satisfaction (Martin & Huebner, 2007). However, the only relevant longitudinal study conducted to date found victimization was *not* a predictor of middle school students' later life satisfaction (Martin, Huebner, & Valois, 2008).

Several characteristics of teacher-student relationships have been investigated in relation to youth outcomes, but the majority of this literature has focused on elementary and middle school students. In regards to teacher-student conflict, the few existing cross-sectional studies have found an association between stressful teacher-student relationships and mental health problems (i.e., delinquency, depression, anxiety, and conduct problems), with the strongest association with conduct problems (Baker, Grant, & Morlock, 2008; Murray & Greenberg, 2001). Longitudinal research has linked high

reports of teacher-student conflict to risky behavior in later grades (Essex, Armstrong, Burk, Goldsmith, & Boyce, 2011). Most literature on wellness and teacher-student relationships has focused primarily on social support from teachers, with only one study examining characteristics of the relationship. Results indicated that teacher-student relationships characterized by communication and trust were related to higher concurrent levels of life satisfaction, whereas alienation was inversely associated with life satisfaction (Murray & Zvoch, 2011). When exploring associations between relationship quality and both psychopathology and wellness, the teacher-student relationship significantly predicted all indicators of mental health, with the strongest prediction of depressive symptoms among young adolescents (Murray & Zvoch, 2011).

As stated previously, few studies have examined the more subjective indicator of stress, known as perceived stress, and its link with mental health outcomes. The existing studies have found links between perceived stress and externalizing behaviors such as anger (Carlozzi et al., 2010), and internalizing problems such as anxiety, somatic complaints, and depression (Moeini et al., 2008). Regarding adolescent wellness, perceived stress has yielded inverse associations with life satisfaction and happiness (Alleyne, Alleyne, & Greenidge, 2010; Schiffrin & Nelson, 2010; Yarcheski, Mahon, Yarcheski, & Hanks, 2010). The one study that examined perceived stress in relation to comprehensive mental health revealed significant negative relationships between stress and life satisfaction, and positive associations with mental health problems (i.e., internalizing and externalizing problems; Suldo, Shaunessy, & Hardesty, 2008).

A comprehensive study is needed that explores how stress, including both environmental stressors and perceived stress, influences students' mental health, as

defined within the positive psychology literature as including both indicators of psychopathology and wellness, known as the dual factor model. Much of the literature examining stress and comprehensive mental health is limited to cross-sectional research and has not explored relationships over time. Also, no known studies have conceptualized stress as aligned with the psychological model by including measures of discrete stressful events, chronic conflict in social relationships, and perceived stress. The current study aimed to fill these gaps in the literature by comprehensively examining the associations between stress and mental health in students over a one year period.

As important as it is to fully understand this link between stress and mental health outcomes in youth, it is also critical to identify factors that protect individuals from developing the most deleterious outcomes associated with stress (Seligman, 2005). Several studies have advanced social support as a protective factor for adverse outcomes among individuals faced with varying types of stress, in part because social support can be an interpersonal resource that aids in coping. The current study aimed to investigate whether certain sources of social support (i.e., parents, classmates, teachers) serve as a protective factor in relation to later mental health problems or low life satisfaction, in line with previous research indicating social support acts as a buffer from adverse outcomes in youth experiencing both chronic and acute stressors (Stadler, 2010; Yang et al., 2010).

Purpose of the Current Study

The purpose of the current study was to gain further insight into the relationships between stress and adolescents' mental health, as consisting of internalizing psychopathology, externalizing psychopathology, and global life satisfaction. Specifically, this study aimed to provide further information on the residual effects of

stress, as defined in accordance with the psychological model of stress, on adolescents' later mental health. Finally, this study intended to determine if social support from various sources is a protective factor for adverse outcomes of youth experiencing stress. To date, no studies have investigated the relationship between stress and mental health comprehensively. By providing further information on which types of stress are more strongly related to mental health outcomes, and identifying potential protective factors, educators can gain further insight into which students are at risk in order to facilitate early prevention and intervention efforts.

The research questions this study aimed to answer are as follows:

1. Which sources of stress are most strongly and uniquely linked to later mental health (conceptualized as psychopathology and life satisfaction) in youth:
 - a. Major discrete stressful life events
 - b. Chronic stressors, pertinent to:
 - i. Peer victimization
 - ii. Teacher-student conflict
 - iii. Parent-child conflict
 - c. Global perceived distress?
2. Do any of the following sources of social support protect students who experience various types of stress (as defined in question 1) from later mental health problems or low life satisfaction:
 - a. Parental support
 - b. Teacher support
 - c. Classmate support?

Definition of Key Terms

Major life events. This type of stress includes the accumulation of major events experienced in one's life, such as the death of a family member, the loss of a job, change in schools, move to a new neighborhood, and divorce, during a specified period of time.

Chronic stress. As compared to acute events that have a finite beginning and end (i.e., major life events), this type of environmental stress involves ongoing strain in various contexts. In the current study, chronic stress was examined in three areas: parent-child relationships, peer relationships, and teacher-student relationships. Chronic stressors were indicated by characteristics related to conflict and negative quality relationships within parent-child and teacher-student relationships. Chronic stress within the peer relationship was defined as experiences of overt and relational victimization.

Perceived stress. This type of stress reflects perceptions of cognitive distress, specifically feelings that one is unable to meet life demands given one's available internal and external resources. The current study assessed such subjective appraisals of global stress, termed perceived stress.

Psychopathology. Emotional and behavioral problems in youth are typically described across two broadband syndromes: internalizing and externalizing problems (Merrell, 2008). In general, youth with internalizing problems (e.g., depression, anxiety, somatic complaints) typically deal with their troubles by turning inward, while youth with externalizing problems (e.g., aggressive behavior, conduct problems) typically act out and direct frustration onto others or their environment. In line with the notion that youth are the most accurate reporters of their internal distress while often being unaware of the extent to which they bother others, the current study utilized students' self-report to

index internalizing symptoms of psychopathology and teachers' reports to assess symptoms of externalizing problems. Elevated scores on nationally standardized inventories of mental health problems indicated high psychopathology.

Life satisfaction. Life satisfaction is the cognitive component of subjective well-being (SWB), the scientific term for happiness. Life satisfaction refers to one's global evaluation of the quality of his or her life, determined by the unique set of standards an individual has constructed for him or herself (Diener & Diener, 1996). The current study utilized students' overall assessment of their happiness, which is considered a global assessment of life satisfaction.

Social support. Tardy's (1985) model advances social support as a multidimensional construct that involves perceptions of support in four domains: emotional support, instrumental support, informational support, and appraisal support. The current study investigated adolescents' total perceptions of social support in these domains from each of three sources: parents, classmates, and teachers.

Moderator. A moderator is a variable that affects the strength and/or the direction of the relationship between an independent variable and a dependent variable (Baron & Kenny, 1986). In the current study, it was hypothesized that social support would be a protective factor by impacting the relationship between stress and mental health outcomes. For instance, students that experienced stress but also perceived higher levels of social support would have better mental health outcomes than students who experienced stress but also perceived lower levels of social support.

Contributions to the Literature

The current study aimed to augment the available knowledge on the associations between stress and adolescents' complete mental health, as indicated by both psychopathology and life satisfaction. This was the first known study to investigate stress comprehensively in accordance with the psychological model of stress. The handful of studies that have explored the relation between an indicator of stress and adolescents' complete mental health have all been cross-sectional in design and primarily examined middle school students. This study intended to add to the literature by investigating stress among high school students utilizing a longitudinal design in order to provide further understanding of how stress (i.e., discrete stressful events, chronic stress in social relationships, and perceived stress) affects later mental health outcomes in an older adolescent sample. It is important to focus on high school students given the unique developmental context (i.e., preparing for graduation, peer relationships become increasingly salient, preparation to become contributing members of society). Further, this study aimed to contribute to the literature by determining which sources of social support serves as protective factors against adverse mental health outcomes among students that experience stress. Understanding how stress affects students' life satisfaction, and whether social support from various sources buffers against low reports of happiness, is critical in light of the growing body of research that links student wellness and complete mental health with academic and social-emotional benefits (Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008; Suldo, Thalji, & Ferron, 2011; Suldo, Thalji, Frey, McMahan, Chappel., & Fefer, 2011). Understanding the relationships

between these constructs helps educators to identify students in need of more support in an effort to prevent later mental health problems or lower happiness.

Chapter 2

Review of the Literature

This chapter reviews definitions of mental health, including the progression within research and practice to a more comprehensive view of mental health that includes not only psychopathology and illness but also wellness. First, traditional models of mental health are discussed, followed by a more modern view of mental health that is outlined under an area of recent research termed “positive psychology”. Models that incorporate both traditional approaches of mental health as well as positive indicators of mental health into one comprehensive model are outlined. Thereafter, a framework that conceptualizes stress as consisting of events, stressors, and cognitive evaluations of perceived stress is delineated. Next relationships between illness and wellness, and stress are explored. Finally, a discussion of social support and how it is associated with the relationship between mental health and stress in youth is provided.

Traditional Approaches to Mental Health

Traditionally, mental health has focused on the presence or absence of psychopathology as a way to diagnose individuals. *The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR; American Psychiatric Association, 2000) is commonly used by practitioners to diagnose individuals with disorders based on the presence of specific symptoms. The first DSM was based on the medical model which viewed behavioral and emotional problems as “mental disease.” Although recent revisions have utilized a multi-axial approach, the focus is still primarily

on the presence of illness and problems within social relationships and the environment (American Psychiatric Association, 2000).

An alternative approach to classification referred to as the behavioral dimensions approach focuses on the assessment of behavioral clusters. Within this paradigm, psychopathology is often conceptualized within two broad categories of emotional and behavior problems: externalizing problems (e.g., aggression, rule breaking behavior) and internalizing problems (e.g., anxiety, depression; Merrell, 2008). Externalizing problems are considered to be the result of under-controlled behaviors or emotions that are typically expressed outward towards others, while internalizing problems are over-controlled behaviors and emotions that typically develop and are maintained within an individual (Merrell, 2008).

The two aforementioned classification systems most commonly used within the field of psychology primarily focus on the assessment and intervention of pathological symptoms and neglect positive factors such as personal strengths that can lead to the prevention and treatment of mental illness (Seligman, 2005). These problem-focused systems also preclude assessing and thus fostering wellness among individuals without pathology, but who desire improvement and growth. In the following section, more modern conceptualizations of mental health that focus not only on the absence of pathology, but the presence of psychological wellness, are presented.

Modern Approaches to Defining Mental Health

In recent years, researchers have called for an increased focus on the study of psychological wellness. Psychological wellness can be defined as a comprehensive state that not only includes an absence of psychopathology but also the presence of

individuals' strengths and subjective experiences of happiness (Huebner, Gilman, & Suldo, 2007). The paradigm shift in the field of psychology that calls for a focus on examining indicators of optimal functioning and prevention is referred to as positive psychology. In the field of positive psychology, several constructs are purported to be indicators of one's quality of life. These constructs represent one's subjective opinion of one's past (i.e. well-being and satisfaction), present (i.e., flow, joy, happiness), and future (i.e., optimism, hope, faith; Seligman, 2005).

Subjective well-being. One specific construct that has been studied within the positive psychology realm is subjective well-being (SWB), coined as the scientific term for happiness. SWB is defined as an individual's subjective assessment of his or her life and includes an emotional component (i.e., high levels of positive affect, low levels of negative affect), and a cognitive component (i.e., satisfaction with life; Diener, Lucas, & Oishi, 2005). Affect and satisfaction, although related, are considered to be separate indicators of happiness due to differences in stability over time. The affective component which is comprised of the frequency of positive emotions such as excitement and delight, and negative emotions such as disgust and gloom, is considered to fluctuate more frequently and be less stable over time (Diener et al., 2005). Life satisfaction is considered to be more stable over time; however, it is also sensitive enough to be affected by changes in life circumstances. Gilman and Handwerk (2001) found that both global and domain-specific life satisfaction fluctuated as a result of life experiences, decreasing in response to stress and increasing due to positive experiences, such as improved social interactions and academic success. While people react to experiences which results in

fluctuations in SWB, people have been shown to be resilient and adapt, returning to their “set point” of happiness (Diener, 2000).

Positive and negative affect. The affective component of SWB is comprised of both positive and negative moods and emotions. The *frequency* of positive and negative emotions is more strongly linked to wellness than the *intensity* of those feelings (Diener, Sandvik, & Pavot, 2009). Affect is considered to be more transient and affected by daily events and experiences when compared to life satisfaction, which is considered more stable (Diener et al., 2005). Studies examining affect longitudinally have found mixed results. An international study by Diener and Suh (1998) found declines in pleasant affect across age cohorts, while negative affect showed little change. The examination of affect among students in grades 8-10 for one year also found declines in positive affect over time, with negative affect remaining stable (Weinstein, Mermelstein, Hankin, Hedeker, & Flay, 2007). Contrastingly, more recent studies have found positive affect to be relatively stable over the life-span, while negative affect declined across the life-span (Charles, Reynolds, & Gatz, 2001; Windsor & Anstey, 2010).

In regards to how emotions relate to functioning, literature has built on the broaden-and-build theory postulated by Fredrickson (1998). This theory describes how positive emotions can broaden one’s thoughts and behaviors to facilitate adaptation and future well-being (Fredrickson, 1998). Experiencing positive emotions can be considered a personal resource that can help individuals face and respond to challenges in the future (Fredrickson & Joiner, 2002). Although negative emotions may be adaptive in threatening situations, experiencing high levels of negative emotions can reduce learning and adaptation (Reschly, Huebner, Appleton, & Antaramian, 2008).

Correlates of youth affect. A review of the literature yields only a few studies examining affect in youth. Existing research indicates that positive affect is associated with favorable outcomes (Lewis, Huebner, Reschly, & Valois, 2009; Lyumbormirsky, King, & Diener, 2005; Reschly et al., 2008). Frequent positive emotions are associated with stronger social relationships, problem-solving skills, creativity, adaptive coping, and job satisfaction in adulthood (Lyumbormirsky et al., 2005). In a study of the relationships between affect and student engagement and coping among students in grades 7 through 10, positive affect was significantly related to student engagement (i.e., control and relevance of school work, extrinsic motivation, future aspirations and goals, peer support for learning) and coping (i.e., seeking social support and self-reliance/problem-solving). In contrast, negative affect was inversely associated with engagement and unrelated to coping (Reschly et al., 2008). Among middle school students, negative affect is linked to higher levels of physical and relational aggression (Martin & Huebner, 2007). In general, the few studies examining mood and emotions with youth samples indicate that experiencing frequent positive emotions is associated with more desirable functioning in academic, social, emotional, and behavioral domains. Contrastingly, experiencing frequent negative emotions is related to social problems and low academic engagement.

Life satisfaction. Life satisfaction has been defined as a “cognitive judgmental process in which individuals assess the quality of their lives on the basis of their own unique criteria” (Pavot & Diener, 1993, p. 164). One’s cognitive appraisals can be measured globally (i.e., “My life is going well”) or within specific domains of life (i.e., family, friends). As indicated in the definition, each individual differs on the standards used to rate his or her satisfaction with life, therefore global ratings are most often used in

research. The assessment of specific domains (e.g., school, family) can be more closely tied to certain experiences, which provide additional information than reports of global life satisfaction (Suldo, Huebner, Friedrich, & Gilman, 2008). Studies have found a strong relationship between one's global life satisfaction and satisfaction with specific domains of life (Seligson, Huebner, & Valois, 2003). Several global and domain-specific assessments have been developed specifically for use with youth. An example of a global life satisfaction measure that has been found to be reliable and valid and used frequently in published research is the Students' Life Satisfaction Scale (SLSS; Huebner, 1991).

Correlates of youth life satisfaction. A growing body of research has elucidated specific individual difference variables and environmental factors associated with youth life satisfaction. One such individual characteristic is self-efficacy or self-worth. Students with positive evaluations of their self (Huebner, Gilman, & Laughlin, 1999) or perceive competence in social and academic abilities report elevated life satisfaction (Suldo & Shaffer, 2007). For instance, academic self-efficacy is strongly correlated with current global life satisfaction, as well as predictive of later life satisfaction (among a sample of Chinese students; Leung, McBride-Chang, & Lai, 2004).

Other internal correlates of life satisfaction in youth include optimism, holding high personal standards, and adaptive coping strategies. In a sample of adolescents from the Southeastern United States, having high personal standards was related to high satisfaction across several domains of life, when compared to students with lower personal standards (Gilman, Ashby, Sverko, Florell, & Varjas, 2005). Furthermore, students with adaptive coping strategies (i.e., seeking social support during times of stress) report higher life satisfaction when compared to students that utilize anger and

avoidance coping styles (Suldo, Shaunessy, & Hardesty, 2008). In this sample of high-achieving high school students, coping strategies accounted for one-third of the variance in global life satisfaction.

Life satisfaction is also linked to school performance and behavior (i.e., risky behaviors, social functioning). In a comprehensive study of six through twelfth grade students in the Southeastern United States, adolescents reporting the highest life satisfaction were those with the highest grade point averages (GPA), most positive attitudes towards school, and most positive social relations (Gilman & Huebner, 2006). Life satisfaction is repeatedly linked to adaptive social functioning, including greater social support from adults and peers, and positive relations with parents (Shek, 1997; Suldo, et. al., 2009; Suldo & Huebner, 2006; Suldo & Shaffer, 2008). Regarding the relationship between life satisfaction and school functioning, middle school students with the highest SWB had higher GPAs (including one year later) and better scores on standardized achievement tests when compared to students with lower SWB (Suldo & Shaffer, 2008; Suldo, Thalji, & Ferron, 2011).

Low life satisfaction is linked to problematic behaviors and emotions. For instance, adolescents who report low levels of life satisfaction also have more behavioral incidents in school (e.g., negative peer interactions), worse school attendance, and increased risk-taking behaviors. Low life satisfaction has also been linked to violent, delinquent, and risky behaviors among high school students, such as early sexual intercourse, lack of contraception use, physical abuse by/of a sexual partner, cheating on tests, fighting in school, skipping class, alcohol use, and bringing drugs/alcohol to school (Suldo & Shaffer, 2008; Valois et al., 2002). Among middle school students, carrying a

gun or weapon, and physically fighting peers was associated with low life satisfaction (Valois, Paxton, Zullig, & Huebner, 2006). In addition to these externalizing behavior problems, Huebner and colleagues (2000) found significant negative correlations between life satisfaction and several forms of internalizing psychopathology, including depression, anxiety, social stress, and atypicality (e.g., socially unacceptable behaviors, such as seeming out of touch with reality). Other research suggests high life satisfaction serves as a buffer against pathology, specifically depression and anxiety (Huebner & Gilman, 2006). Overall, research has indicated the importance of life satisfaction to children and adolescents' social-emotional functioning and academic success. Given the relatively large body of literature supporting the salience of life satisfaction to youth functioning, and the greater stability of this construct across time, the current longitudinal study proposes to focus on life satisfaction as the indicator of subjective well-being.

Models of Mental Health that Incorporate Psychopathology and SWB

Literature within the field of positive psychology has provided support for conceptualizing optimal psychological functioning as comprised of both positive and negative indicators, instead of viewing psychopathology and wellness as opposite ends of a continuum (Antaramian, Huebner, Hills, & Valois, 2011; Eklund, Dowdy, Jones, & Furlong, 2011; Greenspoon & Saklofske, 2001; Keyes, 2002, 2006; Suldo & Shaffer, 2008). In the following section two models will be described. The model advanced by Keyes (2002, 2006) is outlined first, followed by studies examining the dual-factor model. In Keyes' model (2002), mental health is operationalized as "a syndrome of symptoms of positive feelings and positive functioning in life" (p. 207) as well as the absence of symptoms that meet criteria for major depressive episode based on the DSM-

III-R (American Psychiatric Association, 1987). The dual-factor model examines both positive (i.e., SWB) and negative (i.e., internalizing and externalizing symptoms) indicators of mental health, and conceptualizes optimal functioning or complete mental health as the presence of wellness *and* the absence of psychopathology.

Optimal mental health as flourishing. In a seminal study by Keyes (2002), he categorized adults' mental health into four distinct categories: flourishing, languishing, moderate mental health, and mental illness. Mental health was defined as a syndrome that exists when a specific level of emotional, social, and psychological well-being is met, as well as the presence of positive functioning in life. In this study, 3,032 adults ages 24 to 72 completed scales representing the three areas of well-being, as well as mental illness (i.e., depression). Emotional well-being was measured by the frequency (i.e., ranging from "all" to "none of the time") of positive affect symptoms (i.e., cheerful, in good spirits, extremely happy, calm and peaceful, satisfied, full of life) in the past 30 days. Participants reported on their psychological well-being by indicating how much they were thriving within specific domains of their personal life (i.e., self-acceptance, positive interpersonal relationships, personal growth, feeling of purpose in one's life, ability to manage responsibilities, and ability to influence others) ranging from "poor" to "excellent." As a last indicator of well-being, participants reported on the extent to which they were thriving in their social life (i.e., social acceptance, social actualization, social contribution, social coherence, social integration). Mental illness was measured through the Composite International Interview Short Form (CIDI-SF; Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998), which assessed symptoms of major depressive episode during that past 12 months. Individuals categorized as "flourishing" had

complete mental health, as defined as high levels on one of the two emotional well-being scales and high levels on 6 of the 11 positive psychological well-being scales. Adults with low levels on one of the two emotional well-being scales, and low levels on 6 of the 11 scales of positive functioning were categorized as “languishing”. “Moderate mental health” consisted of a group functioning in between languishing and flourishing on 7 out of the 13 well-being scales. Finally, participants were categorized as having mental illness based upon their responses to the CIDI-SF and meeting criteria for having major depressive episode. Of the 3,032 adults, 12.1% were categorized as languishing, 17.2% flourishing, 56.6% moderate mental health, and 14.1% mental illness.

Keyes (2002) concluded that “compared with flourishing adults, moderately well adults were about 2.1 times more likely to have had major depression during the past year, while languishing adults were 5.7 times more likely” (Keyes, 2002; p. 213). This study found that languishing is associated with poor outcomes at levels comparable to an episode of full depression, highlighting the importance of the inclusions of positive indicators into the definition of mental health. This seminal study suggests the treatment of mental illness alone will not necessarily make adults mentally healthy. More recent research testing comprehensive models of mental health within youth are described next.

Keyes (2006) extended his work on flourishing and languishing by exploring its applicability among adolescents. A sample of 1,234 adolescents between the ages of 12 and 18 reported on a measure SWB (i.e., 12 items adapted from the Midlife in the United States study; Keyes & Magyar-Moe, 2003) that assessed adolescents’ emotional, social, and psychological well-being. Emotional well-being was assessed by the frequency of feeling happy, interested in life, and satisfied, within the past month. Four dimensions

(environmental mastery, positive relations with others, personal growth, and autonomy) constituted the psychological well-being measure. The five dimensions of social well-being include social contribution, social integration, social actualization, social acceptance, and social coherence. A shortened version of the Child Depression Inventory (CDI; Kovacs, 1992) was used to assess depressive symptoms, and single items were used to assess conduct problems (i.e., skipping school, being arrested, and drug use). Psychosocial functioning was measured via the Global Self-Concept Scale (Marsh, 1990), a six-item measure of self-efficacy and the amount of time that youth feel good about themselves.

Adolescents were categorized into three categories (flourishing, languishing, and moderate mental health), based on the results of the assessments, using the same methods used with aforementioned study of adults (see Keyes, 2002). Results revealed differences in group membership based on age, with the majority of 12 to 14 year olds categorized as flourishing (i.e., 48.8%) and the majority of 15 to 18 year olds classified as moderate mental health (i.e., 54.5%). Membership within the languishing group was similar between the 12 to 14 year old group and the 15 to 18 year old group (6% and 5.6% respectively). In regard to functioning, adolescents categorized as languishing reported 2.7 times as many depressive symptoms as the moderate mental health group and 7.4 times more than the flourishing group. Additionally, conduct problems were more prevalent within the languishing group than the other two groups, and more prevalent in the moderate mental health group (with the exception of use of inhalants) when compared to the flourishing group. Furthermore, flourishing adolescents reported better psychosocial functioning (i.e., feeling good about oneself, feeling close to others, self-

determination) when compared to the other two groups. These results extend Keyes' research with adults (including recent research on college students; Robitschek & Keyes, 2009). Taken together, Keyes' research findings demonstrate that flourishing within three domains (emotional, psychological, and social wellness) is associated with better functioning in several areas of life, which support goals to improve mental health beyond a simple absence of psychopathological symptoms.

Optimal mental health as low psychopathology and high subjective well-being. Rather than conceptualizing psychopathology as an outcome/criterion associated with different levels of wellness, other researchers have viewed youth mental health as consisting of concurrent levels of wellness (specifically, SWB) and psychopathology (specifically, internalizing and externalizing symptoms of mental health problems). Greenspoon and Saklofske (2001) were the first to test the existence and utility of this “dual factor” (i.e., SWB *and* psychopathology) model of mental health among children. This study investigated both wellness and mental illness with a particular interest in identifying individuals that could be categorized into two distinct groups, those with low levels of pathology and SWB, and those with high levels of both pathology and SWB. These individuals do not fit into the unidimensional view of mental health, which primarily focuses on individuals with high pathology and low SWB or those with low pathology and high SWB. A total of 407 Canadian students in grades three through six, completed measures of life satisfaction (i.e., Multidimensional Students' Life Satisfaction Scale; MSLSS; Huebner, 1994) and psychopathology (i.e., Behavior Assessment System for Children [BASC], Reynolds & Kamphaus, 1992). Additionally, participants filled out measures of personality, interpersonal relationships, self-concept, locus of control, and

temperament. Analyses revealed four distinct groups of students: well-adjusted (high SWB, low pathology), distressed (low SWB and high pathology), dissatisfied (low SWB, low pathology), and externally maladjusted (high SWB, high pathology). Distressed youth had worse social skills than externally maladjusted youth, a finding that provides support for the protective influence of having high life satisfaction, at least within the social domain. Furthermore, students in the dissatisfied group had poorer functioning in six of the eight outcomes (e.g., locus of control, self-worth, scholastic competence) when compared to students in the well-adjusted group, underscoring the importance of high SWB even among students who lack mental health problems. This study provided initial empirical support for the notion that assessing both positive and negative indicators of psychological functioning provides a more comprehensive view of youth mental health.

Suldo and Shaffer (2008) extended support for the dual factor model of mental health to early adolescents. A total of 350 middle school students in grades six through eight completed the SLSS, along with measures of their affect via the Positive and Negative Affect Scale-Children (PANAS-C, Laurent et al., 1999) and their internalizing problems via the Youth-Self-Report Form of the Child Behavior Checklist (YSR; Achenbach & Rescorla, 2001). Externalizing problems were measured by teacher report on the Teacher Report Form of the Child Behavior Checklist (TRF; Achenbach & Rescorla, 2001). Participants also reported on their social functioning, attitudes towards schools, and physical health. School records provided information on students' academic functioning (i.e., GPA, performance on state standardized tests, attendance). Of the total sample, 57% were considered to have complete mental health (high SWB and low psychopathology), 13% were vulnerable (low SWB and psychopathology), 13% were

classified symptomatic but content (high SWB and psychopathology), and 17% were considered troubled (low SWB and high psychopathology). Students in the complete mental health group had superior performance on standardized tests of reading skills, attendance, and physical health as compared to their vulnerable peers. Regarding attitudes towards school, students' with complete mental health also reported higher academic competence, valued school more, and self-regulated their academic behaviors more than students in the vulnerable group. Such findings highlight the importance of wellness, in that the absence of psychopathology does not lead to optimal functioning. Additionally, by comparing students' functioning in the symptomatic but content group to their peers in the troubled group, there was further support for the benefits of having high SWB. Students with both high SWB and psychopathology reported better physical health, more positive interpersonal relationships, and more social support from parents than students in the troubled group. This study extends the known benefits of complete mental health to include physical health, academic achievement, and academic behaviors linked to academic success.

A longitudinal follow-up (one year later) of this sample underscored the importance of the tandem of specific SWB and psychopathology levels to students' academic functioning (Suldo, Thalji, & Ferron, 2011). Specifically, students initially classified as troubled had the greatest declines in GPA when compared to adolescents without psychopathology. Importantly, changes in GPA of youth in the symptomatic but content group did not differ from changes in GPA of youth with low psychopathology. This suggests that having high SWB may protect youth from declines in GPA, regardless of high levels of psychopathology. Examining the outcomes of youth with complete

mental health revealed that these students had the best attendance, GPA, and standardized math scores one year later, highlighting the far-reaching benefits of having both high SWB and low psychopathology.

More recent studies have confirmed the existence of the aforementioned four categories yielded in a dual factor model of mental health, as well as extended this line of research by examining additional outcomes, such as multiple domains of school engagement, including behavioral engagement, emotional engagement (i.e., school satisfaction), and cognitive engagement (i.e., future aspirations of goals; Antaramian et. al., 2011). Findings from this study of middle school students included that students in the positive mental health group (67%; akin to complete mental health) had the highest levels of behavioral, emotional, and cognitive engagement, and symptomatic but content adolescents had higher engagement than youth in the troubled group (again supporting the protective nature of high SWB).

An extension of the dual-factor model of mental health to a college student population examined both maladaptive (e.g., locus of control, attention problems, hyperactivity, alcohol abuse) and adaptive indicators of functioning (i.e., hope, gratitude, grit; Eklund et. al., 2011). Findings revealed that well-adjusted college students (akin to having complete mental health) had the highest levels of hope, gratitude and grit, significantly exceeding the levels found among the two groups of individuals with low life satisfaction. This study underscored how positive indicators of functioning, such as hope and gratitude, are in abundance among individuals with optimal/complete mental health.

Taken together, research on the dual-factor model indicates that wellness and psychopathology are not just opposite ends of the continuum, but instead high (or low) levels of both constructs can exist in a given individual. Examining both positive and negative indicators in tandem provides a more comprehensive view of mental health and how it relates to youth emotional, social, academic, and behavioral functioning. Individuals with average to high levels of SWB, along with few symptoms of psychopathology, were consistently found to have optimal functioning. Additionally, SWB was found to protect youth from the worst functioning (especially within the social domain) that usually co-occurs with clinical levels of psychopathology. Future research should continue to examine mental health comprehensively by including indicators of both psychopathology and subjective well-being. The current study defined mental health in lines with the dual-factor model, instead of Keyes' model, given that more abundant research utilizing adolescent samples supports the existence of this model. Further, research on the dual-factor model has found support for more relevant outcomes to students, such as better attendance, GPA, school engagement, and standardized math scores one year later. Therefore, although the current study did not form groups of students based on mental health scores, it extends on previous research on the dual-factor model with adolescent samples by exploring stress in relation to both wellness and psychopathology.

The current study utilized such a comprehensive definition of mental health when examining a specific predictor of psychological functioning —stress— among high school students. Adolescence is a developmental period in which students are faced with many transitions and stressors. Research among adolescents has primarily focused on

how stress affects traditional pathology-focused indicators of mental health and neglects the importance of assessing how stress also affects indicators of wellness. Further understanding of how stress relates to both positive and negative indicators of mental health is warranted to clarify the extent of the influence of stress on youth psychological well-being. In the following sections, stress is defined, research on stress and mental health is summarized, and gaps in the literature are identified.

Defining Stress

This section describes the different sources and types of stress that have been researched in past literature. Stress has been defined in various ways, reflecting the fact that what is stressful to one person may not be stressful to another. Major models of stress differ in the extent to which they focus on environmental stressors in comparison to individuals' perceptions of the impact of such stressors as overwhelming or manageable. Stress can be quantified merely by accumulation of one's environmental circumstances, and/or by considering one's cognitive appraisal of those experiences (Lazarus & Folkman, 1984). The Psychological Model, highly influenced by Richard Lazarus, advances stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus & Folkman, 1984, p. 19). The emphasis on the relationship between environmental events or conditions and an individual's cognitive appraisal of the event is also known as the Transactional Perspective (Lazarus & Folkman, 1984).

Most studies of stress within adolescents have ignored the cognitive component (i.e., subjective measure of stress) and focused mainly on the environmental conditions, known as objective stressors (Grant, Compas, Stuhlmacher, Thurm, McMahon, & Halper,

2003). Within the environment, experiences can be categorized into normative and non-normative stressors, based on their frequency and severity (McNamara, 2000). Normative stressors consist of challenges that all adolescents face such as school transitions and navigating social relationships. Non-normative stressors represent unexpected demanding events such as parental divorce and family death. Depending on the frequency and severity, forms of stress can fall into either category. For example, navigating relationships with peers and parents can be considered a normative stressor; however, frequent negative social experiences or bullying can be considered a non-normative stressor, as it is something that not every adolescent encounters. Further classification of stress beyond normative and non-normative consists of major life events (i.e., acute incidences), chronic conditions (i.e., on-going experiences), and daily hassles (i.e., irritating minor events such as an argument with a sibling; McNamara, 2000). The current study will conceptualize stress comprehensively in line with the Psychological Model of stress, while also considering accumulation of environmental conditions. Thus, stress will be defined as major events, chronic conditions, and one's cognitive evaluations of stress. The following sections briefly define and describe these three components. Empirical links between stress and mental health are outlined in greater detail in the subsequent section.

Major life events. One type of stress that has been frequently examined in relation to its impact on child and adolescent psychopathology is major life events. Garber (2000) defines stressful life events as “circumstances characterized by either the lack or loss of a highly desirable and obtainable goal or the presence of a highly undesirable and inescapable event” (p. 475). Compas (2004) summarizes that “exposure

to stressful events and circumstances is a primary pathway through which distal risk factors exert effects on adolescent mental and physical health, including the generation of stressors in neighborhood, school, peer, and family environments” (p. 270). A total of 25% of adolescents will experience at least one significant major life event (Zimmer-Gembeck & Skinner, 2008). Additionally, stressful life events can create a cumulative effect as a result of multiple stressors occurring at the same time (Morales & Guerra, 2006). In most research examining stress in adolescents, stressful events were measured utilizing a checklist of items that researchers deem as “objective” environmental stressors (without consideration of the extent to which a youth perceived a given event as stressful).

Chronic stress. On-going chronic stressors tend to have stronger associations with adolescent outcomes than major life events (Ash & Huebner, 2001; McNamara, 2000). Chronic stressors can be categorized into either non-normative or normative stress. Examples of normative chronic stressors include developmental tasks such as puberty, navigating changes in autonomy, and social relationships. Stressors related to school such as concerns about grades, homework, and exams are also considered normative chronic stressors. As aforementioned, the frequency of problems within social relationships can become a non-normative chronic stressor if the social experience is atypical.

Normative developmental changes such as puberty effect adolescents’ mood, self-image, and relationship with parents. Variable hormone changes that occur early on in puberty have been shown to be related to adolescents’ mood with increases in irritability, impulsivity, aggression (in boys), and depression (in girls; Spear, 2000). Particularly for

Caucasian girls, puberty is also associated with lower self-image and body dissatisfaction (Rosenblum & Lewis, 1999). Puberty has been related to sustained increased distance and conflict between parents and adolescents, especially the mother (Ogletree, Jones, & Coyl, 2002). Puberty can affect the way a family interacts communicates. For example, as adolescence age, they may want to be more included in the decision-making process (Van Petegem et al., 2012). Negative effects of puberty are exacerbated by unique timing (i.e., early or late onset; Cota-Robles, Neiss, & Rower, 2002; Kim, Ge, Brody, Conger, Simmons, Gibbons, et. al., 2003). In sum, puberty can be a stressor that is experienced by adolescents that can affect their behavior and functioning in various ways.

Another potential source of normative stress during adolescence pertains to the educational environment and students' academic demands. Stress over grades, tests, and excessive homework can lead to adverse outcomes in youth (Lee & Larson, 2000; Lou & Chi, 2000).

Family conflict associated with strivings for responsibility and autonomy is another type of normative stressor for adolescents. Such growth causes a period of reorganization and role changes within the family, and can affect the way family members interact on a daily basis (Collin & Larson, 2004). Adolescents whose autonomy is hindered are at great risk for negative outcomes such as depression and behavioral problems (Collin & Larson, 2004). Increased autonomy is associated with separation from parents and development of more mature relationships with peers. The increased importance of peer relationships can cause arguments among family members and differing expectations about family obligations, salient sources of stress (Phinney & Ong, 2002).

Navigating peer relationships can also be considered a stressor. Peers act as a source of feedback and models for adolescents to try out different identities, and influence adolescents' self-image (Steinberg, 2005). Related normative stressors during adolescence include the transition from peer groups that consist primarily of the same sex to interacting with the opposite sex, and navigating romantic relationships. Rejection and problematic peer relationships can be great sources of stress, and can be considered more of non-normative chronic stressors.

Social stress. Chronic social stress (i.e., frequent conflict in social relationships involving family, peers, and/or teachers) is a primary focus of the current study.

Family relationships. The frequency of conflict between adolescents and parents typically increases (especially with mothers) during adolescence, however it may not necessarily impact the parent-child relationship (Arnett, 1999). Arguments between adolescents and parents are resolved through either submission or disengagement, with most arguments occurring over trivial topics (Arnett, 1999). Although most conflicts have few negative effects, chronic conflict that is unresolved or has a coercive pattern can lead to maladjustment (Smetana, 1996). High levels of parent-child conflict have been linked to poor achievement, antisocial behavior, and drug use (Barnes, Reifman, Farrell, & Dintcheff, 2000; Ingoldsby, Shaw, Winslow, Schonberg, Gilliom, & Criss, 2006). Conflict between children and parents does not always lead to maladjustment. Conflict that is moderate, negotiated, and managed to some degree can actually aid in adolescent functioning, such as development of social skills (Collins & Laursen, 2004).

Peer relationships. Specific characteristics of peer interactions that contribute to conflict include peer rejection and aggression (both overt/physical and relational forms of

aggression). Peer rejection has been associated with depression, low self-esteem, diminished social competence, social and academic withdrawal, behavior problems, and academic difficulties among adolescents (French & Concrad, 2001; Olweus, 2003). In addition to peer rejection, aggression from peers and bullying are also associated with negative outcomes. Overt aggression consists of physical or verbal aggression targeted towards rejected peers (Crick, 1996). Relational aggression is a separate form of aggression that can be defined as “aggression intended to harm other adolescents through deliberate manipulation of their social standing and social relationships” (Steinberg, 2005, p. 193). This form of aggression was first observed among girls; however, later research found that it affects both genders but girls may be more aware of and distressed by it (French, Jansen, & Pidada, 2002). Bullying is a form of aggression directed towards particular peers; this aggression involves a differential in social status (Espelage & Swearer, 2003). Students who are consistent victims of aggression and bullying are at increased risk for experiencing anxiety, depression, academic difficulties, decreased self-esteem, and suicidality (Hyman, Kay, Tabori, Weber, Mahon, & Cohen, 2006; Troop-Gordon & Ladd, 2005). In sum, peer victimization has been shown to lead to adverse outcomes for adolescents.

Teacher-student relationships. In a highly mobile society such as the United States, “teachers represent one of the last stable sources of nonparental role models for adolescents” (Eccles, 2004; p. 130). Student-teacher relationships may have increased impact on child and adolescent adjustment during certain developmental periods, such as transitions into elementary, middle, or high school (Cowan, Cowan, Ablow, Johnson, & Measelle, 2005). High quality student-teacher relationships are characterized by

closeness, mutual respect, caring, and warmth (Rudasill, Reio, Stipanovic, & Taylor, 2010). Contrastingly, negative student-teacher relationships are high in conflict, discord, anger, and frustration between teachers and students (Rudasill et al., 2010). A negative relationship with a teacher can adversely affect adolescents' perceptions of school climate and lead to adverse youth outcomes (Cowan et. al., 2005).

In sum, adolescents may experience several major events and chronic stressors, some normative (e.g., autonomy striving) and some non-normative (e.g., negative social relationships) that affect their functioning. Adolescence is an important developmental period, as it is associated with transitions and developmental changes that could cause stress but affect future outcomes into adulthood. Of note, although previous research has viewed adolescence as a time of storm and stress, more recent conceptualizations indicate that this is not inevitable and that most adolescents actually manage quite well, with minimal negative impact (Arnett, 1999). Understanding how stress is associated with adolescents' complete mental health is warranted in order to inform prevention and intervention strategies. An important factor in the impact of stressors involves adolescents' views of the stressors as overwhelming their resources and abilities to cope. In addition to the simple occurrence of an environmental stressor, how the stressor is perceived is a vital factor in how stress affects adolescents. The next section defines adolescents' perception of stress, or distress.

Perceived stress. Most examinations of stress in adolescents have ignored the cognitive appraisal component of the transactional model of stress, and have merely focused on the objective stressful experiences (Grant et al., 2003). In young children, certain stressors such as divorce have been linked to adverse outcomes regardless of

children's perception of the event (Field, 1994). In late childhood and early adolescence, cognitive processes begin to interact with stressful events in the prediction of symptoms (Turner & Cole, 1994). Therefore, it is important to consider not only the experience of stressors, but adolescents' perceptions of these occurrences. Few assessment instruments assess both major life events *and* perceptions of personal distress associated with each event. Measuring one's perception of stress may explain why some adolescents who experience stressful events also experience adverse outcomes, while others do not.

McNamara (2000) summarizes that perceived stress occurs when an external stressor (i.e., environmental event) causes both physiological reactions within the body (i.e., distress) and cognitive distress that exceeds the available external and internal resources of the individual that could act to negate the harmful effects of the stressor. Further, "the conceptualization of perceived stress allows for consideration that certain individuals may possess resources that allow them to experience external stress without experiencing compromised functioning" (Suldo, Shaunessy, & Hardesty, 2008, p. 274). In general, studies find that individuals who perceive high levels of stress are at risk for adverse outcomes (Martin, Kazarian, & Breiter, 1995; Segrin & Rynes, 2009).

In sum, there are several sources and types of stress that can be experienced by adolescents and can lead to negative outcomes. The following section reviews the empirical links between stress (i.e., major stressful events, chronic social stress, and perceived stress) and complete mental health (wellness and psychopathology) in order to highlight primary findings and identify the gaps within this body of research.

Relationships between Stress and Mental Health Outcomes

This section outlines the relationship between each source and type of stress, and youth psychological functioning. First, links between external stressors (i.e., major life events, stress related to social relationships) and mental health outcomes are described, followed by associations between subjective stress and mental health outcomes. Mental health outcomes include problems (psychopathology) and indicators of wellness (life satisfaction, affect, or subjective well-being composite). Of note, only four studies examined an indicator of mental health in relation to more than one type of stress (Ash & Huebner, 2001; McCullough, Huebner, Laughlin, 2000; Morales & Guerra, 2006; Wong, Chang, He, & Wu, 2010) and to date no studies have included measures of discrete events, chronic stressors, and perceived stress. The subsequent sections summarize the bivariate links between a type of stress and mental health, and report which types of stress have emerged as particularly associated with a given mental health outcome when the extant literature has afforded such comparisons.

Associations between major life events and psychopathology. Research has long since established a relationship between stressful life events and increased risk for emotional and behavioral problems (Aseltine, Gore, & Colten, 1994; Compas & Phares, 1991). Stressful events can lead to psychopathology regardless of the developmental stage in which the events occur (McNamara, 2000), and can create a cumulative effect as a result of multiple stressors occurring at the same time (Morales & Guerra, 2006). Several studies have established relationships between stressful life events and later mental health problems, using relatively sophisticated methods that control for initial mental health problems. For instance, McLaughlin and Hatzenbuehler (2009)

collected data from 1,065 adolescents (grades 6-8) at baseline (Time 1) and seven months later (Time 2). Students reported on negative life events (e.g., parental divorce, physical illness) via the Life Events Scale for Children (LES-C; Coddington, 1972). Internalizing psychopathology was assessed by the Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997). Results of a linear regression revealed that stressful life events at Time 1 significantly predicted anxiety symptoms at Time 2, after controlling for Time 1 anxiety symptoms ($\beta = .09, p < .01$). Similar results were found in another longitudinal study, in that reported stressful life events at Time 1 (mean age of 14), predicted internalizing ($\beta = .12, p < .01$) and externalizing ($\beta = .10, p < .01$) problems one year later, even after controlling for Time 1 symptoms (King & Chassin, 2008).

Morales and Guerra (2006) evaluated the cumulative effects of stressful events in three contexts (school, family, and neighborhood), as well as chronic stress in the school environment. This longitudinal study included a diverse sample of 2,745 students in 1st - 6th grades from economically disadvantaged communities. Stress in the school context was defined as peer rejection and peer victimization (as assessed by peer nominations) and school problems (e.g., getting into trouble with the teacher, worrying about grades). Student self-report on the School Problems Stress, Family Transitions, and Neighborhood Violence Stress subscales of Stressful Urban Life Events Scale (SULES; Attar, Guerra, & Tolan, 1994) assessed school problems, family stress, and neighborhood stress. Youth aggression and depression were measured by subscales on the CBCL-Teacher Report Form. Peer rejection and peer victimization exemplified chronic stress, and the SULES indexed stressful life events in multiple contexts (for example, items on the Family

Transitions scale include a family move and having a new baby in the family). The results revealed that stressors from all three contexts were associated with elevated levels of depression and aggression both at Time 1 and Time 2 (i.e., 2 years later). In addition, cumulative stress across all three contexts (i.e., school, neighborhood, and family) was associated with increased concurrent and later levels of psychopathology. When comparing chronic stress (i.e., peer rejection and peer victimization) and discrete stressful events, chronic stressors had stronger associations with concurrent and later mental health problems (Morales & Guerra, 2006). Although this study was one of the only investigations of two sources of stress (i.e., chronic and discrete stressful events) and pathology in youth, analyses consisted of simple correlations and did not control for Time 1 mental health problems when examining mental health problems at Time 2.

Taken together, research indicates that experiencing a higher number of stressful life events during adolescence is associated with greater concurrent and later psychopathology. Only recently have researchers extended this research by examining how stressful events link to positive indicators of mental health. Notably, a review of the literature yielded only one study that examined the links between stressful life events in relation to both positive and negative indicators of mental health, a study described in more detail below.

Associations between major life events and wellness. The growing literature base on associations between stressful life events and positive indicators of mental health supports an inverse relationship (Headey, 2008; Headey, 2010; Lucas, 2007; Suh, Diener, & Fujita, 1996; Suldo & Huebner, 2004). All but one study are cross-sectional in design. A few such studies have incorporated two sources of stress, specifically examining the

influence of both discrete stressful events along with chronic stressors (Ash & Huebner, 2001; McCullough, Huebner, & Laughlin, 2000). McCullough, Huebner, and Laughlin (2000) examined life satisfaction in relation to stressful life events. A cross-sectional sample of 92 students in high school completed the Adolescent Perceived Events Scale (APES; Compas, Davis, Forsythe, & Wagner, 1987) to assess experiences of positive events, negative events, daily events, and major events; life satisfaction was measured by the SLSS. Correlational analyses revealed that positive *major* events and negative *major* events were significantly related to life satisfaction ($r = .30$ and $-.22$, respectively). Experiencing negative *daily* events was also significantly related to life satisfaction ($r = -.34$), with chronic stress having a stronger association with life satisfaction than major events, when looking at the impact of negative experiences, whether chronic or discrete, according to correlational analyses. Ash and Huebner (2001) also conducted a cross-sectional study to examine youth life satisfaction in relation to major life events that are acute, such as the death of a family member, as well as chronic stressors, such as negative social relationships, using a sample of 152 adolescents in grades 9-12. Participants completed the SLSS and the Life Stressors and Social Resources Inventory-Youth Form (LISRES-Y; Moos & Moos, 1994). In support of the aforementioned study, both chronic stressors and acute events were significant correlates of life satisfaction, but chronic stressors exerted more of a direct effect on children's life satisfaction (according to path analysis), particularly proximal stressors such as those occurring within the home environment. In sum, cross-sectional research examining stressful life events and chronic stressors have found significant relationships between the two types of stressors and

indicators of wellness. Similar longitudinal studies are needed in order to examine predictive links between stressful life events and wellness.

A review of the literature yielded only one study in which psychopathology and wellness were examined simultaneously in relation to stressful life events. These comparisons were afforded as part of a larger study determining if life satisfaction served as a moderating variable between stressful events and children's psychopathology (Suldo & Huebner, 2004). A sample of 816 students in grades 6-11 participated in the 2-wave longitudinal study (time points separated by one year). Students completed the SLSS, YSR, and indicated the frequency with which they experienced adverse life events in the past year (via the Life Events Checklist [LEC]; Johnston & McCutcheon, 1980). Findings included that stressful life events were associated concurrently with life satisfaction ($r = -.19$) as well as life satisfaction one year later ($r = -.14, p < .05$). Slightly stronger associations were found between stressful life events and psychopathology both concurrently ($r = .22$ to $.28, p < .05$) and longitudinally ($r = .18$ to $.23, p < .05$), with larger correlations with externalizing problems. The magnitude of the links suggests that externalizing psychopathology may be somewhat more tied to stressful life events. To date, this is the only study to examine the relationship between stressful life events and both positive and negative indicators of mental health using a longitudinal design. Although some literature purports that individuals return to a "set point of happiness" shortly after experiencing a negative event (Headey & Wearing, 1989), these more recent findings highlight the importance of examining the relationship between stressful life events and mental health longitudinally (for example, one year later). Longitudinal studies from older adolescence to adulthood have found that certain major events (e.g.,

death of one's child) cause permanent decreases in SWB, and 14-30% of individuals have large and permanent decreases in SWB over 20 years (Headey, 2008; Headey 2010; Lucas, 2007).

In sum, preliminary research suggests that stressful events have an inverse association with indicators of wellness (Ash & Huebner, 2001; McCullough et al., 2000; Suh et al., 1996; Suldo & Huebner, 2004). Such findings support that accumulation of stressful life events is an important type of stress to examine in studies designed to elucidate the most salient predictors of mental health. More research is needed that incorporates a comprehensive definition of mental health, and to replicate the findings of Suldo and Huebner (2004) using more sophisticated analyses (i.e., beyond correlations, controlling for initial levels of psychopathology) in order to understand how stressful events predict later mental health. The following section focuses on how chronic stress within different social domains links to adolescent mental health.

Associations between chronic social stress in parent-child relationships and psychopathology. There are several theories that postulate how the quality of parent-child interactions can be a risk factor for behavior problems later in childhood and adolescence. In social interactional theory, the “coercion model” hypothesizes that interactions characterized by negative and intense emotionality lead to an increased risk for behavior problems (Scaramella & Leve, 2004). In this cycle, the child responds to parents with resistance and anger, which causes parents to intensify their responses of anger, leading to more child externalizing behaviors. Studies lend extensive support to this model in early childhood samples, in that increased conflict leads to delinquent and antisocial behavior later in childhood (Ingoldsby, Shaw, Winslow, Schonberg, Gilliom,

Criss, et. al., 2006; Shaw, Criss, Schonberg, & Beck, 2004). Regarding conflict that occurs during adolescence, poor quality parent-child relationships can lead to adverse outcomes throughout adolescence and into adulthood, such as increased antisocial behavior, substance use, and poor quality romantic relationships (Overbeek, Stattin, Vermulst, Ha, & Engels, 2007; Wills & Yaeger, 2003). Of note, more contemporary research of parent-child relationships purport that although parent-child conflict increases during adolescence, it may not necessarily have a negative impact on the parent-child relationship, it may even be beneficial if it occurs within a warm relationship (Arnett, 1999). Although recent research does not characterize adolescence as a period of storm and stress, it is however still a popular myth and in fact adolescents experience biological and identity changes that may cause increases in the frequency of conflict with parents (Arnett, 1999).

In a recent longitudinal study by Klahr and colleagues (2010), 1,199 adopted and non-adopted adolescents (ages 10 to 18) from 610 families were included in a study examining parent-child conflict in relation to acting out behavior. Adolescents' acting out behavior was assessed via self-report (the 21-item Delinquent Behavior Index; Gibson, 1967) as well as observed by researchers during two 5-minute video-taped family interactions by the Sibling Interaction and Behavior Study Rating Scale (SIBSRS; adapted from the Iowa Family Interaction Rating Scales) Antisocial scale. Family interactions (i.e., parent-child conflict) were coded using the SIBSRS Angry Coercion scale. Parents and children also self-reported conflict via the Parental Environment Questionnaire (Elkins, McGue, & Iacono, 1997). Results revealed that observed and informant-reported parent-child conflict were significant predictors of acting out behavior

(e.g., skipping school, using a weapon in a fight) four years later, whether it was observed or self-reported, even when controlling for baseline conduct problems. The associations were equivalent regardless of whether the child was adopted or not. This study demonstrates the links between the quality of the parent-child relationship and adolescent outcomes, regardless of whether the constructs of interest were assessed by an observer or the parent and child themselves. Other adverse outcomes linked to parent-child conflict during adolescence include associations with delinquent (drug-using) peers and later substance use (Brook, Brook, Zhang, & Cohen, 2009; Marsiglia, Kulis, Parsai, Villar, & Garcia, 2009).

Studies of parent-child conflict in relation to internalizing problems are few, and limited to studies of parenting styles. For example, Silk, Morris, Kanaya, and Steinberg (2003) examined parenting practices such as psychological control and autonomy granting (measured via items drawn from several measures assessing acceptance/involvement and psychological autonomy granting), adolescent depression and anxiety (measured through the Depression Scale of the Center for Epidemiologic Studies [CES-D]; Radloff, 1977), and externalizing behaviors (measured via 13 items regarding minor delinquency, drug use, and school misconduct) in 9,564 high school students. Higher psychological control was related to greater internalizing behaviors, indicating that youth with symptoms of anxiety and depression are likely to perceive their parents as utilizing coercive manipulation, namely guilt, to control their behavior. There were no significant relationships between parenting behaviors and externalizing problems. Other research has identified that positive parenting styles, such as autonomy promotion (inclusion of children in the decision-making process) is linked to higher self-

esteem (across ethnic groups) and less depression (among African American adolescents; Gutman & Eccles, 2007). Other studies have extended upon this cross-sectional study by examining these relationships over time (Boutelle, Eisenberg, Gregory, & Neumark-Sztainer, 2009, Ingoldsby et. al., 2006, Overbeek et. al., 2007).

For instance, Boutelle and colleagues (2009) examined parent-child connectedness (another important variable in parent-child relationships) in relation to adolescent psychopathology in a five year longitudinal study of 1,472 students ranging from 12 to 20 years old. Participants responded to questions about parent connectedness (four items measuring perceived parental caring and communication) and depressive symptoms (six items regarding level of dysthymic mood, tension/nervousness, fatigue, worry, sleep disturbance, and hopelessness), and completed the Rosenberg Self-Esteem Inventory (RSE; Rosenberg, 1965). Parent-connectedness significantly predicted increased self-esteem (for males only) and decreased depressive symptoms for both males and females.

The results of these studies elucidate the important influence of parent-child relationships on youth psychopathology. Aspects of parent-child relationships that have emerged as correlates of mental health problems include conflict, parenting styles (i.e., autonomy promotion, psychological control) and communication (i.e., connectedness). Although there is an abundant amount of literature that supports a relationship between parenting styles in particular and mental health problems, more research is needed that focuses on students' overall perceptions of parent-child relationship quality (or conflict) in relation to both internalizing and externalizing forms of youth psychopathology, in part because perceptions may be more malleable than actual parenting behaviors. Additionally,

a review of the literature found only one study that utilized a comprehensive definition of mental health in relation to parenting behaviors. Therefore, research is warranted examining how parent-child conflict is related to both psychopathology and wellness. The following section summarizes literature on parent-child conflict and adolescents' wellness, including the only study that examined both types of mental health simultaneously.

Associations between chronic stress in parent-child relationships and wellness. A review of the literature yielded only a few studies that explored the association between parent-child relationships and wellness (of note, parental support has been studied more extensively; findings associated with this aspect of parenting behaviors are reported in a later section of this chapter). Additionally, most studies that explored this relationship were cross-sectional, with only one study examining parent-child conflict and adolescent wellness longitudinally. In an earlier study on parent-child conflict in relation to youth life satisfaction, a sample of 378 Chinese adolescents reported their level of conflict with both their parents and their personal life satisfaction (Shek, 1998). Conflict with parents was measured via the Child Version of the Father-Adolescent Conflict Scale and Mother Adolescent Conflict Scale (Robin & Foster, 1989) while life satisfaction was assessed by the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffen, 1985). Participants completed these measures at baseline/Time 1 (ages 12-16) and one year later. Correlational analyses revealed that conflict with both parents was concurrently and longitudinally inversely associated with life satisfaction. In particular, conflict with fathers at Time 1 had stronger associations with life satisfaction at both time points ($r = -.40$ at Time 1 and $r = -.34$ at Time 2). In

additional analyses accounting for Time 1 life satisfaction, father-child conflict significantly predicted later life satisfaction ($r = -.20, p < .001$). These results represent that conflict, particularly with fathers, is associated with lower levels of later happiness in adolescence. Cross-sectional studies with different adolescent samples support these findings (Milevky, Schlechter, Netter, & Keehn, 2007; Wong et al., 2010).

With regard to the relationships between wellness and indicators of *less stress* in parent-child relationships, Ben-Zur (2003) assessed the parent-child relationship (i.e., emotional closeness, communication) from both parent and child report, and life satisfaction in a sample of 121 adolescents (ages 15 – 18). Correlational analyses revealed that high quality parent-child relationships were associated with greater satisfaction with life (as assessed by three-items representing global life satisfaction), regardless of the informant of parent-child relationship quality, and according to regression analyses, significantly predicted life satisfaction ($\beta = .22, p < .01$; Ben-Zur, 2003). Although this study was cross-sectional, it provides support for the association between parent-child relationships and wellness in youth. In contrast, a study of migrant workers in China examined aspects of both parent-child relationships and peer relationships and life satisfaction, and conflict within both of these relationships (assessed by items measuring inter-generational conflict) was *not* a significant predictor of life satisfaction (Wong et. al., 2003). Aspects of relationships that did emerge as significant predictors were harmony and companionship in parent-child relations (assessed by items regarding childrens' experience of having their parents accompany them in daily and social activities), and closeness and companionship in peer relationships (i.e., feeling of having someone to confide in and share their sadness and joy with, feeling they are more

connected with others). This is the only study that has looked at chronic stress from two sources of relationships and how it relates to wellness in youth. Future studies need to extend upon this study by exploring chronic stress in multiple relationship sources (i.e., parents, peers, and teachers), and examining how they relate to students' wellness over time. Additionally, since the only existing study involved a specific population of migrant adolescents' in China, studies are needed with general samples of youth from Western societies in order to test the generalizability of findings.

Of particular relevance to the current study, Rask and colleagues (2003) explored the association between several aspects of family dynamics and adolescents' comprehensive mental health (i.e., subjective well-being and ill-being). In a sample of 506 Finnish adolescents ages 12 to 17, parents and adolescents rated their family dynamics via the Family Dynamic Measure (FDM; Barnhill, 1979). Adolescent mental health was measured via self-report on the Berne Questionnaire of Subjective Well-Being (BSW/Y; Grob, 1995), which contains two subscales termed satisfaction (i.e., positive attitude towards life, self-esteem, joy, and lack of depressed mood) and ill-being (i.e., problems and somatic complaints). There is limited information on the reliability and validity of this measure, which was translated from English to Finnish for the purposes of the study. The family dynamics scale measured six bi-polar dimensions: individuation–enmeshment, mutuality–isolation, flexibility–rigidity, stability–disorganization, clear communication–distorted communication and role reciprocity–role conflict. Regression analyses revealed three significant predictors of global satisfaction: high levels of stability (i.e., security and consistency in family interactions) and mutuality (i.e., sense of emotional closeness), and parents' reports of no severe conflict. These three variables

accounted for 61% of the variance in global satisfaction. Global ill-being was predicted by high levels of disorganization (i.e., lack of predictability in family relations), poor family functioning reported by parents, and poor parental relationships as reported by the adolescent (accounting for 45% of the variance in ill-being). Notably, this study is one of the few to include both positive and negative indicators of mental health as outcomes. Further research is needed exploring mental health comprehensively in other samples of adolescents (for instance, American youth) using more reliable and valid instruments. Additionally, exploring social stressors in relation to mental health over time will aid in understanding how conflict with parents affects later functioning.

Taken together, these studies indicate that positive parent-child relationships are associated with greater subjective well-being and life satisfaction, whereas parent-child conflict (a form of chronic stress) is typically associated with lower life satisfaction. To date, only one study has explored this relationship longitudinally, and while cross-sectional research supports a negative relationship between parent-child conflict and life satisfaction, further support of the long-term influence of parent-child conflict on adolescents' wellness is needed. The following section outlines the mental health outcomes related to stress occurring in peer relationships.

Associations between chronic stress in peer relationships and psychopathology. Chronic stress within the peer relationship can be characterized by several factors, including frequent rejection and victimization by others. Many studies have established that victimized youth are more likely to suffer from internalizing and externalizing problems than non-victimized youth. To illustrate, in a recent meta-analysis, Reijntjes and colleagues (2010) examined the association between victimization

and internalizing problems in 15 studies (primarily with middle childhood samples) that examined broad-band internalizing problems over an extended period of time and controlled for initial levels of peer victimization. Results indicated that effect sizes ranged from .04 to .41, with greater effect sizes for studies that had the same informant for both victimization and adjustment. Victimized youth experienced loneliness, anxiety, low self-esteem, and depression. Additional peer relationship variables such as direct/indirect victimization, social isolation, friendship alienation, and friendship conflict are also significant predictors of adolescent depression and social anxiety (Bosacki, Dane, & Marini, 2007). In a large longitudinal study of 2149 Dutch adolescents (ages 10 to 12 at Time 1), frequency and severity of peer victimization (i.e., physical violence, sexual harassment, bullying, negative gossip) had stronger concurrent and predictive associations with internalizing than externalizing problems (Bakker, Ormel, Verhulst, & Oldehinkel, 2010). Although this study and others (e.g., Stadler et al., 2010) have found mean differences in boys' and girls' levels of peer victimization, victimization is a significant predictor of psychopathology (i.e., hyperactivity/attention problems, emotional problems, conduct problems) for both genders. Specific to associations with externalizing problems, German adolescents who experienced direct bullying reported higher levels of anti-social behavior and anger control problems when compared to non-victimized peers (Hampel, Manhal, & Hayer, 2009). Research has consistently found that adolescents who are both victims of bullying and bullies themselves experience the most externalizing problems (Haynie, Nansel, Eitel, Crump, Saylor, Yu, et. al., 2001; Reijntjes, et. al., 2010)

In sum, multiple longitudinal and cross-sectional studies have supported positive associations between peer victimization and mental health problems in youth. Students that experience both relational and overt aggression are at increased risk for internalizing and externalizing problems. These links exist regardless of gender, despite mean differences in victimization levels. Although research provides ample support for links between peer victimization and psychopathology, studies that incorporate both positive indicators of wellness in addition to the traditional indicators of psychopathology are needed.

Associations between chronic stress in peer relationships and wellness.

Among the first researchers to explore links between peer victimization and wellness, Flouri and Buchanan (2002) examined correlates of life satisfaction among 1,344 adolescent boys, ages 13-19. Youth self-reported their experiences of peer victimization (measured via 6 items related to bullying) and rated their global life satisfaction using a one-item indicator. A moderate, negative relationship ($r = -.27$) emerged between bullying and concurrent life satisfaction. Flaspohler, Elfstrom, Vanderzee, and Sink (2009) extended this literature by examining peer victimization and life satisfaction using a more psychometrically sound measure of wellness. A total of 4,331 elementary and middle school students completed the Brief Multi-dimensional Students' Life Satisfaction Scale (BMSLSS; Seligson, Huebner, & Valois, 2003), which assesses satisfaction in five domains (family, friends, school, self, and living environment) and also provides a global life satisfaction score. Results revealed lower levels of global life satisfaction experienced by both bully-victims and perpetrators of bullying as compared to their peers who had no involvement in bullying. These findings were replicated in a sample of 866 students in

grades five through 12, in that higher levels of life satisfaction were reported by non-victims than by bully-victims (You, Furlong, Felix, Sharkey, & Tanigawa, & Greif Green, 2008). Martin and Huebner (2007) found further support for cross-sectional links between victimization (overt and relational) and life satisfaction in their examination of 571 middle school students. Participants completed the MSLSS and the Children Self Experience Questionnaire (SEQ-SR; Crick & Grotpeter, 1996). While both sources of aggression were inversely correlated with life satisfaction, regression analyses indicated that overt aggression was the stronger predictor.

In a longitudinal follow-up to their first study, Martin, Huebner, and Valois (2008) examined victimization and life satisfaction in 417 participants in their middle school sample at a second time point, one year later. Results indicate significant concurrent and longitudinal correlations between life satisfaction and both sources of victimization. However; regression analyses found that neither overt nor relational victimization at Time 1 predicted life satisfaction scores at Time 2, after controlling for Time 1 life satisfaction. To date this is the only study to examine the longitudinal links between peer victimization and happiness in youth.

In sum, a growing body of research supports the notion that victimization is inversely and reliably associated with positive indicators of mental health. Specifically, students that are victimized by their peers report lower levels life satisfaction than non-victimized peers. More research is needed that considers both types of victimization (overt and relational) in relation to wellness. Additionally, all but one of the aforementioned studies explored this relationship utilizing cross-sectional data, with only one study utilizing a longitudinal design. To date, no studies have examined peer

victimization in relation to wellness longitudinally in high school students. Studies are also needed that examine chronic social stressors in relation to both positive and negative indicators of mental health. The next section discusses youth mental health in relation to another potential source of social stress, namely strained teacher-student relations.

Associations between chronic stress in teacher-student relationships and psychopathology. Characteristics of teacher student-relationships that have been explored in past research include teacher support, teacher-student connectedness, and overall relationship quality. Much of this literature has involved elementary and middle school students, and focused on current and future academic functioning as outcomes (Birch & Ladd, 1997; Gregory & Weinstein, 2004; Reio, Marcus, & Sanders-Reio, 2009; Rudasill et al., 2010). Studies on teacher *support* as a predictor of mental health are summarized in a later section of this document.

In regard to stressful teacher-student relationships and psychopathology, research is limited. Murray and Greenberg (2001) examined the self-reported student-teacher relationships (i.e., affiliation with teachers, dissatisfaction with teacher) among students with and without disabilities (289 students in regular or special education classrooms in elementary schools). Significant positive correlations emerged between dissatisfaction with teachers and mental health outcomes (i.e., delinquency, depression, anxiety, and conduct problems), whereas inverse associations were found between affiliation with teachers and all types of mental health problems. Dissatisfaction with teachers accounted for 2 to 12% of the variance in mental health outcomes, with the largest associations with conduct problems. When comparing results of students with and without disabilities, teacher-student relationships mattered more to students in special education and were a

stronger predictor of their mental health outcomes as compared to students in general education. Similar findings (see Baker, Grant, & Morlock, 2008) emerged in a more ethnically diverse sample of elementary students using teacher ratings of relationship quality (i.e., the Student-Teacher Relationship Scale [STRS]; Pianta & Minetz, 1991).

Extending upon these cross-sectional findings, Rudasill and colleagues (2010) also explored teacher ratings of teacher-student relationships and students' risky behavior in a sample of 1156 students over a two year period. Teacher-student relationship quality was measured by the STRS and risky behavior was assessed by the Risky Behavior Questionnaire (RBQ; Conger & Elder, 1994). Low ratings on closeness and high scores on conflict in 4th grade predicted more risky behavior (e.g., smoking cigarettes, drinking beer or alcohol, stealing, and getting into gang fights) in 6th grade. However, this study did not take into account Time 1 reports of risky behavior. In a different longitudinal study, high teacher-student conflict (as rated by STRS) in 1st grade was also significantly related to students' externalizing and internalizing symptoms in 7th grade ($r = .37$; Essex, Armstrong, Burk, Goldsmith, & Boyce, 2011). In this study's regression analyses, teacher-student conflict in 1st grade predicted 7th grade psychopathology in only some models; specifically, when accounting for symptom severity in 1st grade, teacher-child conflict was no longer a significant predictor of later symptoms.

In sum, teacher-student relationships characterized by high levels of conflict, as reported by both students and teachers, are related to elevated youth externalizing and internalizing symptoms. Research exploring this relationship from the perspective of the student is limited to younger adolescent samples. Further investigations are needed utilizing teenagers' perceptions of student-teacher conflict and how this variable links to

later mental health problems. Notably, a review of the literature uncovered only one such study (discussed next) that used a comprehensive definition of mental health, in that both wellness and psychopathology were considered.

Associations between chronic stress in teacher-student relationships and wellness. Most literature examining wellness and teacher-student relationship variables have focused on student-perceived teacher *social support* (discussed in a later section) as opposed to stress in the *relationship*. A review of the literature revealed only one study that examined teacher-student *relationship quality* and an indicator of wellness. Specifically, Murray and Zvoch (2011) studied 64 at-risk African American youth, in grades 5-8, from low income backgrounds. Children were labeled “at-risk” according to their scores on the teacher report form of the CBCL. Additionally, teachers reported on the teacher-student relationship via the STRS. Children rated three dimensions of teacher-student relationships (i.e., communication, trust, alienation) via the Inventory of Teacher-Student Relationships (ITSR; Murray & Zvoch, 2011), and self-reported symptoms of depression (as measured by the Reynolds Child Depression Scale [RCDS]; Reynolds, 1989), conduct problems (measured via the Seattle Personality Questionnaire for Children [SPQ-C]; Greenberg & Kusche, 1990) and life satisfaction (via the SLSS). Results indicated that teacher-student relationships characterized by communication and trust were positively related to concurrent levels of life satisfaction, whereas alienation was inversely associated with life satisfaction. Regarding the teacher-rated relationship, closeness was positively correlated with student life satisfaction whereas conflict was inversely correlated. Regression analyses indicate that students’ perceptions of their relationships with their teacher accounted for 14% of the variance in life satisfaction,

20% of variance in conduct problems, and 21% of variance in depressive symptoms. These findings suggest that chronic social stress in student-teacher relations may be more strongly associated with psychopathology than wellness. However, as this is the only study to date to investigate both positive and negative indicators of students' mental health in relation to teacher-student relationships, replication and extension is needed, ideally including larger and more ethnically diverse samples of (older) adolescents, and using longitudinal designs. Furthermore, studies are warranted that compare chronic stress in various relationships in relation to adolescent mental health outcomes, as well compare the influence of combined chronic social stressors to the influence of discrete stressful events and global perceived stress. The next section establishes perceived stress as an additional type of stress correlated with youth mental health outcomes.

Associations between perceived stress and psychopathology. Although perceived stress has been examined in relation to a host of physiological outcomes (e.g., heart rate, blood pressure, cortisol levels) in various populations, only a few studies have examined perceived stress in relation to adolescent mental health problems. In one such example, Carlozzi and colleagues (2010) examined an ethnically diverse sample of 53 8th and 9th grade students from a southwestern state and focused on the relationship between perceived stress (as measured by the Perceived Stress Scale [PSS]; Cohen & Williamson, 1988) and anger (measured via the State-Trait Anger Expression Inventory [STAXI-2]; Spielberger, 1999). Perceived stress was positively correlated ($r = .28$ to $.51$) with several types of anger, including State Anger (feelings at a particular moment), Trait Anger (general tendency to feel angry), Anger Expression-Out (expressing anger aggressively), and Anger Expression-In (anger suppression). Types of anger control were negatively

associated with perceived stress ($r = -.35$ to $-.47$), indicating that the ability to calm down or control anger co-occurs with less perceived stress. Although this study provided initial support for a link between perceived stress and externalizing problems (specifically, anger), research is needed with older samples, using psychometrically sound measures of psychopathology that assess more than anger.

Research has also supported a relationship between internalizing psychopathology and perceived stress in an Iranian sample of 12th grade students (Moeini, Shafii, Hisarnia, Babaii, Birashk, & Allahverdipour, 2008) and university students (Segrin & Rynes, 2009). Moeini and colleagues sampled 148 students in grade 12 on their levels of perceived stress (via the PSS) and mental health problems. The General Health Questionnaire (GHQ; Goldberg & Hillier, 1979) was utilized to measure somatic symptoms, anxiety, social dysfunction, and severe depression. Correlational analyses indicate a significant relationship between perceived stress and all subscales of the GHQ, with the strongest associations with anxiety and social dysfunction ($r = .59$). In support of previous research, a significant relationship between perceived stress and internalizing problems was found; however, future studies that look at both externalizing and internalizing problems are warranted to further understand the link between perceived stress and mental health problems.

In sum, of the few studies on perceived stress and psychopathology, most do not include a comprehensive definition of mental health problems. One study to date has looked at perceived stress and mental health comprehensively (i.e., life satisfaction and mental health problems), which is outlined in the following section. Further studies are needed that include both internalizing and externalizing problems to further understand

how perceived stress is related to different mental health problems in youth. Although research supports a positive association between stress and mental health problems, most studies have merely conducted correlation analyses and have not explored how perceived stress can predict mental health problems utilizing a longitudinal design. Additionally, the measures of psychopathology that have been used in the extant literature are not the most comprehensive assessments or reliable and valid measures. Given that late adolescence is a particular developmental period in which students are adjusting to the increased salience of peer relationships and preparing for important future academic and personal goals beyond high school, which may cause stress, more research is warranted utilizing high school age samples. The next study describes research linking perceived stress to wellness, including the one study to date that examined perceived stress in relation to indicators of both pathology and wellness in youth.

Associations between perceived stress and wellness. The few studies that have investigated perceived stress in relation to adolescents' wellness have supported an inverse association with life satisfaction and happiness (Alleyne, Alleyne, & Greenidge, 2010; Schiffrin & Nelson, 2010; Yarcheski, Mahon, Yarcheski, & Hanks, 2010). In addition to these studies with younger adolescents, other research has examined students in college (Matheny, Curlette, Aysan, Herrington, Gfroerer, Thompson, et. al., 2002; Schiffrin & Nelson, 2010). In a younger sample of 144 middle school students, Yarcheski and colleagues (2010) examined the relationship between wellness and perceived stress using several measures of perceived stress. The Wellness Factor of the Laffrey Health Conception Scaley, 1986) for adolescents was used to measure well-being. Example items asked students to report "feeling great-on top of the world" and "creatively living

life to the fullest". Perceived stress was assessed via the PSS (which asks the frequency with which students perceive their lives to be uncontrollable, unpredictable, and overwhelming) and the Primary Appraisal Scale (PAS; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986) which asks how stressful experiences of major life events were to students. Results revealed that wellness was significantly, inversely related to perceived stress ($r = -.44$) and primary appraisals ($r = -.47$). Regression analyses found that perceived stress accounts for 20% of the variance in middle school students' wellness, and primary appraisals accounted for 10% of the variance in wellness, indicating a particularly strong influence of global perceived stress as measured by the PSS. Similar studies using more validated measures of happiness in older adolescent samples are needed. Extending upon this literature, Vera and colleagues (2011) examined 144 middle school students, ages 12 to 15, utilizing a more typical measure of students' happiness (the SWLS) and the PSS to assess perceived stress. Findings included that stress was significantly related to life satisfaction ($r = -.27$) and negative affect ($r = .47$), and unrelated to positive affect. More research is needed to determine if results generalize to high school age students.

A review of the literature found only one study that examined both positive and negative indicators of mental health in relation to perceived stress. Specifically, Suldo, Shaunessy, and Hardesty (2008) examined a sample of 307 general education and high-achieving high school students. Stress and life satisfaction were assessed via self-report on the PSS and SLSS, respectively. Mental health problems were indexed by the internalizing and externalizing composite scores on the YSR. In support of previous findings, correlational analyses revealed significant negative relationships between stress

and life satisfaction, and positive associations with mental health problems (i.e., internalizing and externalizing problems). Strong associations were found between perceived stress and internalizing problems ($r = .72$) and life satisfaction ($r = -.63$), while the association with externalizing problems was moderate ($r = -.40$). To date, this study is the only one to examine stress and its association with both wellness and mental health problems in older adolescents. Similar studies are warranted utilizing different high school samples and more sophisticated analyses beyond correlations to further understand how stress relates to students' wellness. Additionally, studies investigating this relationship over time are needed to further understand how stress influences students' comprehensive mental health.

In sum, a review of the literature has identified several gaps within the research on stress and adolescents' mental health. More research is needed to explore how stress, including environmental stressors and subjective appraisals, influence students' wellness and psychopathology type of stress in relation simultaneously. To date, only four published studies have looked at some type of stress in relation to students' comprehensive mental health. However, all these studies have been cross-sectional in nature and have not examined these relationships over time. Additionally, only five studies have looked at more than one to any mental health outcome. To date, no published studies have examined stress comprehensively as conceptualized as involving experiences of discrete stressful events, chronic conflict in social relationships, and perceived stress. Understanding how different types of stress predict students' mental health is a critical step in potentially identifying students in need of support.

One aim of the positive psychology paradigm is to identify factors that promote positive functioning among all people, as well as factors that protect individuals from developing the most deleterious outcomes when experiencing various types of stress (Seligman, 2005). Protective factors are those variables that help buffer individuals who experience stress from later developing later mental health problems and declines in wellness. By identifying factors that may protect adolescents who experience stress from adverse outcomes, educators may have clarification on possible points of intervention. One such factor with great potential as a promotive and/or protective factor is social support. In the next section, social support is defined and the empirical links between stress, social support, and mental health are summarized.

Social Support

One particular factor that has been investigated as a protective factor (moderator) between stress and mental health outcomes in youth is social support (McNamara, 2000). The following section first defines social support from various sources, primarily parents, peers, and teachers. Next, the benefits of social support are outlined, including links to better youth mental health. Last, empirical findings relevant to social support as a moderator between stress and mental health outcomes are summarized.

Defining social support. According to Tardy (1985), social support is as an interpersonal transaction involving one or more of the following four domains: emotional support, instrumental support, informational support, and appraisal support. Emotional support reflects perceptions of love, trust, empathy, and caring. Instrumental support refers to providing tangible resources or assistance, while informational support entails providing information that will help a person solve problems. Appraisal support refers to

providing information that is helpful for self-evaluation, such as feedback or social comparison. An individual's *perception* of receiving support within such domains is critical; research indicates that perceived support is more linked to outcomes than the existence of support. Whereas early research measured social support globally, "more recent theoretical investigations have found that multiple sources and multiple types must be taken into account when examining this construct" (Malecki & Demaray, 2003, p. 232). Within the adolescent literature, critical social relationships include those with parents, peers/friends, and teachers. Research has examined social support from these particular sources.

Parent support. Parental support refers to "gestures or acts of caring, acceptance, and assistance that are expressed by parents towards a child" (Shaw, Chatters, Connell, & Ingersoll-Dayton, 2003; p. 4). High levels of perceived support from parents have been linked to numerous positive outcomes. In regards to academic outcomes, high levels of parental support have been associated with increased academic motivation (Neha & Shobhna, 2011), positive feelings towards school, and academic achievement (Bean, Bush, McKenry, & Wilson, 2003; Liebkind, Jasinskaja-Lahti, & Solheim, 2004; Verner, 2007). Additionally, students who report feeling supported by parents have increased self-esteem and improved behavior at school (Bean et. al., 2003).

Links with youth mental health. Low levels of parental support co-occur with adverse outcomes both concurrently and longitudinally, including symptoms of depression (Needham, 2008; Rueger, Malecki, & Demaray, 2010), anxiety (Shek, 2002; Stadler et al., 2010), externalizing problems and substance use in adolescents (Kerr, Preuss, & King, 2006). To illustrate, parental support emerged as a strong predictor of

depressive symptoms in a longitudinal study of 10,828 adolescents (Needham, 2008). Needham assessed caregiver support and depression across three time points; participants were on average 15 years old at Time 1, and 21 years old at Time 3. Results included that low levels of perceived parental support co-occurred with higher initial levels of depressive symptoms ($\beta = -.41, p < .05$) and significantly predicted depressive symptoms six years later ($\beta = -.15, p < .05$). Regarding studies of multiple types of internalizing problems, Rueger, Malecki, and Demaray (2010) investigated sources of support in relation to internalizing problems (i.e., depression, anxiety) among 636 middle school students. Parental support was a unique predictor of all internalizing problems among both boys and girls at Time 1 ($r = -.15$ with boys' anxiety symptoms to $r = -.46$ with girls' depression symptoms), and for girls six months later (for boys, parental support was a unique predictor of depression and self-esteem only). In sum, these longitudinal studies of adolescents indicated that reduced mental health symptoms may be a benefit of having a parent-child relationship characterized by support, warmth, and trust.

In line with attention to the positive psychology movement, recent research has examined the relationship between parental support and youth wellness. In general, studies suggest a positive association between perceived parent support and indicators of wellness such as subjective well-being and life satisfaction (Edwards & Lopez, 2006; Huebner, Suldo, McKnight, & Smith, 2004; Petito & Cummins, 2000; Shek, 2002; Suldo et al., 2009; Stewart & Suldo, 2011). Several studies have utilized a comprehensive definition of mental health and simultaneously examined both negative and positive indicators of psychological functioning in relation to perceived parental support. In a study of the dual factor model in 349 middle school students, youth in the “complete

mental health” group and “symptomatic but content” group reported greater perceived parent support than students in the “vulnerable” group and the “troubled” group (Suldo & Shaffer, 2008). Therefore, students with average to high SWB (including life satisfaction) experienced higher levels of parent support compared to students with low SWB, with or without psychopathology. In a further analysis of this dataset, Stewart and Suldo (2011) found parent support co-occurred with fewer internalizing and externalizing problems, and greater life satisfaction. Similar research utilizing older adolescent samples is warranted in order to further understand parental support in relation to both wellness and pathology indicators among teenagers.

Peer support. Peer support can be characterized by reciprocity and self-disclosure between two individuals resulting in emotional support, acceptance, and trust (Desjardins & Leadbeater, 2011). Peer support becomes increasingly critical throughout adolescence (ages 12 to 17); during this period, adolescents rely mostly on peers (vs. parents) for emotional support (de Valle, Bravo, & Lopez, 2010). Supportive peer relationships have been linked to a myriad of positive outcomes in youth, including academic engagement and achievement (Chen, 2008), academic motivation (Nelson & DeBacker, 2008), and lower school drop-out rates among inner-city adolescents (Lagana, 2004). Additionally, having close supportive relationships with peers has been associated with increased self-worth (Xu & Liu, 2005), self-esteem, self-concept, and self-reliance (Demaray & Malecki, 2002; Rueger, Malecki, & Demaray, 2010).

Links with youth mental health. Longitudinal and cross-sectional studies have yielded negative associations between peer support and mental health problems. In a longitudinal study of 82 middle school students, peer support significantly predicted

internalizing problems (i.e., anxiety, social stress, depression, sense of inadequacy, interpersonal relations, and self-esteem) one year later ($\beta = -.34$; Demaray, Malecki, Davidson, Hodgen, & Rebus, 2005). Similar associations have been found with various samples of middle school students (Rueger, Malecki, & Demaray, 2010) and high school age adolescents (Colarossi & Eccles, 2003; De Witt, Karioja, Rye, & Shain, 2011). Extending previous research to externalizing symptoms, Way, Reddy, and Rhodes (2007) found a significant association between declines in peer support and increased behavioral problems (i.e., telling lies, breaking rules at school, cutting class, skipping school, hitting other people, and acting mean towards others). In sum, supportive peer relationships can be beneficial in that they are inversely associated with mental health problems.

Limited research has investigated peer support in relation to positive indicators of mental health, such as SWB and life satisfaction. Preliminary research on the dual factor model found evidence for a significant relationship between complete mental health and peer support. Specifically, middle school students with “complete mental health” reported more social support from peers in comparison to students in the “vulnerable,” “symptomatic but content,” and “troubled” groups (Suldo & Shaffer, 2008), underscoring associations between the presence of supportive peer relationships and optimal functioning in youth. Other studies of peer support in relation to youth life satisfaction demonstrate a significant positive relationship between these two factors (Suldo & Huebner, 2006; Piko & Hamvai, 2010; Vera, Thakral, Gonzales, Morgan, Conner, et al., 2008). For instance, in a sample of 698 middle and high school students, students reporting the highest levels of life satisfaction also reported the greatest peer support when compared to students with low or average levels of life satisfaction (Suldo &

Huebner, 2006). In a more recent study of 398 middle school students, perceived social support from peers served as a unique predictor (controlling for the influence of support from parents and teachers) of life satisfaction ($\beta = .11$; $sr^2 = .01$, $p < .05$; Stewart & Suldo, 2011). In general, the benefits of peer social support extend to positive indicators of wellness; however, further research is needed to extend this conclusion to high school adolescents.

Teacher support. Perceived social support from teachers can be defined as “the degree to which teachers listen to, encourage, and respect students” (Brewster & Bowen, 2004, p. 51). Most research on the benefits of teacher support has examined it in relation to students’ academic functioning. Among children in grades five through eight, teacher support is associated with better student social skills and academic competence, and less school maladjustment (Malecki & Demaray, 2003), as well as greater perceived school meaningfulness (Brewster & Bowen, 2004).

Links with youth mental health. Beyond academic outcomes, teacher support has been shown to be inversely associated with mental health problems. In regards to internalizing problems, Colarassi and Eccles (2003) found that supportive teacher relationships co-occurred with older high school girls’ depressive symptoms. In a more comprehensive study of mental health, McCarty and colleagues (2011) examined social support in relation to symptoms of anxiety, depression, substance use, and conduct problems among 521 early adolescents. Parents reported children’s conduct problems when students were in seventh and one year later, and students’ self-reported their symptoms of all other mental health outcomes and perceived social support. Teacher support yielded negative associations at with all mental health outcomes at baseline (i.e.,

conduct problems, anxiety, depression, and substance use). Teacher support was most strongly associated with depression ($r = -.32, p < .01$) and yielded the weakest relationship with separation anxiety ($r = -.16, p < .01$). As this study focused primarily on the prediction of substance use, longitudinal analyses were not completed that included social support and mental health outcomes. This study illustrated the importance of perceived support from teachers via its concurrent inverse association with several types of mental health problems. Other longitudinal studies that have analyzed social support and mental health outcomes overtime have found that as teacher support decreases, youth outcomes such as depression, smoking, drinking, emotional distress, and somatic complaints increase (DeWit, Karioja, Rye, & Shain, 2011; Walsh, Harel-Fisch, & Fogel-Grinvald, 2010).

In one of the few studies to explore teacher support in relation to both positive and negative indicators of mental health, Stewart and Suldo (2011) examined the unique influence of multiple sources of support (i.e., parent, teachers, and peers) in predicting both mental health problems (i.e., internalizing and externalizing symptoms) and wellness (i.e., life satisfaction). While teacher support yielded significant bivariate associations in the expected directions with all forms of mental health, in simultaneous multiple regression analyses that controlled for the influence of peer and parent support, teacher support emerged as a unique predictor of externalizing problems only ($\beta = -.15, sr^2 = .02, p < .01$); in contrast, parent and peer support were unique predictors of internalizing problems and life satisfaction.

Other studies have found positive bivariate associations between perceived teacher support and indicators of wellness (Walsh, et. al., 2010; Suldo & Huebner, 2006;

Suldo & Shaffer, 2008; Van Petegem, Aelterman, Van Keer, & Rosseel, 2008).

Additionally, research has found teacher support to be the dimension of school climate most strongly linked to students' SWB (Suldo, Shaffer, & Riley, 2008). In a seminal study examining teacher support in relation to adolescents' wellness, perceived teacher support accounted for 16% of the variance in middle school students' SWB, with emotional support being the most influential component (Suldo et al., 2009). In sum, studies of young adolescents support a positive association between perceived teacher support and students' well-being. Research with high school samples, and that conceptualizes mental health comprehensively, is warranted.

In addition to establishing social support as a promotive factor in that it co-occurs with better mental health outcomes amongst all youth, studies have explored how social support also operates as a protective factor for at-risk students. In the following section, studies examining the links between stress, social support, and mental health are summarized.

Interactions between Stress, Social Support, and Mental Health Outcomes

Several studies have examined social support as a protective factor for adverse outcomes among individuals faced with varying types of stress, because social support can be an interpersonal resource that aids in coping. In particular, studies have investigated the buffering effects of social support for two types of stressors—chronic social stress (conflictual parent and peer relationships) and negative life events. In a study of 329 Latino inner-city adolescents (in 6th – 8th grades), students reported on parental support and conflict as measured by the LISRES-Y and on internalizing and externalizing behaviors measured via the YSR (Crean, 2008). Parental support and conflict were

separated into maternal and paternal sources. Results revealed that for boys experiencing conflict with a parent, support from the opposite parent was a protective factor for externalizing problems ($\beta = -.23, p < .05$); however, for girls this was not the case. This study illustrated the importance of examining a broad range of mental health problems, as social support served as a protective factor for externalizing problems only.

Chronic conflict within peer relationships that leads to peer victimization and bullying is another source of stress that can lead to adverse outcomes in youth; however research has found social support to be a protective factor (Desjardins & Leadbeater, 2011; Rigby, 2000; Stadler, 2010). Desjardins and Leadbeater (2011) focused on social support as a moderator between relational victimization and depression over a six year period. Participants consisted of 540 adolescents ages 12-19, who self-reported their symptoms of depression, parental and peer emotional support, and physical victimization via the following measures: the Brief Child and Family Phone Interview (Cunningham, Harrison, Knight, McHolm, Pollard, & Ricketts, 2007), the Child's Report of Parental Behavior Inventory (Schaefer, 1965), Perceived Social Support from Friends Scale (Procidano & Heller, 1983), and 5-items on physical victimization from the SEQ, respectively. Results revealed that concurrently, social support was not a protective factor against depressive symptoms. However, emotional support from fathers moderated the relationship between relational victimization and later depressive symptoms ($\beta = -.28, p < .01$), such that students that experienced relational victimization and reported low levels of paternal support, experienced increases in depressive symptoms. Interestingly, while peer support and maternal support also emerged as moderators, they functioned as risk factors in that students that reported victimization and high levels of emotional support

from these sources led to increases in depressive symptoms. In contrast, Stadler and colleagues (2010) examined the same age group and found parent support to be a protective factor for adverse outcomes (i.e., emotional problems, conduct problems, and problems with peers) related to peer victimization, especially for 11-15 years old girls. Teacher support also moderated the relationship between peer victimization and mental health problems for older adolescents (ages 15-18). This study showed that different sources of social support may serve as protective factors at various developmental stages. Further research is warranted that includes several sources of social support and examines multiple chronic stressors, such as conflict in other important social relationships, to explore if different sources of social support buffer high school students from later mental health problems.

Research has also investigated whether social support is a protective factor for students experiencing acute stressors such a negative life events (Traske-Tate, Cunningham, & Lang-DeGrange, 2010; Yang et. al., 2010). In a study of 136 African American female high school students, the relationships between negative life events, family support, and depression were investigated. Students reported on 34 negative life events (via a shortened version of the Coddington's Life Events Questionnaire [LEQ]; Coddington, 1972), social support from mothers, fathers, and grandparents (measured by the Social Support Scale [SSSCA]; Munsch & Blyth, 1993) and depression (via 9 items developed by the authors based on items from the Children's Depression Inventory, Kovacs, 1992). Of all three sources of family support, maternal support emerged as the only moderator between negative life events and depressive symptoms ($\beta = -.22, p < .05$). Specifically, participants that experienced negative life events but also reported high

levels of maternal support reported less depressive symptoms than those that reported low levels of maternal support. Yang and colleagues (2010) further examined the relationships among these variables, with a particular focus on peer support, in a 15-month longitudinal study of 143 youth ages 14 to 18. Peer support emerged as a moderator in the link between negative life events and depressive symptoms; specifically, a lower level of social support from peers at Time 1 was associated with greater increases in depressive symptoms following the occurrence of negative events. In sum, findings indicate a moderating effect of social support (from parents and peers) on the relationship between negative stressful life events and internalizing symptoms in youth. More research is needed that includes samples of high school students and examines social support from multiple sources, to explore if support from sources such as teachers buffers adolescents against the adverse outcomes that are related to negative stressful life events. Additionally, extant research has focused primarily on internalizing problems, such as depression; further research is needed to understand whether social support is a protective factor against youth externalizing problems and diminished life satisfaction.

In general, social support has been investigated as a protective factor from adverse outcomes in youth experiencing both chronic and acute stressors. More research is needed examining other sources of stress beyond peer victimization and parent-child conflict, such as teacher-student conflict. Regarding global perceptions of stress, only one cross-sectional study has examined whether perceived social support was a moderator or mediator in the relationship between perceived stress and mental health problems (Yarcheski & Mahon, 1999). In a sample of 148 middle school adolescents, perceived social support was not a moderator, however it was a mediating factor in the

relationship between perceived stress and mental health problems (Yarcheski & Mahon, 1999). Further studies are needed that examine stress, both by subjective and objective measures, and whether social support is a protective factor against mental health problems. A review of the literature also has found no studies that have utilized a comprehensive definition of mental health to explore whether social support is a protective factor for not only later mental health problems but also low levels life satisfaction. Understanding how stress affects students' life satisfaction, and whether social support from various sources buffers against low reports of happiness, is critical in light of the growing body of research that links student wellness and complete mental health with academic and social-emotional benefits (Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008; Suldo, Thalji, & Ferron, 2011; Suldo, Thalji, Frey, McMahan, Chappel., & Fefer, 2011).

Chapter 3

Method

The current study determined the concurrent and longitudinal relationships between several types of stress and mental health in a sample of high school students. After determining which types of stress and stressors were most strongly and uniquely linked to students' mental health, this study examined whether perceived social support from a particular sources (i.e., parents, classmates, teachers) buffered students from developing later mental health problems or declines in life satisfaction the following year. This chapter outlines information pertaining to participants, followed by the procedures related to the data collection process. The measures utilized to examine the key variables of interest and data analyses are described.

Procedures

Setting. Participants for this study were recruited from two high schools in a large, urban school district in a Southeastern state. The two schools were chosen to take part in a larger, on-going research project due to their diverse student population and administrative interest in students' mental health. The larger research project entailed two waves of data collection; Time 1 occurred in December of 2010, and Time 2 took place in December of 2011.

School A consisted of a total of 2224 students in the 2009-2010 school year and is located in a rural community. The total school population is comprised of the following ethnic groups: 56% Caucasian, Non-Hispanic; 27% Hispanic; 13% African American;

2% Asian, and 2% are identified as multi-ethnic. A total of 40% of the students are economically disadvantaged as indicated by their lunch status (i.e., received free or reduced lunch). At Time 1, students from grades nine through eleven were recruited to participate so that the same students could participate during the subsequent school year. A total of 2494 students comprised the population of School B during the 2009-2010 school year.

School B is in a more urban community and has the following ethnic makeup: 42.2% Caucasian, Non-Hispanic; 40.1% Hispanic; 8.8% African American; 3.8% Asian; 0.5% Indian; 4.3% Multiethnic. School B has a slightly higher percentage (49%) of students that are economically disadvantaged (i.e., receive free or reduced lunch). As with School A, students from grades nine, ten, and eleven were initially recruited to participate in the study. The current study utilized archival data that was collected during the 2010-2011 school year as Time 1, and then collected Time 2 data from the same students the following year (2011-2012 school year).

Student participants at time 1. At Time 1, a total of 500 students from the two high schools provided complete and valid data. Time 2 participation was sought from each of these students who remained enrolled in the participating schools. The Time 1 data set consisted of more females than males (59% vs. 41% respectively); the following ethnic groups were represented: 43% White, 34% Hispanic, 10% multi-racial, 8% African-American, 3% Asian, 2% other ethnicity (Suldo, Thalji, Frey, McMahan, Chappel, & Fefer, 2011). A total of 49% of the students were economically disadvantaged as indicated by receipt of free or reduced-price school lunch (Suldo et al., 2011).

Teacher participants at time 1. A total of 45 teachers from School A participated at Time 1 by completing the BASC-2 TRS-A on at least one participating student. The mean number of students teachers from School A reported on was 5.84 students (range 1 to 12 students). At School A the majority of teachers who provided student data via the BASC-2 TRS-A were female (63.67%). Regarding race, four (4.54%) identified themselves as Hispanic; regarding ethnicity, the majority (97.72%) identified as Caucasian. Teachers reported an average of 16.57 years of experience teaching (range: 1 to 37 years).

A total of 40 teachers from School B also participated in the current study by completing a BASC-2 TRS-A for one or more student participant. The mean number of students teachers from School B reported on was 6.08 students (range 1 to 12 students). At School B the majority of teachers who provided student data were female (75%). Regarding race, 5 (12.5%) identified themselves as Hispanic; regarding ethnicity, the majority (85%) identified as Caucasian and 4 teachers (12.5%) identified as African-American. Teachers reported an average of 11.53 years of experience teaching (range: 1 to 35 years).

Recruitment of participants. After receiving administrative support to collect data in the two high schools, specific steps were taken to recruit students and teachers to be part of the large research project. At Time 1, students in grades nine through eleven were recruited to participate (students in grade 12 were not recruited given they would not be attending high school during the 2011-2012 school year). In addition to students in grade 12, students taught in self-contained classrooms via Exceptional Student Education

and students with limited English proficiency were excluded from recruitment due to the readability requirements of the self-report measures.

School A. In order to recruit students and teachers from School A, members of the research team informed teachers at School A of the purpose of the study, their role in participating in the study, and the incentives associated with their participation (see Appendix A). At School A, English teachers were targeted to assist in passing out student consent forms. Research team members provided packets with parent consent forms (Appendix B) and a script for the English teachers to read to students explaining the purpose of the study and participation requirements (Appendix C). Students were also informed of the incentives offered for return of consent forms, including enrollment in a lottery for a \$50 gift card to the local mall. Students were given two weeks to return parent consent forms. The consent form outlined the purpose of the research study was to collect data at two time points; therefore, consent was obtained for participation in both waves of data collection, beginning of the 2010-2011 school year. English teachers collected the returned consent forms that allowed students to participate in the study and gain entry into the drawing for the gift cards.

In addition to recruiting students, the research team recruited teachers to provide information on student behavior. Teachers that had the student participants for a core academic class were recruited. Teachers that consented to participate (Appendix D) completed a measure of student psychological functioning (i.e., BASC-2-TRS-A) for a specified student participant. Students and teachers who chose to participate in the study were provided with incentives. Students who completed the self-report measures were

given a pre-paid move pass, and teachers were provided a \$5.00 gift card for every BASC-2-TRS-A that they completed.

School B. Identical procedures were utilized to recruit student and teacher participants from School B, with the exception of going through homeroom teachers (vs. English teachers) to recruit student participants. Specifically, half of the homeroom teachers for students in grades 9-11 were randomly selected to assist in distributing and collecting consent forms.

Data collection. Permission to conduct the larger study was obtained in September 2010 from the University of South Florida Institutional Review Board (IRB) and the school district in which both schools are located. Designated teachers recruited students for participation during the second nine-week grading period. The university research team created lists (by school) of students with parental consent to participate. In December 2010, students were called to the school auditorium or cafeteria in groups of 50 to 70 to complete a packet of questionnaires. Before administering the self-report measures, members of the research team read aloud the student assent form (see Appendix E). Students were notified that they were free to withdraw from the study at any point and that this decision would not affect their relationship with the school or research staff. After written assent was obtained from students, students completed a packet that included a demographic questionnaire (Appendix F), practice likert questions, and several self-report measures. Measures were counterbalanced in order to control for possible order effects. The survey took students approximately 25-60 minutes to complete. Members of the research team were available to monitor survey completion and answer all questions posted by student participants. Once students completed the

survey packets, a member of the research team looked over the packet to detect any errors and guarantee that items were not skipped accidentally by student participants. After the survey was confirmed completed by a research team member, students were given a pre-paid movie ticket.

After student data was collected, one teacher per student was asked to report on students externalizing problems by completing the BASC-2-TRS-A. Prior to participating, teachers verified they had known the specified student for at least two months, and provided written consent to participate (Appendix D). Teachers received a \$5 gift card for each rating scale completed.

The same procedure was utilized to collect data at Time 2, as referenced in the current study. The same 500 students were called down in large groups to complete the same packet of measures. Once students completed the survey packet, they were given a pre-paid movie ticket to thank them for their time and participation. For each student participant, a current teacher was recruited to fill out information regarding student behavior via the BASC-2-TRS-A. Teachers were again compensated with a \$5 gift card to a local store.

Student participants at time 2. A total of 216 students from School A participated in Time 2 data collection, for a return rate of 84 %, and a total of 212 students from School B participated in Time 2 data collection, for a return rate of 86%. In sum, a total of 428 students from the two high schools provided complete data, for a total return rate of 86%. For reasons described in the next chapter, data from three participants were excluded from the final dataset; therefore a dataset containing 425 students was utilized in subsequent data analyses. The Time 2 data set was similar to the Time 1

sample in that it consisted of more females than males (60% vs. 40% respectively); the following ethnic groups were represented: 44% White, 35% Hispanic, 9% multi-racial, 7% African-American, 3% Asian, 1% other ethnicity. A total of 49% of the students were economically disadvantaged as indicated by receipt of free or reduced-price school lunch. Summary data for the total student sample regarding student participants' grade level, gender, ethnicity, and socio-economic status (SES) are presented in Table 1.

Teacher participants at time 2. A total of 30 teachers from School A participated at Time 2 by completing the BASC-2 TRS-A on at least one participating student. The mean number of students teachers from School A reported on was 7.1 students (range 1 to 14 students). In contrast to Time 1, at School A the majority of teachers who provided student data via the BASC-2 TRS-A were male (53.33%). Regarding race, one (3.33%) identified themselves as Hispanic; regarding ethnicity, the majority (86.67%) identified as Caucasian. Teachers reported an average of 18.41 years of experience teaching (range: 1 to 39 years).

A total of 36 teachers from School B also participated in the current study by completing a BASC-2 TRS-A for one or more student participant. The mean number of students teachers from School B reported on was 5.89 students (range 1 to 13 students). At School B the majority of teachers who provided student data were female (58.33%). Regarding race, 8 (22.22%) identified themselves as Hispanic; regarding ethnicity, the majority (83.33%) identified as Caucasian and 3 teachers (8.33%) identified as African-American. Teachers reported an average of 11.76 years of experience teaching (range: 1 to 33 years).

Table 1

Demographic Characteristics of Participants

Demographic variable	Time 1 Sample (<i>N</i> = 500)	Time 2 Sample School A (<i>N</i> = 213)	Time 2 Sample School B (<i>N</i> = 212)	Time 2 Sample (<i>N</i> = 425)
	%	%	%	%
Gender				
Male	40.80	35.68	43.40	39.53
Female	59.20	64.32	56.60	60.47
Ethnicity				
American Indian	0.40	0.00	.94	0.47
Asian	2.60	1.88	3.77	2.82
African American	8.20	7.98	7.08	7.53
Hispanic/Latino	33.80	27.70	42.25	35.06
White	43.60	53.05	34.43	43.76
Multi-Racial	10.00	8.45	10.38	9.41
Other	1.40	.94	.94	0.94
Socioeconomic Status				
Low	49.00	49.77	48.57	49.17
Average/High	51.00	50.23	51.43	50.83
Family Composition				
Married Parents	42.45	44.60	39.81	42.22
Parents not Married	57.55	55.40	60.19	57.78
Grade Level				
9	43.6			
10	36.4	55.71	33.49	44.63
11	20.0	36.67	34.45	35.56
12		7.62	32.06	19.81

Measures. The current study included both predictors in the form of stress variables (i.e., discrete stressful life events, chronic stress in social relationships, and perceived stress) and outcomes conceptualized as positive and negative indicators of mental health (i.e., life satisfaction, externalizing problems, and internalizing problems). The following section describes the specific measures that were analyzed to answer the

specific questions of interest. Table 2 provides as summary of the measures that correspond to the variables that were examined. The research questions are as follows:

1. Which sources of stress are most strongly and uniquely linked to later mental health (conceptualized as psychopathology and life satisfaction) in youth:
 - a. Major discrete stressful life events
 - b. Chronic stressors, pertinent to:
 - i. Peer victimization
 - ii. Teacher-student conflict
 - iii. Parent-child conflict
 - c. Global perceived stress?
2. Do any of the following sources of social support protect students who experience various types of stress (as defined in question 1) from later mental health problems or low life satisfaction:
 - a. Parental support
 - b. Teacher support
 - c. Classmate support?

Table 2

Measures of Stress, Mental Health, and Social Support Variables

Construct	Measure
Major life events	Life Events Checklist (LEC) composite
Chronic stress in parent-child relations	Relations with Parents scale of the Behavior Assessment System for Children- Self Report of Personality, Second Edition (BASC-2 SRP-A)
Chronic stress in peer relations	Overt Victimization and Relational Victimization scales of the Social Experience Questionnaire- Self Report (SEQ-S)
Chronic stress in teacher-student relations	Attitudes towards Teachers scale of the BASC-2 SRP-A
Perceived stress	Perceived Stress Scale (PSS) composite
Life satisfaction	Students' Life Satisfaction Scale (SLSS) composite
Internalizing psychopathology	Internalizing Problems composite of the BASC-2-SRP-A
Externalizing psychopathology	Externalizing Problems composite of the Behavior Assessment System for Children- Teacher Report Scale, Second Edition BASC-2-TRS-A
Parent support	Parent Support scale of the Child and Adolescent Social Support Scale (CASSS)
Classmate support	Classmate Support scale of the CASSS
Teacher support	Teacher Support scale of the CASSS

Demographic form. Students self-reported their grade level, age, gender, socioeconomic status (SES), race/ethnicity, and parent marital status. Additionally, two sample questions that represent likert scales were provided to explain and model to students how to appropriately answer likert-type questions (see Appendix F).

Students' Life Satisfaction Scale (SLSS). The SLSS (Huebner, 1991; Appendix G) assesses students' global satisfaction with life. This measure was designed to be used with students in grades 3-12 (Huebner, 1991). Participants indicated their level of agreement with seven general statements about their life (e.g., I have a good life, I have what I want in life, My life is better than most kids'). Response options range from 1 (*strongly disagree*) to 6 (*strongly agree*). An overall life satisfaction score was attained by reverse-scoring items three and four, then summing the responses indicated and dividing by seven. Higher mean SLSS scores indicate higher global life satisfaction.

The SLSS has high internal consistency ($\alpha = .82 - .88$) and test-retest reliability at 1-2 weeks ($r = .74$; Huebner, 1991). High stability across a 4 week period has also been obtained ($r = .64$; Gilman & Huebner, 1997). The construct validity of the SLSS is supported by strong associations with other measures of subjective well-being, such as the Piers-Harris Happiness Subscale ($r = .53$), the Multidimensional Life Satisfaction Score ($r = .88$), and the Andrew-Withey Life Satisfaction Scale ($r = .62$; Huebner, 1991). A significant relationship ($r = .54$) between SLSS scores and parent ratings of their children's happiness also supports the convergent validity of this measure (Gilman & Huebner, 1997).

Self Report of Personality Form of the Behavior Assessment System for Children-Adolescent Version, 2nd Edition (BASC-2-SRP-A). The BASC-2-SRP-A (Reynolds & Kamphaus, 2004) assesses different areas of psychopathology and adaptive functioning in youth ages 12 to 21. This 176-item measure includes 12 clinical subscales (anxiety, attention problems, attitude to school, attitude to teachers, atypicality, depression, hyperactivity, locus of control, sensation seeking, sense of inadequacy, social

stress, and somatization) and four adaptive scales (interpersonal relations, relations with parents, self-esteem, and self-reliance). Students respond to some items with “true” or “false,” while other items are on a 4-point Likert scale ranging from 1 (*never*) to 4 (*almost always*). For the purpose of the study, only clinical scales that loaded onto the Internalizing Composite (i.e., atypicality, locus of control, social stress, anxiety, depression, sense of inadequacy, and somatization), the Attitude to Teachers subscale, and the Relations with Parents subscale were analyzed. Lower scores on the Relations with Parents composite indicate strain and stress. Higher scores on the Attitudes to Teachers subscale and Internalizing composite were designed to indicate stress and problems, respectively.

There is strong support for the reliability and validity of the BASC-2-SRP-A as an assessment of youth psychopathology and adaptive functioning. Excellent internal consistency has been found for the Internalizing Problems composite ($\alpha = .96$), as well as on the other scales of interest: Relations with Parents ($\alpha = .88$) and Attitudes towards Teachers ($\alpha = .82$). Additionally, the BASC-2-SRP-A has good test-retest reliability across a 20-day period for the Internalizing Problems composite ($r = .82$), Relations with Parents ($r = .80$), and Attitude to Teachers ($r = .70$). In regards to convergent validity, the Internalizing composite of the BASC-2-SRP-A has a strong correlation with the Internalizing Syndrome Scale of the Achenbach System of Empirically Based Assessment Youth Self-Report ($r = .80$; [ASEBA] Achenbach & Rescorla, 2001), and a moderate correlation ($r = .69$) with the Internalizing Problems composite of the Conners-Wells' Adolescent Self-Report Scale (Conners et al., 1997). The Relations with Parents subscale has also shown moderate correlations ($r = -.54$) with the Family Problems scale

of the Minnesota Multiphasic Personality Inventory-2 (Butcher, Graham, Ben-Porath, Tellegen, Dahlstrom, & Kaemmer, 2000). To date no published studies have provided support for the convergent validity of the Attitude towards Teachers scale by comparing it with similar constructs. However, the face validity of the scale could be assessed by examining the specific items in the scale. According to the test manual, the Attitudes towards Teachers scale “assesses the individual’s perception of teachers as being uncaring, unfair, or unmotivated to help their students” (p. 75). Items in this measure represent one of these dimensions as shown by the following examples: My teacher cares about me, Teachers are unfair, and My teacher gets mad at me for no good reason. Responses to these items would indicate the quality of the student-teacher relationship. Scores on the Attitudes towards Teachers scale have been found to correlate with related outcomes, such as scores on the externalizing problems scale ($r = .61$) and the oppositional defiant problems scale ($r = .62$) on the Youth Self-Report ASEBA. High scores on the Attitude towards Teacher scale typically indicates poor teacher-student relations. Participants’ raw composite scores were analyzed.

Teacher Rating Scale Form of the Behavior Assessment System for Children-Adolescent Version, 2nd Edition (BASC-2-TRS-A). The BASC-2-TRS-A (Reynolds & Kamphaus, 2004) is similar the BASC-2-SRP-A in that it is a measure of psychopathology and adaptive functioning in youth ages 12 to 21. This measure is to be completed by a teacher that has known the student for at least two months. A total of 139 items are scored on a 4-point Likert scale ranging from 1 (*never*) to 4 (*almost always*). The BASC-2-TRS-A includes 10 clinical subscales (i.e., aggression, anxiety, attention problems, atypicality, conduct problems, depression, hyperactivity, learning problems,

somatization, and withdrawal) and five adaptive subscales (i.e., adaptability, leadership, social skills, study skills, and functional communication). For the purpose of the study, only clinical subscales that form the Externalizing Composite (i.e., aggression, conduct problems, hyperactivity) were analyzed. The raw sum composite scores on the relevant subscales and the externalizing composite were analyzed.

The manual reports excellent internal consistency for the Externalizing composite ($\alpha = .96$). The Externalizing composite has also shown good test-retest reliability ($r = .89$) and strong construct validity via a strong correlation with the Externalizing Syndrome scale of the ASEBA ($r = .76$; Achenbach & Rescorla, 2001).

Life Events Checklist (LEC). The LEC (Johnston & McCutcheon, 1980; Appendix H) is a 48-item measure in which respondents indicate whether they have experienced certain life events within the past year. The presence of stressful life events is based upon the “yes” or “no” responses ($yes = 1, no = 0$). For the current study, only the 18 items that are perceived as out of the child’s control were administered. Each student’s score can range from 0 to 18, with higher numbers indicating more frequent experiences of major stressful life events. In prior research with middle and high school students, the internal consistency of this shortened version of the LEC was found to be moderate ($\alpha = .68$; Suldo & Huebner, 2004a). The test-retest reliability of the complete version of the LEC is adequate, with correlations after two weeks ranging from .69 to .72 (Brand & Johnson, 1982).

Perceived Stress Scale (PSS). The PSS (Cohen, Kamarck, & Mermelstein, 1983; Appendix I) was originally a 14-item measure that covered perceived levels of stress/distress and attempts to cope with this stress. Respondents rate their feelings in the

past month on a 5-point scale (0 = *never* to 5 = *very often*). Later factor analytic work found that the six negatively phrased items loaded onto a single factor of perceived distress (Golden-Kreutz, Browne, Frierson, & Andersen, 2004). For the purposes of the current study, this 6-item index of global distress was analyzed (e.g., in the last month, how often have you (1) *felt nervous or stress*, (2) *felt that you were unable to control the important things in your life*, and (3) *felt difficulties were piling up so high that you could not overcome them*).

The 6-item PSS has been used successfully with several adolescent samples and has demonstrated high internal consistency ($\alpha = .91$, Suldo et al., 2008). The original 14-item scale evidenced strong test-retest reliability ($r = .85$) over a two day period among college students, as well as significant correlations in the expected directions with mental health problems such as depression ($r = .76$) and somatic complaints, and a significant correlation with objective measures of stressors assessed via the College Student Life-Events Scale ($r = .20$; Cohen et al., 1983).

The Social Experience Questionnaire- Self Report (SEQ-S). The SEQ-S (Crick & Grotpeter, 1996; Appendix J) is a 15-item measure that assesses children's reports of relational victimization, overt victimization, and receipt of pro-social acts in the school setting. For the purposes of the current study, only Overt Victimization scale (5 items) and Relational Victimization scale (5 items) were examined. Students report on the frequency of victimization experiences using a Likert scale ranging from 1 (*never*) to 5 (*all the time*). The Overt Victimization scale measures the frequency with which other adolescents threaten to harm or attempt to harm their physical well-being (e.g., *How often do you get pushed or shoved by another student at school?*). The Relational Victimization

scale measures the frequency with which others attempt to threaten or harm their relationships (e.g., *How often does a student try to keep others from liking you by saying mean things about you?*). Students' responses were summed for each scale, with higher scores equaling greater experiences of victimization. Previous research utilizing the SEQ-SR has analyzed the victimization subscales separately; however past research has found a strong correlation ($r = .75$; Martin, Huebner, & Valois, 2008) between the two victimization scales indicating that they could potentially be analyzed together as a combined total victimization score. In the current study, preliminary analyses examined the correlation between the two victimization subscales. Due to the high correlation between the two ($r = .62$), items from the two subscales were combined and analyzed as a total victimization score.

The SEQ-SR has been shown to have strong internal consistency ($\alpha = .77$ to $\alpha = .80$) in past studies with adolescent samples. Strong test-retest reliability in a 4-week period was found in an adolescent sample for the Overt Victimization scale ($r = .57$) and the Relational Victimization scale ($r = .53$; Storch, Crisp, Roberti, Bagner & Masia-Warner, 2005). In addition, overt and relational victimization relate in the expected directions with mental health outcomes, namely depressive symptoms ($r = .49$ and $r = .49$), loneliness ($r = .44$ and $r = .34$), and social anxiety ($r = .47$ and $r = .51$), respectively (Storch et al., 2005).

Child and Adolescent Social Support Scale (CASSS). The CASSS (Malecki & Demaray, 2002; Appendix K) measures students' perceptions of social support from five sources: parents, teachers, classmates, close friends, and school administrators. Students rate the frequency with which they perceive receiving four types of support (emotional,

instrumental, appraisal, and informational) from a specific course, using a likert scale ranging from 1 (*never*) to 6 (*always*). The CASSS was designed for administration to students in grades 3 to 12. Although the complete CASSS includes 60 items to assess five sources of support, the current study only examined three subscales of the CASSS: parents (12 items), teachers (12 items), and classmates (12 items). Example items include: *my parent(s) show be they are proud of me* (parent support), *my teacher(s) treats be fairly* (teacher support), and *my classmates treat me nicely* (peer/classmate support). Student participants were asked to rate on their general teacher-student relationships instead of reporting on one particular teacher. Therefore, this subscale was utilized as a global indicator of general teacher support. The classmate support subscale was chosen as a representation of general peer support given that classmate support is more readily available and more relevant during adolescence since students switch classes every subject. Therefore, during secondary school, students may not be in any classes or attend the same school as their close friends and social support from peers may be particularly important in the school context when dealing with stressors such as peer victimization and student-teacher conflict. Further, classmate support has been shown to account for more of the variance in emotional symptoms, personal adjustment, and school maladjustment (as measured by composites on the BASC-2 SRP), when compared to close friend support (Malecki & Demeray, 2003).

Previous studies with youth reveal high internal consistency for all three subscales of interest, with alpha coefficients ranging from .92 to .95 (Malecki & Demaray, 2010). There has also been strong support for test-retest reliability over an 8 to 10 week period ($r = .78$; Malecki & Demaray, 2002). In regards to convergent validity, the CASSS parent,

teacher, and classmate subscales are significantly correlated with parent, teacher, and classmate scales from Harter's (1985) Social Support Scale for Children ($r = .56, .48,$ and $.36,$ respectively).

Overview of Data Analysis Plan

After Time 2 data was collected on the aforementioned measures, data was entered into the larger database, checked for accuracy, and imported into Statistical Analyses Software (SAS). The following section outlines analyses utilized to answer the research questions of interest.

Preliminary analyses. The dataset was screened for outliers, and sensitivity analyses were conducted to determine the effect of including and excluding the outliers on the study results. The normality of all continuous variables analyzed were examined via descriptive statistics. If high levels of skew and kurtosis were detected, the transformed versions of these variables were utilized in analyses. To assure the reliability of the measures chosen, the internal consistency of each composite score was calculated and reported through Cronbach alphas. Further, analyses were conducted to explore differences between School A and School B in order to determine if the subsamples are unique in some way, prior to combining the two subsamples into one total sample.

Descriptive statistics were used to illustrate the sample characteristics with regard to mean age and proportion of each demographic characteristic represented in the sample. Further analyses were performed to investigate whether there were systematic differences in the sample between Time 1 and Time 2 that was caused by differential attrition of a particular group or type of participants. A series of chi-square tests was conducted detect differences between the sample of students that had complete data (i.e., remained in the

study from Time 1 to Time 2), as compared to the subsample that only had data at Time 1.

Correlational analyses. To determine the bivariate relationships between Time 1 stress variables (i.e., stressful life events, conflict in social relations, and perceived stress), and mental health at both time points (i.e., Time 1 and Time 2 life satisfaction and psychopathology), Pearson product-moment coefficients were calculated between variables. An alpha level of .05 was used to indicate statistical significance in this and all subsequent analyses.

Regression analyses. Three simultaneous multiple regressions were conducted to determine the extent to which Time 1 stress variables predict Time 2 mental health outcomes (i.e., life satisfaction, externalizing problems, internalizing problems). Time 1 mental health scores were included in the equations and were regressed on Time 2 mental health score in order to control for initial levels of mental health on the outcome. Each Time 1 stress variable was also entered and regressed on mental health scores at Time 2. The R-square (R^2) represents the total variance of Time 2 mental health scores accounted for by the stress variables and Time 1 mental health scores. Beta weights and uniqueness indices were reviewed to assess the importance of each predictor variable and provide information on the amount of variance in Time 2 mental health scores that can be accounted for by each specific stress variable independently while holding the others constant. To determine which stressors are unique predictors of mental health, the p -values for the specific beta weights of each stress variable were examined. To assess the unique contribution of each predictor variable, squared semi-partial correlations (sr^2) were examined. Squared semi-partial correlations represent a predictor's unique

contribution to the outcome variable (i.e., life satisfaction, externalizing problems, and internalizing problems) while controlling for the influence of all other predictors. For example, the simultaneous regression analysis to predict Time 2 internalizing problems consisted of Time 1 internalizing problems scores, as well as Time 1 major life events scores, perceived stress scores, attitudes towards teachers scores, relations with parents scores, and peer victimization scores regressed onto Time 2 internalizing problems scores. This process was repeated for Time 2 externalizing problems, and Time 2 life satisfaction scores. Below are the three multiple regression equations that were entered into SAS:

$$\text{T2 Internalizing} = \text{T1 Internalizing} + \text{T1 Major Life Events} + \text{Time 1 Peer Victimization} \\ + \text{Time 1 Attitudes towards Teachers} + \text{T1 Relations with Parents} + \text{T1} \\ \text{Perceived Stress}$$

$$\text{T2 Externalizing} = \text{T1 Externalizing} + \text{T1 Major Life Events} + \text{Time 1 Peer} \\ \text{Victimization} + \text{Time 1 Attitudes towards Teachers} + \text{T1 Relations} \\ \text{with Parents} + \text{T1 Perceived Stress}$$

$$\text{T2 Life Satisfaction} = \text{T1 Life Satisfaction} + \text{T1 Major Life Events} + \text{Time 1 Peer} \\ \text{Victimization} + \text{Time 1 Attitudes towards Teachers} + \text{T1 Relations} \\ \text{with Parents} + \text{T1 Perceived Stress}$$

In order to test whether social support from various sources is a moderator between stress reported at Time 1 and mental health at Time 2, nine hierarchical multiple regression analyses were conducted. First, all variables used in the regression analyses were centered to avoid multicollinearity. Time 1 mental health problems were entered into the regression analyses along with each stress variable (i.e., stressful life events, peer victimization, attitudes towards teachers, relations with parents, and perceived stress) and the specific source of support of interest (i.e., parent, classmate, teacher). Additionally, the interaction terms between each stress variable and the source of social support were

entered. For example, in order to test for moderation effects of peer support on the relationship between initial stress and later internalizing problems, Time 1 scores on internalizing problems, each stress variable, and peer support, as well as the interaction term between peer support and each stress variable were regressed onto internalizing problems at Time 2. This process was repeated to look at parent and teacher support as a moderator between stress variables and Time 2 mental health outcomes. Below are the following equations that were entered into SAS to complete the moderation analyses.

$$\begin{aligned} \text{T2 Internalizing} = & \text{T1 Internalizing} + \text{T1 Major Life Events} + \text{Time 1 Peer Victimization} \\ & + \text{Time 1 Attitudes towards Teachers} + \text{T1 Relations with Parents} + \text{T1} \\ & \text{Perceived Stress} + \text{T1 Peer Support} + \text{T1 Major Life Events} * \text{T1 Peer} \\ & \text{Support} + \text{T1 Peer Victimization} * \text{T1 Peer Support} + \text{T1 Attitudes} \\ & \text{towards Teacher} * \text{T1 Peer Support} + \text{T1 Relations with Parents} * \text{T1} \\ & \text{Peer Support} + \text{T1 Perceived Stress} * \text{T1 Peer Support} \end{aligned}$$

$$\begin{aligned} \text{T2 Internalizing} = & \text{T1 Internalizing} + \text{T1 Major Life Events} + \text{Time 1 Peer Victimization} \\ & + \text{Time 1 Attitudes towards Teachers} + \text{T1 Perceived Stress} + \text{T1} \\ & \text{Parent Support} + \text{T1 Major Life Events} * \text{T1 Parent Support} + \text{T1} \\ & \text{Peer Victimization} * \text{T1 Parent Support} + \text{T1 Attitudes towards} \\ & \text{Teacher} * \text{T1 Parent Support} + \text{T1 Perceived Stress} * \text{T1 Parent Support} \end{aligned}$$

$$\begin{aligned} \text{T2 Internalizing} = & \text{T1 Internalizing} + \text{T1 Major Life Events} + \text{Time 1 Peer Victimization} \\ & + \text{T1 Relations with Parents} + \text{T1 Perceived Stress} + \text{T1 Teacher} \\ & \text{Support} + \text{T1 Major Life Events} * \text{T1 Teacher Support} + \text{T1 Peer} \\ & \text{Victimization} * \text{T1 Teacher Support} + \text{T1 Relations with Parents} * \text{T1} \\ & \text{Teacher Support} + \text{T1 Perceived Stress} * \text{T1 Teacher Support} \end{aligned}$$

$$\begin{aligned} \text{T2 Externalizing} = & \text{T1 Externalizing} + \text{T1 Major Life Events} + \text{Time 1 Peer} \\ & \text{Victimization} + \text{Time 1 Attitudes towards Teachers} + \text{T1 Relations} \\ & \text{with Parents} + \text{T1 Perceived Stress} + \text{T1 Peer Support} + \text{T1 Major Life} \\ & \text{Events} * \text{T1 Peer Support} + \text{T1 Peer Victimization} * \text{T1 Peer Support} + \\ & \text{T1 Attitudes towards Teacher} * \text{T1 Peer Support} + \text{T1 Relations with} \\ & \text{Parents} * \text{T1 Peer Support} + \text{T1 Perceived Stress} * \text{T1 Peer Support} \end{aligned}$$

$$\begin{aligned} \text{T2 Externalizing} = & \text{T1 Externalizing} + \text{T1 Major Life Events} + \text{Time 1 Peer} \\ & \text{Victimization} + \text{Time 1 Attitudes towards Teachers} + \text{T1 Perceived} \\ & \text{Stress} + \text{T1 Parent Support} + \text{T1 Major Life Events} * \text{T1 Parent} \\ & \text{Support} + \text{T1 Peer Victimization} * \text{T1 Parent Support} + \text{T1 Attitudes} \\ & \text{towards Teacher} * \text{T1 Parent Support} + \text{T1 Perceived Stress} * \text{T1 Parent} \\ & \text{Support} \end{aligned}$$

T2 Externalizing = T1 Externalizing + T1 Major Life Events + Time 1 Peer Victimization + T1 Relations with Parents + T1 Perceived Stress+ T1 Teacher Support + T1 Major Life Events * T1 Teacher Support + T1 Peer Victimization* T1 Teacher Support + T1 Relations with Parents* T1 Teacher Support + T1 Perceived Stress* T1 Teacher Support

T2 Life Satisfaction = T1 Life Satisfaction + T1 Major Life Events + Time 1 Peer Victimization + Time 1 Attitudes towards Teachers + T1 Relations with Parents + T1 Perceived Stress+ T1 Peer Support + T1 Major Life Events * T1 Peer Support + T1 Peer Victimization* T1 Peer Support + T1 Attitudes towards Teacher* T1 Peer Support + T1 Relations with Parents* T1 Peer Support + T1 Perceived Stress* T1 Peer Support

T2 Life Satisfaction = T1 Life Satisfaction + T1 Major Life Events + Time 1 Peer Victimization + Time 1 Attitudes towards Teachers + T1 Perceived Stress+ T1 Parent Support + T1 Major Life Events * T1 Parent Support + T1 Peer Victimization* T1 Parent Support + T1 Attitudes towards Teacher* T1 Parent Support + T1 Perceived Stress* T1 Parent Support

T2 Life Satisfaction = T1 Life Satisfaction + T1 Major Life Events + Time 1 Peer Victimization + T1 Relations with Parents + T1 Perceived Stress+ T1 Teacher Support + T1 Major Life Events * T1 Teacher Support + T1 Peer Victimization* T1 Teacher Support + T1 Relations with Parents* T1 Teacher Support + T1 Perceived Stress* T1 Teacher Support

Ethical Considerations

Several considerations were taken in order to ensure the safety of the participants in the current study. The primary investigators of the larger, ongoing study received IRB approval from the University of South Florida and the participating school district prior to Time 1 data collection. It was not anticipated that the current study would cause harm to student participants. The author of the current dissertation had an amendment request approved to conduct the additional analyses specified in this document.

Second, a parental consent form (Appendix A) was sent home with each student who met recruitment criteria. The parental consent form outlined the goals of the larger

on-going research project as well as the benefits and risks of the children participating in the study. Once a parent consent form was received allowing the students to participate in the study, written assent was obtained prior to permitting the students to initiate participation by completing the surveys at Time 1. Prior to Time 1 data collection, one of the trained research team members read aloud the student assent form in order to ensure understanding of the risks and benefits of participation. Within the student assent, confidentiality and voluntary participation was outlined.

In part because the current study required students to provide sensitive information on their psychosocial functioning, several steps were taken in order to maintain confidentiality of their responses. For instance, at Time 1 each student was provided with a code number, and the information linking the student to his or her code number was (and will continue to be) locked and only accessible by the principal investigator and approved research team members. All data from participants were analyzed in this de-identified and aggregated form. Further, participants' individual responses to the questions were not shared with school staff.

Chapter 4

Results

This chapter describes the results of the analyses conducted in order to answer the research questions of interest in the current study. Attrition analyses were conducted to examine whether there were differences between students who participated at both time points and those who only participated at Time 2. Additional preliminary analyses included ensuring the reliability and validity of the data collected at Time 2. Next, correlations among variables are provided to illustrate the relationship between mental health indicators (i.e., life satisfaction, psychopathology) at both time points, as well as associations between mental health and initial levels of stress (i.e., stressful life events, negative social relationships, perceived stress) and social support from parents, teachers, and peers. Then, results from regression analyses conducted to determine if stressors experienced at Time 1 are related to students' mental health outcomes at Time 2 are summarized. Last, results of regression analyses conducted to determine if social support is a protective factor against declines in students' mental health are presented.

Preliminary Analyses

Attrition analyses. Attrition analyses were conducted to determine if there were significant demographic differences between the 428 participants who participated at both Time 1 and 2 and the 72 participants who participated only at Time 1. Chi-square tests for independence indicated no significant differences between the two groups in terms of ethnicity, $\chi^2(6, N=500) = 10.02, p = .12$, parent marital status, $\chi^2(1, N=500) = 0.19, p = .67$, socio economic status (SES)/ school lunch status, $\chi^2(1, N=500) = 0.03, p$

= .85, gender, $\chi^2(1, N = 500) = 1.44, p = .23$), grade level, $\chi^2(2, N = 500) = 2.07, p = .36$, or school, $\chi^2(1, N = 500) = 0.64, p = .42$.

Validity of data. The accuracy and validity of the data collected and entered at Time 1 has been established previously (see Thalji, 2012). In order to examine the validity of the survey data collected at Time 2, the 428 students' scores on the BASC-2 SRP-A V (validity) index were examined. The V index consists of five "nonsensical items" and according to the BASC-2 SRP-A manual, a sum score of 3 is in the "caution" range, and scores above or equal to 4 represent "extreme caution." A total of 16 participants had scores of 3 and a total of 6 participants had scores of 4 or above. After the research team manually examined the 22 survey packets for these participants, it was decided that three participants should be removed from the sample because they endorsed an impossible item (e.g., I have not seen a car in the past six months), and appeared to have responded in a random manner on other items throughout the survey packet. The other 19 participants were retained in the data set because they did not endorse any of the impossible items on the V index and did not seem to be random responders on any of the other survey measures. Following the validity check of the BASC-2 SRP, data from a final sample of 425 participants were examined in the following analyses.

Accuracy of data entry. Both student self-report and teacher report data were entered into a SPSS database by the author of this dissertation and one other graduate student. Every 10th student and teacher survey packet was checked for data entry errors by members of the USF Positive Psychology research team. When an error was detected, the survey packets that were entered immediately before and after were checked for errors. The data checking procedure resulted in 58 student survey packets (13.55% of the

428 student self-report packets) and 66 teacher packets being checked for errors. Each student survey packet contained 369 data entry points. A total of 12 errors were detected out of the 58 student packets that were checked, resulting in a 99.94% accuracy rate. Each teacher survey contained 157 variables. A total of 15 errors were detected out of the 66 teacher packets that were checked, resulting in a 99.86% accuracy rate.

Handling of missing data. Out of the 428 student participants, a total of 146 skipped at least one item on the self-report packet; conversely a total of 282 participants had zero missing data points. Of the 146 participants: 64.38% skipped only one item, 20.54% skipped two items, 10.96% skipped three items, 2.74% skipped four items, and 0.68% (one participant) missed 10 items. The measure with the most items missed was the BASC-2 SRP (43 items skipped). In the event of a missing data point on SLSS, the PSS, SEQ-S, and the CASSS, a score was calculated and imputed if the participant had data for at least 80% of the items on a given subscale; the mean score on the answered items was substituted for the missing data point. If there was missing data on the LEC, it was assumed that the particular event did not occur and therefore the missing data value was changed to a zero to represent that the event did not occur.

Out of the 428 teacher ratings (as provided by 67 teachers), a total of 58 missed at least one item on the teacher-report measures, while 370 teacher participants had zero missing data points. Of the 58 teachers that had missing data points, 75.86% missed 1 item, 17.24% missed 2 items, and 6.90% missed 3 items.

Missing data for the BASC 2-SRP and the BASC 2-TRS, items were handled according to procedures outlined in the BASC technical manual. In the event that one or

two items were missing from a specific scale, the constant score for that specific scale (as specified in the BASC technical manual) was inserted in place of the missing data point.

Data screening. The sample consisting of 425 students with complete and valid Time 1 and Time 2 data was then screened using Statistical Analysis Software, version 9.3 to identify any univariate and multivariate outliers. Univariate outliers were defined as participants scoring more than 4 standard deviations from the group mean on any of the mental health variables (i.e., life satisfaction, internalizing problems, externalizing problems). A total of 11 students were identified as being extreme outliers at Time 1; ten out of the 11 due to their scores on Externalizing Problems as rated by their teacher on the BASC-2 TRS-A, and the eleventh outlier due to its score on the internalizing problems per student self-report on the BASC-2 SRP-A. A total of 8 students were identified as extreme outliers at Time 2, all due to their scores on the Externalizing Problems composite of the BASC-2 TRS-A rated by their teachers. Cook's distance value was then calculated to estimate the change in analysis that occurred with the removal of the observation. For all identified univariate outliers, the Cook's distance values were <1.0 and therefore these participants were retained in the data set due to their scores not significantly influencing the outcomes in the dataset.

Multivariate outliers were defined as subjects scoring higher than 22.46, the criterion determined by the Mahalanobis distance for six degrees of freedom. Eight participants of the 425 were identified as multivariate outliers. The relationships between their scores on mental health indicators (i.e., life satisfaction, internalizing problems, externalizing problems) between Time 1 and Time 2 exceeded the $p < .001$ criterion ($\chi^2 [6] = 22.46$). Although eight participants were identified as multivariate outliers, they

were retained in the dataset ($N=425$) for all subsequent analyses for several reasons. First, it is assumed that the mental health profiles of the participants were not due to invalid responses after examining the BASC validity index and careful review of the rating scales with elevated validity index scores. Those surveys in which students responded in an invalid way were removed from the dataset. Further, data were both screened and checked for accuracy, decreasing the probability of a data entry error. Last, the eight observations that were identified as multivariate outliers can be considered to be the result of naturally occurring variances in mental health profiles. In any event, sensitivity analyses were employed as a follow up to all data analyses of the current study. Specifically, data analyses conducted to answer the research questions of interest to the current study were done twice: utilizing the dataset that included the multivariate outliers ($N= 425$) and then were repeated using the dataset that excluded the eight multivariate outliers ($N= 417$). Comparisons of findings obtained from the two datasets are summarized in Table 9.

Descriptive Statistics

The means, standard deviations, ranges, skewness, and kurtosis of each of the predictor, moderator, and outcomes variables were examined to assess univariate normality. The results are reported in Table 3.

Table 3

Descriptive Statistics of Raw/Non-Transformed Variables (N= 425)

Variable	N	M	SD	Range	Skewness	Kurtosis
<u>Predictor</u>						
T1 Life Satisfaction	425	4.26	1.01	1.0 - 6.0	-0.45	-0.27
T1 Internalizing	425	41.53	28.30	0.0 - 150.0	0.78	0.08
T1 Externalizing	425	5.28	8.77	0.0 - 26.0	2.78	8.28
T1 Major Life Events	425	4.23	2.82	0.0 - 14.0	0.92	0.61
T1 Peer Victimization	424	14.59	5.36	10.0 - 48.0	2.29	8.38
T1 Negative Attitude towards Teachers	425	7.42	4.81	0.0 - 23.0	0.58	-0.20
T1 (Positive) Relations with Parents	425	18.62	6.79	0.0 - 29.0	-0.36	-0.64
T1 Perceived Stress	425	2.99	1.00	1.0 - 5.0	0.07	-0.70
<u>Moderator</u>						
T1 Teacher Support	425	4.25	1.06	1.0-6.0	-0.31	-0.44
T1 Parent Support	425	4.14	1.15	1.17-6.0	-0.13	-0.93
T1 Peer Support	425	4.15	1.02	1.08-6.0	-0.08	-0.42
<u>Outcome</u>						
T2 Life Satisfaction	425	4.48	1.00	1.0 – 6.0	-0.58	-0.04
T2 Internalizing	425	38.38	26.79	0.0-131.0	0.86	0.32
T2 Externalizing	425	5.13	9.49	0.0-70.0	3.10	11.94

Results indicate that 11 variables had a normal distribution (skewness and kurtosis between -1.0 and 1.0) and three variables had non-normal distributions with

extreme values of skew and kurtosis. These three variables include externalizing problems at Time 1 (skew = 2.78, kurtosis = 8.28), peer victimization at Time 1 (skew = 2.29, kurtosis = 8.38), and externalizing problems at Time 2 (skew = 3.10, kurtosis = 11.04). To explore the influence of non-normal data, sensitivity analyses were conducted with transformed versions of the non-normal variables. After transformation, all three problematic variables met criteria for normal distribution (i.e., skew and kurtosis values between the range of -1 to +1). The results of the transformations are as follows: peer victimization (transformed by taking the inverse of the raw variable; skew = -.41 kurtosis = -.79), externalizing problems Time 1 (transformed by taking the log of the raw variable; skew = .67, kurtosis = -.83), and externalizing problems at Time 2 (transformed by taking the log of the raw variable; skew = .76, kurtosis = -.54).

The transformed versions of the three variables were utilized in further analyses to explore the effect of non-normal distributions. Results from analyses utilizing the transformed and raw variables were compared (using the complete dataset that included participants identified as outliers). In the correlational analyses, the relationship between variables remained similar in 89 of the possible 91 relationships. Two relationships changed in terms of statistical significance when the transformed variables were used. In terms of externalizing problems at Time 1 and major life events, the relationships between variables was .09 between the raw variables and .13 between the transformed variables, with the *p*-values changing from .057 to .009 respectively. The absolute value of the positive relationship between negative attitudes towards teachers and externalizing problems at Time 2 changed from .18 to .15, and the *p*-value changed from <.001 to .003.

When the results from regression analyses were compared using both the raw and transformed variables, there were no differences with respect to life satisfaction and internalizing problems as outcomes. However, in the case of Time 2 externalizing problems as the outcome, when the raw/original forms of all variables were employed, both Time 1 externalizing problems and negative attitudes towards teachers were significant predictors of Time 2 externalizing problems. When the transformed variables were utilized negative attitudes towards teachers was no longer a significant unique predictor of Time 2 externalizing problems ($p = .08$) leaving Time 1 externalizing problems as the only significant predictor.

When results obtained from the moderated regression analyses using both raw and transformed variables were compared, there were no differences in the results (i.e., no sources of social support were significant moderators in the relationship between stress variables and mental health outcomes, regardless of dataset analyzed). Although three interaction terms approached significance (specifically, negative attitudes towards teachers X parent support interaction term for externalizing problems, peer victimization X classmate support interaction term for life satisfaction, negative attitudes towards teachers X classmate support interaction term for internalizing problems), they did not meet the .05 significance criteria.

The rest of this chapter focuses on the results obtained using the original/raw versions of all variables with the complete dataset. However, results obtained in analyses using the transformed versions of the aforementioned non-normal variables are also summarized.

Comparison of Data from Students at Different Schools

The dataset analyzed in the current study includes data from youth attending two large public high schools from differing community types (i.e., rural, urban). Before combining data from the two separate schools, a Box's M test was computed to provide an empirical rationale to analyze the data as one single dataset. Results of the Box's M test utilizing all raw variables, indicate that the covariance matrix across schools is not significantly different ($\chi^2 = 127.88, p = .06$). Therefore, the correlations and standard deviations among variables for each school are not significantly different. Analyses were repeated utilizing the transformed variables still indicate that the data from the two separate schools can be combined into one dataset ($\chi^2 = 106.25, p = .45$). As a follow up, three independent-means t-tests were computed to analyze whether there were significant differences in means between schools on the dependent variables (i.e., Time 2 life satisfaction, Time 2 internalizing problems, and Time 2 externalizing problems). The results of the t-tests revealed no significant mean differences between the two schools on Time 2 life satisfaction scores, $t(423) = -.40; p = .69$, Time 2 internalizing problems, $t(423) = .04; p = .97$, or Time 2 externalizing problems $t(423) = -.44; p = .66$. When the third t-test was repeated using the transformed externalizing problems variable, there were significant mean differences between the schools $t(423) = -1.96; p = .051$. Therefore, analyses involving Time 2 externalizing problems as the dependent variable employ "school" as a covariate to account for the mean differences between schools.

Measure Reliability

For each scale, alpha coefficients were calculated to provide information on the reliability of each measure of interest within the current study. Utilizing the sample of

425 students, the internal consistency of the SLSS was high, with a coefficient alpha of .88 at Time 1 and .89 at Time 2. The BASC-2 SRP-A internalizing composite also had a high internal consistency, with a coefficient alpha of .96 at both Time 1 and Time 2. The internal consistency of the BASC-2 TRS-A externalizing composite was also high ($\alpha = .94$ at Time 1 and $\alpha = .96$ at Time 2). Regarding Time 1 stress predictor variables, the internal consistency was moderate for the LEC ($\alpha = .70$), but higher than anticipated given the lack of logical association between different discrete events (for instance, experiencing a family move would not necessarily co-occur with experiencing a death in the family). The SEQ-S composite score had good internal consistency; the items within the two scales of interest (Relational Victimization and Overt Victimization) yielded a coefficient alpha of .88. Both the single BASC-2 SRP scales had good internal consistency: Attitude towards Teachers ($\alpha = .82$) and Relations with Parents ($\alpha = .90$). The last stress measure, Perceived Stress also had a high internal consistency ($\alpha = .90$). The excellent internal consistencies of the support scales of the CASSS are as follows: Parent Support ($\alpha = .95$), Teacher Support ($\alpha = .94$) and Classmate Support ($\alpha = .94$). In sum, in the current sample all scales resulted in adequate internal consistency, with alpha values ranging from .70 (LEC) to .96 (BASC-2 SRP-A Internalizing Composite Time 1 and Time 2 and BASC-2 TRS-A Externalizing Composite Time 2). The results of these analyses indicate that there is a low probability of measurement error in subsequent analyses.

Correlational Analyses

To determine the nature and strength of relationships between predictor, moderator, and outcome variables within the complete sample (N=425), Pearson product-

moment coefficients were calculated between all variables, utilizing an alpha level of .05 to indicate statistical significance. Correlations are reported in Table 4. Results indicate that at Time 1, life satisfaction was negatively related to internalizing problems ($r = -.67$; $p < .001$) and not related to externalizing problems ($r = .00$). Similarly, Time 1 life satisfaction was negatively related to Time 2 internalizing problems ($r = -.47$; $p < .001$) and not related to Time 2 externalizing problems ($r = .00$). The correlation between internalizing problems and externalizing problems was $r = -.02$ at Time 1 and $r = -.03$ at Time 2. Regarding stability of mental health, across-time correlations between the same mental health variables at different time points are as follows: life satisfaction ($r = .59$; $p < .001$), internalizing problems ($r = .67$; $p < .001$), and externalizing problems ($r = .36$; $p < .001$).

Of particular importance to the current study are relationships between stress variables and mental health indicators. Life satisfaction at Time 1 was associated with all stress variables at Time 1 in the expected directions, including inverse associations with: major life events ($r = -.31$; $p < .001$), peer victimization ($r = -.18$; $p < .001$), negative attitudes towards teachers ($r = -.33$; $p < .001$), and perceived stress ($r = -.57$; $p < .001$). The one stress variable evidencing a positive relationship with Time 1 life satisfaction was relations with parents ($r = .60$; $p < .001$), because higher scores on this scale reflect a more positive relationship and less stress. Internalizing problems at Time 1 were significantly associated in the expected directions with all of the Time 1 stress variables: major life events ($r = .31$; $p < .001$), peer victimization ($r = .38$; $p < .001$), negative attitudes towards teachers ($r = .49$; $p < .001$), perceived stress ($r = .69$; $p < .001$), and relations with parents ($r = -.53$; $p < .001$). Contrastingly, Time 1 externalizing problems

were significantly correlated with only one of the Time 1 stress variables: (negative) attitudes towards teachers ($r = .13; p < .05$).

Relationships between Time 1 stress variables and Time 2 mental health indicators were similar. Time 2 life satisfaction was significantly inversely associated the following Time 1 stress variables: major life events ($r = -.20; p < .001$), peer victimization ($r = -.15; p < .001$), negative attitudes towards teachers ($r = -.25; p < .001$), and perceived stress ($r = -.37; p < .001$), as well as related to relations with parents in a positive direction ($r = .41; p < .001$). Time 2 internalizing problems were positively associated with all but one of the stress variables at Time 1: major life events ($r = .22; p < .001$), peer victimization ($r = .23; p < .001$), negative attitudes towards teachers ($r = .32; p < .001$), and perceived stress ($r = .18; p < .05$), as well as inversely associated with (positive) relations with parents ($r = -.40; p < .001$). Time 2 externalizing problems were significantly correlated with only one Time 1 stressor: negative attitudes towards teachers ($r = .18; p < .001$).

Table 4
Intercorrelations between Predictor, Moderator, and Outcome Variables (N=425)

Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Life Satisfaction T1	1	-0.67**	0.00	-0.31**	0.60**	-0.18**	-0.33**	-0.57**	0.62**	0.32**	0.27**	0.59**	-0.47**	-0.00
2. Internalizing Problems T1		1	-0.02	0.31**	-0.53**	0.38**	0.49**	0.69**	-0.53**	-0.33**	-0.32**	-0.46**	0.67**	0.04
3. Externalizing Problems T1			1	0.09	0.00	0.08	0.13*	-0.00	0.05	0.02	-0.07	-0.05	-0.00	0.36**
4. Major Life Events T1				1	-0.27**	0.21**	0.21**	0.32**	-0.24**	-0.03	-0.16**	-0.20**	0.22**	0.06
5. Relations with Parents T1					1	-0.19**	-0.37**	-0.42**	0.77**	0.31**	0.34**	0.41**	-0.40**	-0.00
6. Peer Victimization T1						1	0.28**	0.27**	-0.20**	-0.35**	-0.28**	-0.15**	0.23**	0.07
7. Negative Attitudes towards Teachers T1							1	0.33**	-0.33**	-0.36**	-0.66**	-0.25**	0.32**	0.18**
8. Perceived Stress T1								1	-0.39**	-0.15**	-0.19**	-0.37**	0.48**	0.03
9. Parent Support T1									1	0.45**	0.38**	0.42**	-0.44*	0.05
10. Classmate Support T1										1	0.51**	0.29**	-0.26**	0.02
11. Teacher Support T1											1	0.20**	-0.18**	-0.04
12. Life Satisfaction T2												1	-0.66**	0.04
13. Internalizing Problems T2													1	-0.03
14. Externalizing Problems T2														1

Note. * $p < .05$, ** $p < .001$

Regression Analyses

Three simultaneous multiple regressions were conducted to determine the extent to which stressors predicted students' mental health (i.e., life satisfaction, internalizing problems, externalizing problems). Beta weights and uniqueness indices were reviewed to assess the importance of each predictor variable and provide information on the amount of variance in mental health variables that can be accounted for by each specific stress variable independently while holding the others constant. To control for initial levels of mental health, Time 1 mental health scores were also entered into the regression analyses. To determine which stressors were unique predictors of each mental health variable, the p -values for the specific beta weights of each stressor were examined. To assess the unique contribution of each predictor variable, squared semi-partial correlations (sr^2) were also examined. Squared semi-partial correlations represent a predictor's unique contribution to the outcome variable (e.g., life satisfaction) while controlling for the influence of all other predictors.

Life satisfaction. The linear combination of Time 1 life satisfaction and stress variables (i.e., major life events, peer victimization, negative attitudes towards teacher, relations with parents, perceived stress) explained a significant and sizable amount of variance in Time 2 life satisfaction, $F(6, 417) = 38.69, p < .001, R^2 = .36$, adjusted $R^2 = .35$. As shown in Table 5, no stress variables were significant unique predictors of Time 2 life satisfaction, beyond the variance accounted for by Time 1 life satisfaction ($\beta = .52, p < .05$). Out of the stress variables included in the regression analyses, the strongest predictor of Time 2 life satisfaction was relations with parents ($\beta = .06, p = .22$). In sum,

when Time 1 scores of life satisfaction are controlled for, none of the particular stressors of interest were unique predictors of life satisfaction scores one year later. Of note, to assess for problems with multi-collinearity (a high degree of correlation among predictor variables), the Variance Inflation Factor (VIF) was examined. None of the variables entered into the multiple regression equation had a VIF larger than 10, which indicates that the lack of findings is not due to multi-collinearity. Sensitivity analyses were also computed utilizing the transformed peer victimization variable. The results of the multiple regression did not change in that the only significant predictor was Time 1 life satisfaction.

Internalizing problems. The combination of Time 1 internalizing problems and stress variables (i.e., major life events, peer victimization, negative attitudes towards teacher, relations with parents, perceived stress) explained a significant and sizable amount of variance in Time 2 internalizing problems, $F(6, 417) = 57.64, p < .001, R^2 = .45, \text{adjusted } R^2 = .45$. As shown in Table 5, no stress variables were significant unique predictors of Time 2 internalizing problems, beyond the variance accounted for by Time 1 internalizing problems ($\beta = .63, p < .05$). The stress variable closest to reaching statistical significance, with the largest influence on Time 2 internalizing problems, was relations with parents ($\beta = -.07, p = .11$). In sum, the only significant predictor of Time 2 internalizing problems was initial internalizing problems; once that variable is controlled for, no other stressors emerged as unique predictors. Analyses were also completed to examine the possible presence of multi-collinearity and changes in results due to the utilization of transformed variables. The VIF values were all less than 10, indicating that the lack of findings is not due to multi-collinearity. When the regression analysis was

repeated using the transformed peer victimization variable, the results did not change in that the only significant predictor was Time 1 internalizing problems.

Externalizing problems. Because of school differences in means levels of externalizing problems, “school” was entered as a covariate in this regression equation. The combination of Time 1 externalizing problems, school, and stress variables (i.e., major life events, peer victimization, negative attitudes towards teacher, relations with parents, perceived stress) explained a significant and moderate amount of variance in Time 2 externalizing problems, $F(7, 416) = 10.43, p < .001, R^2 = .15, \text{adjusted } R^2 = .13$ (see Table 5). One stress variable, negative attitudes towards teachers ($\beta = .16, p < .01$), significantly influenced Time 2 externalizing problems ($\beta = .33, p < .001$), beyond the variance accounted for by Time 1 externalizing problems. The squared semi-partial correlations (sr^2) indicate that Time 1 externalizing problems accounted for 11% of the variance in externalizing problems one year later. High levels of conflict between students and teachers at Time 1 accounted for an additional 2% of the variance in Time 2 externalizing problems. No other stress variables (i.e., major life events, peer victimization, relations with parents, perceived stress) emerged as unique predictors of Time 2 externalizing problems. Analyses were also completed to look for multicollinearity and changes due to use of transformed variables. The VIF values were all less than 10, indicating that the predictor variables were not significantly correlated with each other. When the regression was repeated using the transformed peer victimization, transformed externalizing problems at Time 1, and transformed externalizing problems at Time 2 variables, the results of the multiple regression changed in that the only significant predictor was Time 1 externalizing problems ($\beta = .38, p < .001$). The stress

variable, negative attitudes towards teachers ($\beta = .09, p = .09$), was no longer significant when the transformed versions of the variables were employed in this regression equation. In sum, regression analyses revealed that when accounting for Time 1 mental health variables, no stress variables uniquely predict Time 2 mental health outcomes, with the exception of negative attitude towards teachers significantly influencing Time 2 externalizing problems. The combination of Time 1 mental health variables and stress variables accounted for the most amount of variance (45%) in Time 2 internalizing problems and the least amount of variance in Time 2 externalizing problems (13%). Although there was only one stress variable that uniquely influenced a Time 2 mental health outcome, regression analyses were continued to explore for any potential interaction effects, such that a stress type may predict an outcome only under certain levels of social support. The following section outlines the findings of these multiple regressions.

Table 5
Stressors Regressed on Time 2 Mental Health Outcomes (N=424)

	R^2	B	$SE B$	β	sr^2	t
T2 Life Satisfaction	.35					
T1 Life Satisfaction		.52	.05	.52	.14	9.57**
Major Life Events		-.00	.02	-.01	.00	-.16
Peer Victimization (Non-Transformed)		-.00	.01	-.03	.00	-.64
Negative Attitudes towards Teachers		-.01	.01	-.04	.00	-.81
Relations with Parents		.01	.01	.06	.00	1.24
Perceived Stress		-.02	.05	-.02	.00	-.45
T2 Internalizing Problems	.45					
T1 Internalizing Problems		.60	.05	.64	.16	10.95**
Major Life Events		.08	.37	.01	.00	.21
Peer Victimization (Non-Transformed)		-.15	.20	-.03	.00	-.78
Negative Attitudes towards Teachers		-.08	.24	-.01	.00	-.33
Relations with Parents		-.28	.17	-.07	.00	-1.61
Perceived Stress		.53	1.36	.02	.00	.39
T2 Externalizing Problems (Non-Transformed)	.13					
T1 Externalizing Problems (Non-Transformed)		.36	.05	.33	.11	7.28*
Major Life Events		.03	.16	.01	.00	.18
Peer Victimization (Non-Transformed)		.02	.09	.01	.00	.19
Negative Attitudes towards Teachers		.31	.10	.16	.02	3.07*
Relations with Parents		.09	.07	.06	.00	1.17
Perceived Stress		.02	.50	.00	.00	.05
School		.11	.87	.01	.00	.13

Note. T1 indicates the mental health variables collected during Time 1 (Fall 2010), T2 indicates the mental health variables collected during Time 2 (Fall 2011), * $p < .01$, ** $p < .001$, sr^2 = squared semi-partial correlations.

Regression Analyses to Test for Moderation

A total of nine simultaneous multiple regressions were conducted to determine whether social support from various sources moderated the relationship between initial levels of stress and later mental health (at Time 2). First all variables included in the regression were centered in order to avoid multi-collinearity. Regarding main effects, Time 1 mental health problems were entered along with each stress variable and the specific source of support of interest (i.e., parent, classmate, teacher). Further, the interaction terms between each stress variable and the specific support source were also entered into the regression analyses. Of note, when analyses were completed to test parent support as a moderator, relations with parents and the interaction terms between this variable and parent support were excluded from the equation due to the high correlation between relations with parents and parent support ($r = .77$). This same rule was applied when teacher support was examined as a moderator, due to the high correlation between negative attitudes towards teachers and teacher support ($r = -.66$).

Teacher support as moderator. The combination of centered stress variables, teacher support, teacher support-related interaction terms, and Time 1 life satisfaction scores accounted for a significant amount of variance in Time 2 life satisfaction, $F(10, 413) = 23.71, p < .001$, adjusted $R^2 = .35$ (see Table 6). There were no significant predictors of Time 2 life satisfaction with respect to the centered stress variables; the only significant main effect was the influence of Time 1 life satisfaction on Time 2 life satisfaction. None of the four interaction terms (i.e., major life events X teacher support, peer victimization X teacher support, relations with parents X teacher support, perceived stress X teacher support) were significant (see Table 6). Therefore, experiencing high

levels of teacher support does not buffer students who experience stress from developing worse levels of life satisfaction one year later.

When Time 2 internalizing problems served as the criterion, the combination of stress variables, teacher support, interaction terms, and initial internalizing problems was statistically significant, $F(10, 413) = 35.09, p < .001$, adjusted $R^2 = .45$ (see Table 6). One variable emerged as a significant predictor: Time 1 internalizing problems ($\beta = .64, p < .001$). The only stress variable that approached statistical significance was the influence of relations with parents ($\beta = .08, p = .09$; see Table 6). There were no statistically significant interaction terms, indicating that teacher support was not a moderator between experiencing stress and internalizing problems one year later.

When Time 2 externalizing problems served as the criterion, the stress variables, interaction terms, and Time 1 externalizing problems accounted for a significant amount of the variance, $F(11, 412) = 6.15, p < .001$, adjusted $R^2 = .12$ (see Table 6). However, none of the interaction terms were statistically significant and the only main effect present was the influence of Time 1 externalizing problems ($\beta = .35, p < .001$; see Table 6). Taken together, findings indicate that teacher support was not a significant moderator between experiencing stress at Time 1 and mental health outcomes (i.e., life satisfaction, internalizing problems, and externalizing problems) at Time 2. The p -value associated with the perceived stress X teacher support interaction in predicting Time 2 externalizing problems was $p = .126$, noteworthy because this interaction emerged as a trend when a reduced dataset was employed (see Table 9).

Table 6

Predicting Time 2 Mental Health Scores from Initial Mental Health Levels, Teacher Support, Stressors, as well as the Interactions between Teacher Support and Stressors (N = 424)

	R ²	B	SE B	β	sr ²	t
T2 Life Satisfaction	.35					
T1 Life Satisfaction		.52	.05	.52	.14	9.48*
Major Life Events		-.00	.02	-.01	.00	-.20
Peer Victimization		-.01	.01	-.06	.00	-1.28
Relations with Parents		.01	.01	.07	.00	1.33
Perceived Stress		-.02	.05	-.02	.00	-.38
Teacher Support		.02	.04	.02	.00	.43
Major Life Events X Teacher Support		.00	.01	.01	.00	.25
Peer Victimization X Teacher Support		-.01	.01	-.06	.00	-1.29
Relations with Parents X Teacher Support		-.00	.01	-.04	.00	-.83
Perceived Stress X Teacher Support		-.06	.04	-.07	.00	-1.58
T2 Internalizing Problems	.45					
T1 Internalizing Problems		.61	.05	.64	.17	11.46*
Major Life Events		.04	.38	.00	.00	.10
Peer Victimization		-.01	.23	-.00	.00	-.05
Relations with Parents		-.30	.18	-.08	.00	-1.73±
Perceived Stress		.14	1.37	.01	.00	.10
Teacher Support		1.18	1.01	.05	.00	1.17
Major Life Events X Teacher Support		-.30	.35	-.04	.00	-.87
Peer Victimization X Teacher Support		.14	.15	.04	.00	.96
Relations with Parents X Teacher Support		.03	.14	.01	.00	.22
Perceived Stress X Teacher Support		1.21	1.00	.05	.00	1.26
T2 Externalizing Problems	.12					
T1 Externalizing Problems		.38	.05	.35	.12	7.65*
Major Life Events		.06	.17	.02	.00	.35
Peer Victimization		.08	.10	.05	.00	.84
Relations with Parents		.02	.07	.01	.00	.24
Perceived Stress		.34	.50	.04	.00	.67
T2 School		.57	.88	.03	.00	.65
Teacher Support		.06	.45	.01	.00	.14
Major Life Events X Teacher Support		.17	.16	.06	.00	1.11
Peer Victimization X Teacher Support		.05	.07	.04	.00	.69
Relations with Parents X Teacher Support		.08	.06	.06	.00	1.26
Perceived Stress X Teacher Support		-.65	.43	-.08	.00	-1.53

Note. * $p < .001$, ± $p < .10$, sr^2 = squared semi-partial correlations.

Parent support as moderator. Employing Time 2 life satisfaction as the criterion, the combination of centered stress variables, parent support, parent support-related interaction terms, and Time 1 life satisfaction scores accounted for a significant amount of variance, $F(10, 413) = 24.27, p < .001$, adjusted $R^2 = .35$ (see Table 7). The only significant main effect was the influence of Time 1 life satisfaction ($\beta = .52, p < .001$; see Table 7). None of the interaction terms (i.e., major life events X parent support, peer victimization X parent support, negative attitudes towards teachers X parent support, perceived stress X parent support) were statistically significant at the $p < .05$ level (see Table 7). Therefore, experiencing high levels of parent support does not appear to buffer students who experience stress from reporting decreased levels of life satisfaction one year later. However, the p -value associated with the major life events X parent support interaction ($\beta = -.07$) was $p = .099$, indicating a trend. This finding is consistent with the statistically significant effect associated with this interaction term that emerged when a reduced dataset was employed (see Table 9).

When Time 2 internalizing problems served as the criterion, the combination of stress variables, parent support interaction terms, and initial internalizing problems was statistically significant, $F(10, 413) = 35.18, p < .001$, adjusted $R^2 = .45$ (see Table 7). Two main effects appeared: the influence of Time 1 internalizing problems ($\beta = .62, p < .001$), and the influence of parent support ($\beta = -.11, p < .05$). Parent support accounted for 1% of the unique variance in Time 2 internalizing problems. None of the interaction terms were statistically significant indicating parent support was not a significant moderator in the relationship between stress and later internalizing psychopathology.

When Time 2 externalizing problems served as the criterion, the combination of centered stress variables, parent support, and the interaction terms accounted for a significant variance, $F(11, 412) = 7.31, p < .001$, adjusted $R^2 = .14$ (see Table 7). Two significant main effects emerged: Time 1 externalizing problems, accounting for 11% of the unique variance ($\beta = .34, p < .001$; see Table 7), and negative attitudes towards teachers accounting for 2 % of the unique variance ($\beta = .15, p < .01$) in Time 2 externalizing problems. The main effect of parent support on Time 2 externalizing problems approached significance, but did not meet the $p < .05$ criteria ($\beta = .09, p = .08$). The trend for this effect suggested that more parent support predicted greater externalizing behavior the following year. While none of the interaction terms entered into the model exceeded the p -value that identified a statistically significant effects, the interaction between negative attitudes towards teachers and parent support approached significance ($\beta = -.10, p = .06$).

Table 7

Predicting Time 2 Mental Health Scores from Initial Mental Health Levels, Parent Support, Stressors, as well as the Interactions between Parent Support and Stressors (N = 424)

	R ²	B	SE B	β	sr ²	t
T2 Life Satisfaction	.35					
T1 Life Satisfaction		.53	.06	.52	.13	9.31***
Major Life Events		-.01	.02	-.03	.00	-.64
Peer Victimization		-.01	.01	-.04	.00	-.98
Negative Attitudes towards Teachers		-.01	.01	-.03	.00	-.69
Perceived Stress		-.01	.05	-.01	.00	-.27
Parent Support		.06	.04	.07	.00	1.39
Major Life Events X Parent Support		-.02	.01	-.07	.00	-1.65±
Peer Victimization X Parent Support		.00	.01	.01	.00	.31
Negative Attitude towards Teachers X Parent Support		-.00	.01	-.01	.00	-.13
Perceived Stress X Parent Support		-.06	.04	-.07	.00	-1.57
T2 Internalizing Problems	.45					
T1 Internalizing Problems		.59	.06	.62	.14	10.32***
Major Life Events		.14	.38	.02	.00	.37
Peer Victimization		-.14	.20	-.03	.00	-.71
Negative Attitudes towards Teachers		-.11	.24	-.02	.00	-.45
Perceived Stress		.48	1.37	.02	.00	.35
Parent Support		-2.48	1.00	-.11	.01	-2.47*
Major Life Events X Parent Support		.33	.33	.04	.00	1.01
Peer Victimization X Parent Support		-.04	.16	-.01	.00	-.27
Negative Attitude towards Teachers X Parent Support		-.09	.19	-.02	.00	-.46
Perceived Stress X Parent Support		.27	.92	.01	.00	.30
T2 Externalizing Problems	.14					
T1 Externalizing Problems		.37	.05	.34	.11	7.26**
Major Life Events		.07	.17	.02	.00	.44
Peer Victimization		.05	.09	.03	.00	.56
Negative Attitudes towards Teachers		.29	.10	.15	.02	2.90**
Perceived Stress		.17	.50	.02	.00	.34
T2 School		.16	.87	.01	.00	.19
Parent Support		.74	.42	.09	.01	1.75±
Major Life Events X Parent Support		.10	.14	.03	.00	.69
Peer Victimization X Parent Support		.09	.07	.06	.00	1.29
Negative Attitudes towards Teachers X Parent Support		-.16	.08	-.10	.01	-1.92±
Perceived Stress X Parent Support		-.02	.41	-.00	.00	-.05

Note. T1 indicates mental health variables from Time 1 of the study (Fall 2010), T2 indicates mental health variables from Time 2 of the study (Fall 2011), *** $p < .001$, ** $p < .01$, * $p < .05$, ± $p < .10$, sr^2 = squared semi-partial correlations.

Classmate support as moderator. The first model examined life satisfaction at Time 2 as the outcome variable. The combination of centered stress variables, peer support, and peer support-related interaction terms (major life events X peer support, peer victimization X peer support, negative attitudes towards teachers X peer support, relations with parents X peer support, perceived stress X peer support), and Time 1 life satisfaction scores accounted for a significant amount of variance, $F(12, 411) = 20.38, p < .001$, adjusted $R^2 = .35$ (see Table 8). The only two significant main effects were Time 1 life satisfaction (accounting for 11% of the unique variance) and peer support (accounting for 1% of the unique variance). While none of the interaction terms were significant at the .05 level, the interaction between peer victimization and peer support approached significance ($\beta = -.10, p = .06$).

When Time 2 internalizing problems served as the criterion, the combination of centered stress variables, peer support, and interaction terms accounted for a significant variance, $F(12, 411) = 29.32, p < .001$, adjusted $R^2 = .45$ (see Table 8). Identical to previous findings, the only significant main effect was the influence of Time 1 internalizing problems ($\beta = .61, p < .001$). None of the five interaction terms entered into the model were significant, but the interaction between negative attitudes towards teachers and peer support approached statistical significance ($\beta = -.08, p = .08$).

When Time 2 externalizing problems served as the criterion, the combination of centered stress variables, peer support, and the interaction terms accounted for a significant variance, $F(13, 410) = 6.00; p < .001$, adjusted $R^2 = .13$ (see Table 8). There were two significant main effects (externalizing problems at Time 1, negative attitudes

towards teachers). Time 1 externalizing problems accounted for 10% of the unique variance, and attitudes towards teachers accounted for 2% of the unique variance in Time 2 externalizing problems. There were no significant interactions present in the model.

All nine regressions (moderator analyses) were repeated utilizing the transformed versions of the externalizing problems and peer victimization variables. The results were then compared to the results presented above; there was no difference in findings when the transformed variables were included in the analyses.

Table 8

Predicting Time 2 Mental Health Scores from Initial Mental Health Levels, Peer Support, Stressors, as well as the Interactions between Peer Support and Stressors (N = 424)

	R ²	B	SE B	β	sr ²	t
T2 Life Satisfaction	.35					
T1 Life Satisfaction		.48	.06	.48	.11	8.54**
Major Life Events		-.01	.02	-.03	.00	-.59
Peer Victimization		-.01	.01	-.03	.00	-.60
Relations with Parents		.01	.01	.05	.00	1.08
Negative Attitude towards Teachers		-.00	.01	-.01	.00	-.17
Perceived Stress		-.04	.05	-.04	.00	-.84
Peer Support		.11	.05	.11	.01	2.41*
Major Life Events X Peer Support		.01	.01	.03	.00	.68
Peer Victimization X Peer Support		-.01	.01	-.10	.01	-1.89±
Negative Attitude towards Teachers X Peer Support		.01	.01	.04	.00	.74
Relations with Parents X Peer Support		-.00	.01	-.01	.00	-.31
Perceived Stress X Peer Support		.01	.04	.01	.00	.22
T2 Internalizing Problems	.45					
T1 Internalizing Problems		.57	.06	.61	.14	10.19**
Major Life Events		.19	.38	.02	.00	.49
Peer Victimization		-.18	.24	-.04	.00	-.78
Relations with Parents		-.26	.18	-.07	.00	-1.49
Negative Attitudes towards Teachers		-.20	.24	-.04	.00	-.82
Perceived Stress		1.06	1.38	.04	.00	.77
Peer Support		-1.78	1.12	-.07	.00	-1.59
Major Life Events X Peer Support		.02	.37	.00	.00	.06
Peer Victimization X Peer Support		.15	.16	.05	.00	.97
Negative Attitude towards Teachers X Peer Support		-.40	.23	-.08	.00	-1.74±
Relations with Parents X Peer Support		-.07	.15	-.02	.00	-.49
Perceived Stress X Peer Support		-.62	1.03	-.03	.00	-.60
T2 Externalizing Problems	.13					
T1 Externalizing Problems		.35	.05	.33	.10	7.02**
Major Life Events		.00	.17	.00	.00	.01
Peer Victimization		.10	.10	.06	.00	.98
Relations with Parents		.06	.08	.04	.00	.74
Negative Attitudes towards Teachers		.35	.11	.18	.02	3.27**
Perceived Stress		-.03	.51	-.00	.00	-.06
T2 School		.28	.88	.01	.00	.32
Peer Support		.82	.50	.09	.01	1.65±
Major Life Events X Peer Support		.04	.16	.01	.00	.23
Peer Victimization X Peer Support		.07	.07	.06	.00	.98
Negative Attitudes towards Teachers X Peer Support		-.05	.10	-.03	.00	-.54
Relations with Parents X Peer Support		.08	.07	.06	.00	1.21
Perceived Stress X Peer Support		.09	.46	.01	.00	.20

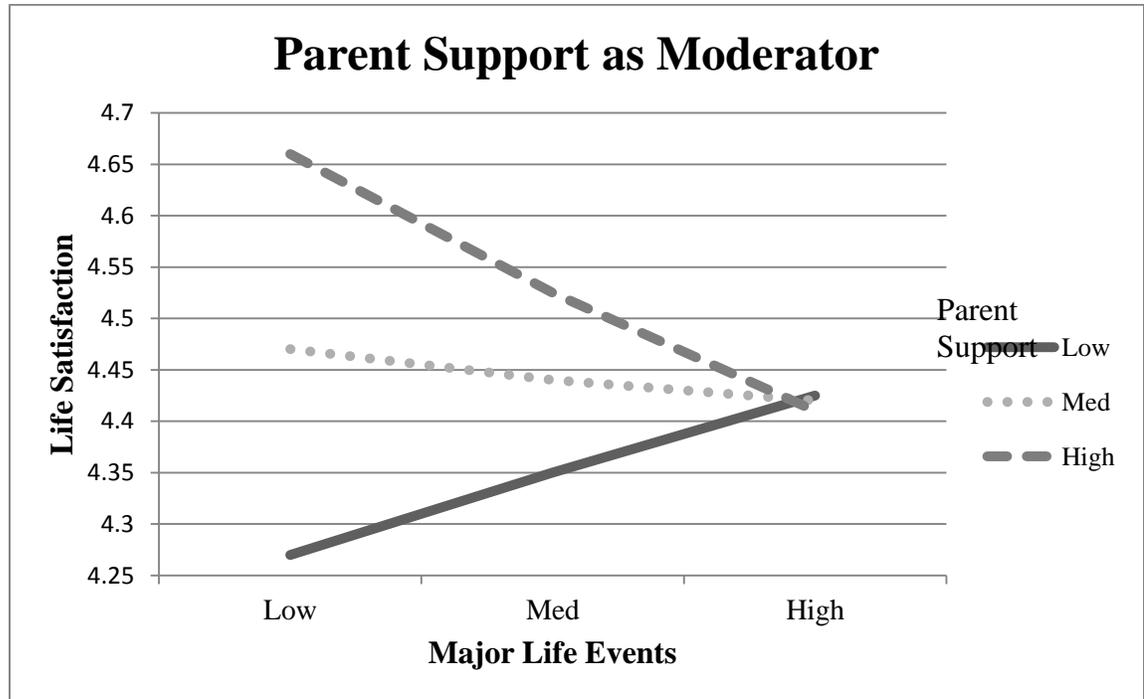
Note. T1 indicates mental health variables from Time 1 of the study (Fall 2010), T2 indicates mental health variables from Time 2 of the study (Fall 2011); ** $p < .001$, * $p < .05$, ± $p < .10$. sr² = squared semi-partial correlations

Interpretation of Interaction Effects that Emerged as Trends

For the four instances in which the interaction terms approached significance ($p < .10$), exploratory analyses were conducted to interpret the nature of the interactions. After the analyses were conducted utilizing the centered variables, the resulting equation was used to solve for participants' predicted mental health scores given combinations of being one standard deviation above or below on either or both the stressor and the support variable. The first such interaction effect involved parent support as a moderator between major life events and Time 2 life satisfaction. The nature of the interaction effect is depicted in Figure 1. Results indicate that life satisfaction is greatest for students who perceive high parent support and incur few major life experiences. In contrast, life satisfaction is low for youth who, despite an absence of major life events, perceive low support from their parents. Thus, the combination of high parent support and few major life events predicted the greatest life satisfaction.

Figure 1

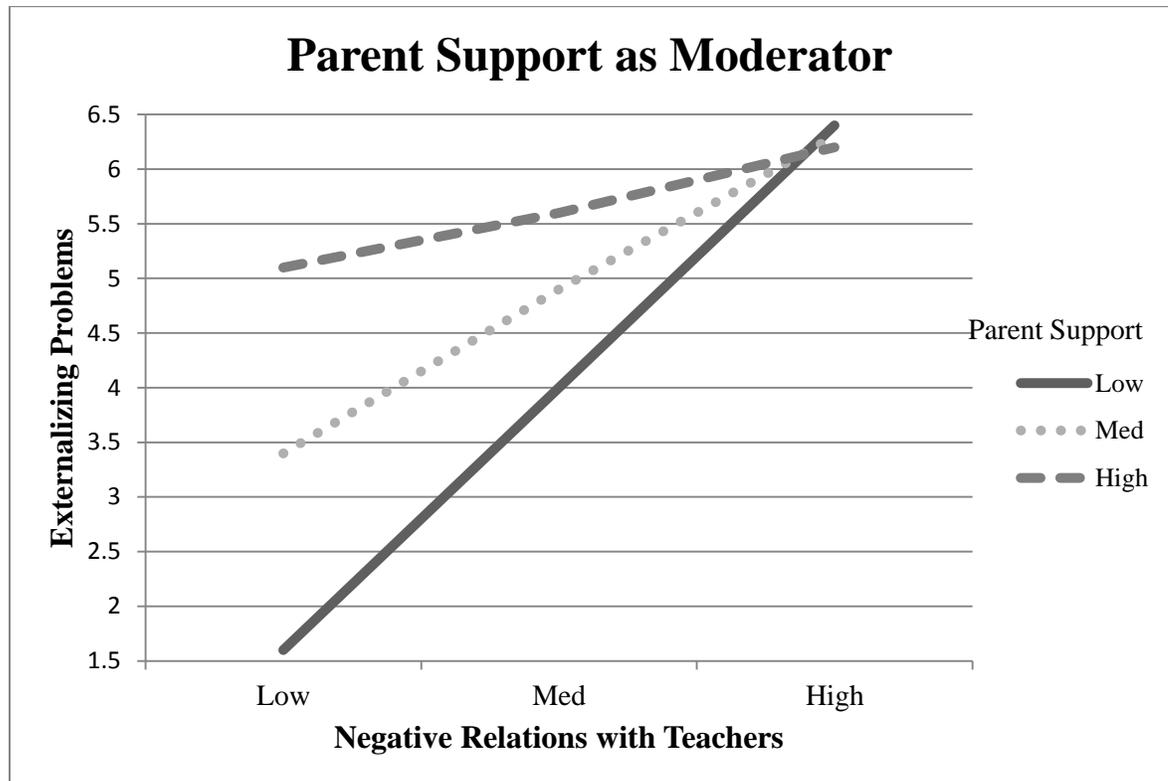
Parent Support as a Moderator between Major Life Events and Life Satisfaction



The second interaction that was explored involved parent support as a moderator between negative attitudes towards teachers and Time 2 externalizing problems. The nature of the interaction effect is depicted in Figure 2. Results indicate that negative relations with teachers predict adolescents' externalizing behaviors only in the case of low parent support. For youth with low parent support, externalizing behaviors increase as negative relations with teachers increase. For students with high parent support, (negative) teacher-student relations are not linked to externalizing behaviors. Thus, high parent support may serve as a buffer in the link between higher levels of negative relations with teachers and increased externalizing behaviors.

Figure 2

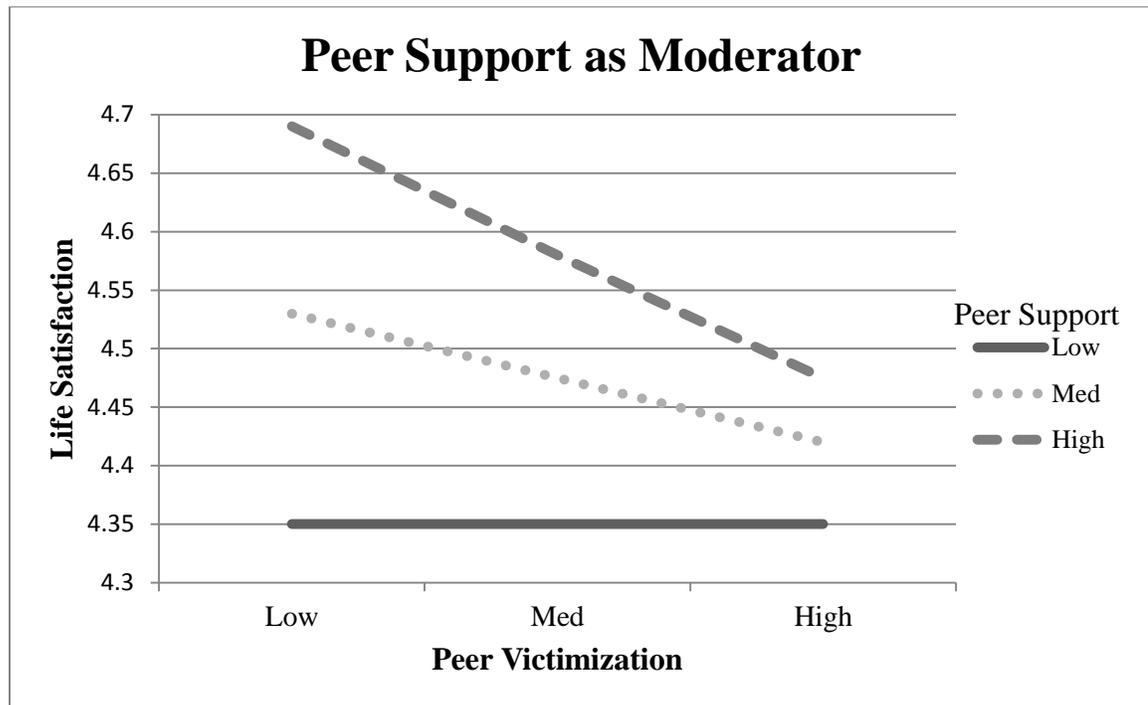
Parent Support as a Moderator between Negative Relations with Teachers and Externalizing Problems



The third interaction that was explored pertains to peer support as a moderator between peer victimization and Time 2 life satisfaction. The results of the interaction are depicted in Figure 3. Results indicate students who are highly victimized by peers are likely to have low life satisfaction regardless of how much support they perceive from classmates. Life satisfaction is greatest for students who perceive high classmate support and are not victimized by peers.

Figure 3

Peer Support as a Moderator between Peer Victimization and Life Satisfaction

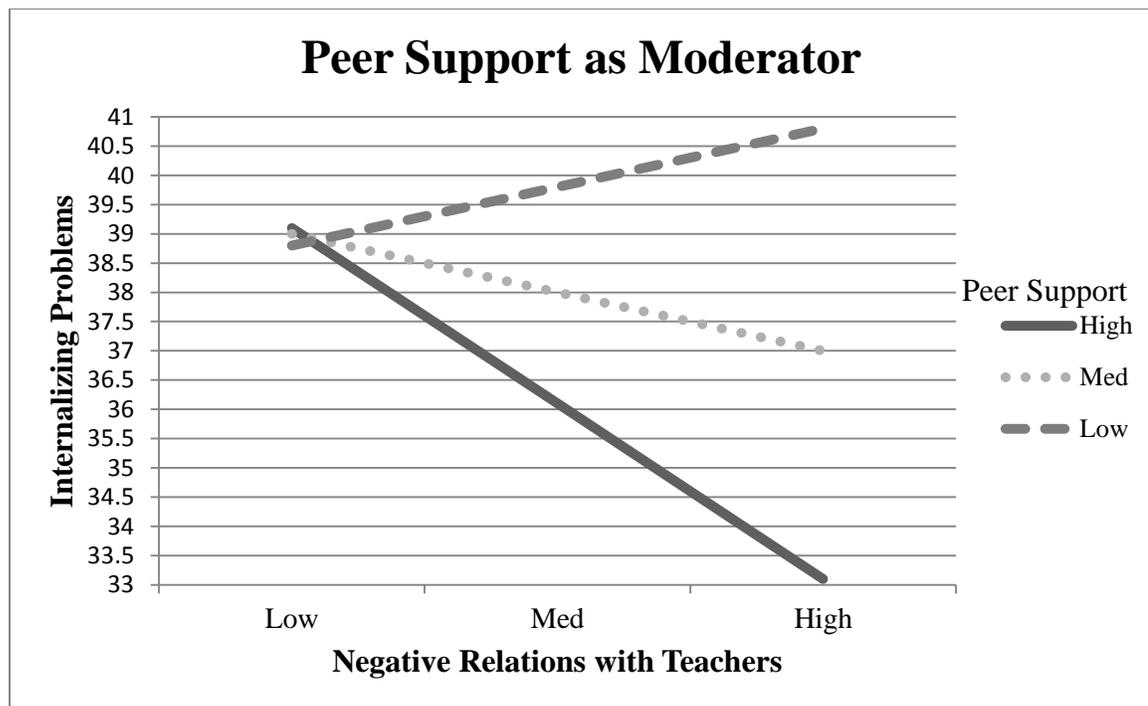


The fourth interaction that was explored pertains to peer support as a moderator between negative attitudes towards teachers and Time 2 internalizing problems. The results of the interaction are depicted in Figure 4. Contrary to expectations, the general trend (main effect) involved an *inverse* association between the predictor and outcome variables, such that worse attitudes towards teachers predicted fewer internalizing symptoms the following year. With respect to the moderating role of peer support, the best mental health (i.e., students with the fewest internalizing symptoms) was associated with the combination of high peer support and high negative attitudes towards teachers. For students with few/low negative attitudes towards teachers, subsequent levels of

internalizing distress were similar regardless of peer support level. The moderating effect of peer support manifests among students with more highly negative attitudes towards teachers. Specifically, among students with high negative attitudes towards teachers, peer support appears protective in that the higher the level of peer support, the fewer internalizing problems the student subsequently reports. Conversely, low peer support appears to serve as a risk factor; for students who perceive low peer support, symptoms of internalizing distress increase along with worse (more negative) attitudes towards teachers.

Figure 4

Peer Support as a Moderator between Negative Relations with Teachers and Internalizing Problems



In sum, three of the exploratory analyses that related to the interaction effects that emerged as trends indicate that social support from various sources was not a buffer

against declines in later mental health. Instead, two interaction effects (i.e., peer victimization X peer support in predicting later life satisfaction, major life events X parent support in predicting later life satisfaction) represented situations in which superior mental health was predicted by a low level of specific stress type in combination with high support from parents or peers. In another instance, the interaction effect indicated a relationship that was in contrast to what would be expected in that the best mental health (i.e., low levels of internalizing problems) emerged for students with high peer support but also high negative attitudes towards teachers. In contrast, another exploratory analysis indicated parent support may act as a buffer in the relationship between high levels of negative relations with teachers and increased externalizing problems at Time 2.

Table 9

Sensitivity Analyses Comparing Results Obtained with Datasets With and Without Multivariate Outliers

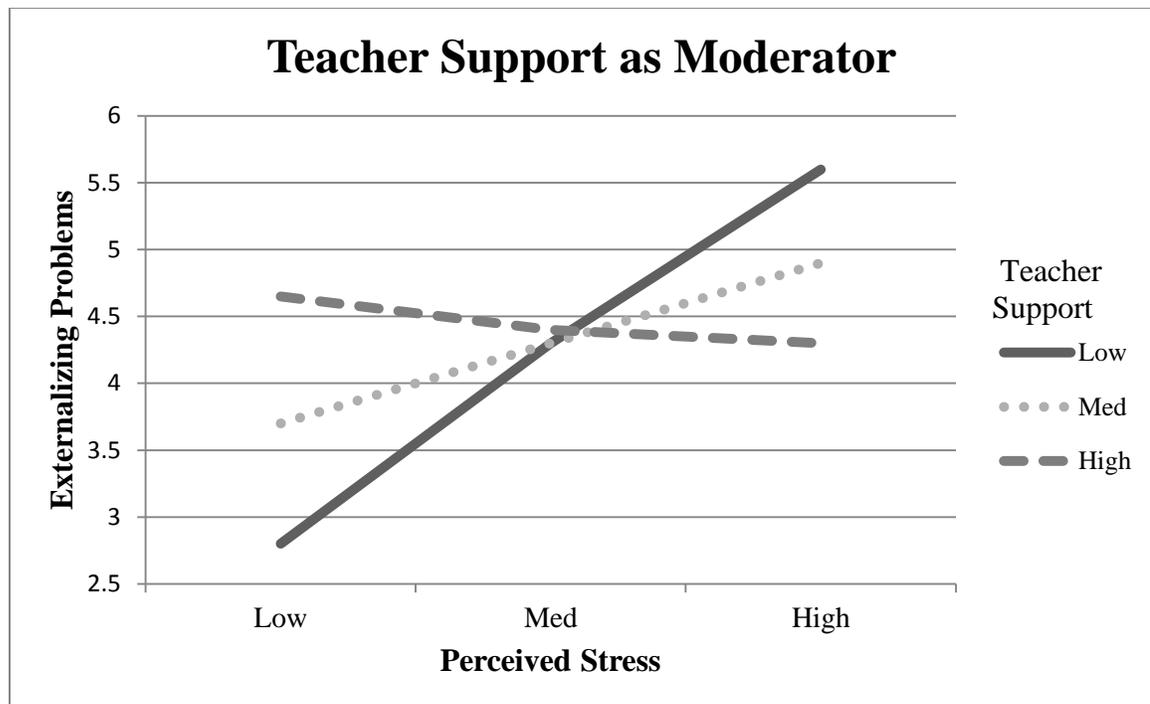
Research Question	Findings Comparable between Datasets?	Notable Findings in Dataset without Outliers ($N = 417$)
RQ1. Relationships between sources of stress and mental health outcomes at Time 2	Yes	<ul style="list-style-type: none"> • All significant correlations among pairs of variables remained statistically significant • Regression coefficients and beta weights remain the same, with no stress variables emerging as significant predictors of Time 2 mental health with the exception of the influence of attitudes towards teachers on Time 2 externalizing problems (effect reached significance regardless of inclusion or exclusion of outliers). • The amount of variance in Time 2 mental health outcomes accounted for by stress variables and Time 1 mental health remain within 1 percentage point of results obtained with the entire dataset.
RQ2. Sources of social support as moderators between stress and Time 2 mental health outcomes	No	<ul style="list-style-type: none"> • In the dataset that includes all participants, 4 of the 13 interaction effects approached statistical significance ($p < .10$). One of these trends (attitudes towards teachers X parent support predicting Time 2 externalizing problems) did not emerge as a trend in the reduced dataset without outliers ($p = .35$). The other two remained trends, ($p = .07$ and $p = .09$) and one became statistically significant ($p = .04$). • One additional interaction effect was detected as a trend in the dataset without outliers: the interaction between perceived stress and teacher support predicting Time 2 externalizing problems ($p = .07$). Regarding the nature of the interaction, high teacher support acted as a buffer in the positive link between perceived stress and externalizing problems (see Figure 5)

The additional trend towards an interaction effect that emerged in the reduced dataset without outliers involved teacher support as a moderator between perceived stress

and Time 2 externalizing problems. The nature of the interaction effect is depicted in Figure 5. Results indicate that perceived stress may predict adolescents' externalizing behaviors only in the case of low teacher support. For youth with low teacher support, externalizing behaviors increase as perceived stress increases. For students with high teacher support, perceived stress is not linked to externalizing behaviors. In sum, low teacher support may be a risk factor in the link between higher levels of perceived stress and increased externalizing behaviors, as perceived stress may predict adolescents' externalizing behaviors only in the case of low teacher support.

Figure 5

Teacher Support as a Moderator between Perceived Stress and Externalizing Problems



Chapter 5

Discussion

The current study examined the relationships between stress, social support, and mental health in high school students over a one year period. Stress was conceptualized in line with the psychological model as consisting of environmental events (i.e., cumulative major life events; chronic stress in relationships with parents, peers, and teachers) as well as one's cognitive appraisals of events in relation to one's resources (i.e., perceived [dis]stress). Mental health was defined in accordance with the positive psychology movement and focuses on both positive (life satisfaction) and negative indicators (internalizing and externalizing psychopathology) of mental health. Specific research questions explored: (1) which sources of stress were most strongly and uniquely linked to later mental health in youth, and (2) whether any sources of social support protected students who experienced various types of stress from manifesting later mental health problems or low life satisfaction. The following discussion summarizes the findings of the study and integrates these findings with pertinent literature. Following a discussion of the results as they relate to current literature, contributions to the literature, implications for practice, limitations, and recommendations for future research are outlined.

Concurrent and Longitudinal Relationships between Stress and Mental Health

Major life events. Research has supported positive concurrent and longitudinal associations between cumulative stressful life events and mental health, particularly in

relation to psychopathology (McLaughlin & Hatzenbuehler, 2009; Morales & Guerra, 2006). Recent research has examined the associations between stressful life events and positive indicators of mental health, such as life satisfaction, and indicated an inverse relationship (Suldo & Huebner, 2004).

In the current study, stressful life events were measured by a student self-report checklist (i.e., LEC; Johnston & McCutcheon, 1980) consisting of 18 events that are beyond the child's control. Students also self-reported their internalizing symptoms (i.e., atypicality, locus of control, social stress, anxiety, depression, sense of inadequacy, and somatization, via the BASC-2 SRP-A [Reynolds & Kamphaus, 2004]) and life satisfaction (via the SLSS [Huebner, 1994]). Students' externalizing problems were assessed via teacher report of symptoms of aggression, conduct problems, and hyperactivity on the BASC-2-TRS (Reynolds & Kamphaus, 2004). Using these indicators, stressful life events evidenced a significant positive correlation with internalizing problems both concurrently ($r = .31$) and one year later ($r = .22$), but not with externalizing problems. The latter finding is somewhat contradictory from previous research that has found strong positive relationships between experiencing stressful life events and any form of psychopathology, including externalizing problems. For example, stronger concurrent and longitudinal associations between stressful like events and externalizing problems ($r = .28$ to $.23$, respectively) were yielded from a prior study with some design similarities (i.e., data gathered from adolescents at two time points separated by one year) but that had students self-report their externalizing psychopathology (Suldo & Huebner, 2004).

In relation to life satisfaction, the positive indicator of mental health examined in the current study, results revealed a negative association of similar strength to that found between major life events and internalizing problems. Significant negative associations were found both concurrently and longitudinally ($r = -.31$ and $-.20$, respectively), which are slightly stronger relationships than identified in the aforementioned study by Suldo and Huebner, which found slightly lower associations between the two variables ($r = -.19$ concurrently, $r = -.14$ longitudinally).

Despite these bivariate associations, regression analyses revealed that when accounting for initial levels of mental health, major life events were not a significant predictor of later psychopathology or life satisfaction. In contrast, other studies have found major life events to be a significant predictor of psychopathology, even after controlling for initial levels. For example, McLaughlin and Hatzenbuehler (2009) found negative life events significantly predicted internalizing problems (specifically, anxiety) at Time 2 (seven months later) even after accounting for initial levels of anxiety among a slightly younger sample of youth (1,065 adolescents in grades 6-8). Further, in a longitudinal study that utilized a sample with a mean age of 14, even after accounting for initial levels of psychopathology, stressful life events predicted Time 2 (one year later) internalizing problems and externalizing problems (King & Chassin, 2008). These contrasting findings may be the result of the utilization of slightly younger samples of adolescents, specifically, middle school students. Perhaps mental health is more stable in older adolescents, and/or this age group rebounds quicker from major life events. The null findings in the current study may also be in part due to the study design in which several types of stressors (representing a comprehensive model of stress) were considered

simultaneously; the common variance shared among stress factors may have washed out the main effect of stressful life events on later mental health. In regards to life satisfaction, the lack of significance related to major life events as a predictor of life satisfaction is somewhat supported by previous research that explored whether acute and chronic stressors were significant predictors of life satisfaction in a cross-sectional study of 152 high school students (Ash & Huebner, 2001). Experiencing acute stress was not a significant predictor of students' life satisfaction when locus of control was included in the path model, but chronic stressors were found to be significant in the same path model. It could be that major life events, since they are considered acute stressors, have an immediate impact of one's life satisfaction, especially if students' feel like they do not have control over the situation, but as time passes, and initial life satisfaction tendencies are accounted for, students' return to their set point of happiness (Headey & Wearing, 1989).

Negative relations with parents. Several theories exist that postulate how the quality of the parent-child relationship puts children at risk for adverse outcomes, such as behavior problems, substance use, and poor quality romantic relationships (Klahr et. al., 2010; Overbeek et. al., 2007). An abundance of studies have focused on the link between parent-child relationships and externalizing problems in youth, however less research has looked at how poor parent-child relationship quality is linked to internalizing problems. Even fewer studies have explored the relationship between parent-child relationships (beyond parent support) and children's wellness; emerging findings indicate a negative relationship between parent-child conflict and life satisfaction (Ben-Xur, 2003; Rask et al., 2003; Shek, 1998).

In the current study, student self-report on the Relations with Parents subscale of the BASC-2 SRP-A served as the indicator of parent-child relations; higher scores represent positive perceptions of the relationship. Bivariate results indicated significant negative concurrent and longitudinal associations between relations with parents and internalizing problems ($r = -.53$ and $r = -.40$, respectively). As students' perceptions of their parent-child relationship became more negative, their reports of internalizing symptoms increased. These findings are consistent with prior research with adolescents that also found a relationship between a parent-child relationship characterized by conflict, and youth internalizing problems. For example, in a longitudinal study of 1,472 students ranging from 12 to 20 years old, perceived parental caring and connectedness were negatively related to depressive symptoms (Boutelle et al., 2009). Additionally, a parent-child relationship characterized by psychological control has related to greater internalizing behaviors such as anxiety and depression (Silk et al., 2003). Taken together, the results of the current study are in accord with previous research that has also found a significant positive relationship between parent-child conflict and internalizing problems.

In contrast, the current study did not find an association between students' perceived relations with parents and teacher-rated externalizing problems, either concurrently or longitudinally. This null finding related to externalizing problems is inconsistent with earlier research that indicated a direct relationship between poor quality parent-child relationships and externalizing problems or "acting out" behaviors. For example, a study of 610 families (children ages 10 to 18) found that both parent and child perceived conflict was significantly related to youth "acting out" behavior, both concurrently and four years later, even when controlling for baseline conduct problems (r

= .30 and $r = .32$, respectively; Klahr et al., 2010). One possible explanation for the lack of association between relations with parents and students' externalizing problems in the current study has to do with different raters of different constructs (i.e., students reported on their relations with parents, while teachers reported on students' acting out behavior). However, in another study with almost 10,000 high school students that explored the relationship between parenting practices and psychopathology (i.e., internalizing and externalizing problems, as rated by students), parent-child relationship characterized by psychological control had no concurrent relationship to externalizing problems (Silk et al., 2003). Results may vary if the current study had either students' or parents' report of externalizing behavior.

Results of correlational analyses that explored the relationship between parent-child relations and life satisfaction indicate a significant positive relationship both concurrently and longitudinally between perceiving a positive parent-child relationship, characterized by less conflict, and life satisfaction ($r = .60$ and $r = .41$, respectively). Recent research on the topic has also supported a strong association between these two variables. For instance, father-child conflict and life satisfaction were significantly related concurrently ($r = -.40$) and longitudinally ($r = -.20$; Shek, 1998). A different cross-sectional research study found a significant association between a parent-child relationship characterized by emotional closeness and communication and adolescents' life satisfaction (Ben-Zur, 2003).

Despite these significant bivariate associations between parent-child relations and student mental health, in regression analysis that accounted for initial levels of mental health, parent child relations did not predict psychopathology or life satisfaction. In

contrast, other studies have found parent-child relations to be a significant predictor of mental health, even after controlling for initial levels. For example, parent-child conflict significantly predicted conduct problems at Time 2 (four years later) even after accounting for initial levels of conduct problems among a sample of 610 families with children ages 10 to 18 (Klahr et al., 2010). Further, in a longitudinal study by Boutelle and colleagues (2009), even after accounting for initial levels of internalizing problems, parent-child connectedness was a significant predictor of Time 2 (five years later) internalizing problems. As aforementioned, the null findings in the current study may be attributed to the fact that several stressors were incorporated to represent a comprehensive model of stress, and therefore the main effect of parent-child relations on later mental health may not have had enough power to emerge as a significant, unique predictor. This hypothesis is supported by the fact that parent-child relations approached significance in the regression analyses in the current study, and was the strongest predictor (besides initial psychopathology) for internalizing and the second strongest for externalizing problems. In regards to life satisfaction, the current study's finding that parent-child relationships were not a significant predictor of life satisfaction is somewhat surprising due to several studies with adolescents identifying significant, strong associations between the two variables. For instance, in cross-sectional research, parent-child relationships characterized by emotional closeness and communication significantly predicted life satisfaction (Ben-Zur, 2003). However, in support of the findings of the current study, another cross-sectional study found that parent-child conflict was not a significant predictor of adolescent life satisfaction (Wong et al., 2003). The mixed findings may be explained by sample differences, as Ben-Zur reported results with a

sample of 121 Jewish adolescents, while the sample examined by Wong (2003) consisted of children of migrant workers from China. It is notable that in the current study, parent-child relations were the largest unique predictor of life satisfaction even though this effect did not reach significance; the main effect of stress in parent-child interactions may increase if a less comprehensive model of stress is utilized such that fewer predictors are entered into models.

Negative relations with peers. Chronic stress within peer relationships can be detrimental to adolescents' mental health given the salience of peer relations to adolescents. In the current study, significant bivariate concurrent and longitudinal relationships emerged between negative relations with peers (i.e., peer victimization) and both life satisfaction ($r = -.18$ and $r = -.15$, respectively) and internalizing problems ($r = .38$ and $r = .23$, respectively). Negative relations with peers were not significantly associated with teacher-rated externalizing problems, neither concurrently and longitudinally. Previous research has supported significant positive associations between peer victimization and psychopathology, and significant negative relationships with life satisfaction (Bakker et al., 2010; Flaspohler et. al., 2009; Stadler et. al., 2010). In a large longitudinal study that included 2,149 Dutch adolescents, stronger concurrent and longitudinal associations were found between peer victimization and internalizing problems, when compared to externalizing problems, which is consistent with the findings in the current study. However, unlike the current study, links with both internalizing and externalizing problems were significant even after controlling for Time 1 psychopathology ($\beta = .20$ and $\beta = .07$, respectively; Bakker et al., 2010). Consistent with the current findings related to life satisfaction, previous longitudinal research found

significant negative *bivariate* associations between peer victimization and life satisfaction, both concurrently and longitudinally (ranging from $r = -.25$ to $r = -.35$; Martin et al., 2008), whereas regression analyses that controlled for initial life satisfaction indicated that peer victimization was not a significant predictor of life satisfaction one year later. In that study, the directionality between peer victimization and life satisfaction was addressed and results revealed that life satisfaction predicted victimization one year later. Thus, it may be that life satisfaction in fact predicts later victimization (i.e., low life satisfaction predisposes youth to later victimization experiences), rather than the opposite direction conceptualized and tested in the current study.

Negative relations with teachers. Few prior studies have explored student-teacher relationship quality in relation to students' mental health. Most research involving student-teacher relationship quality has explored teacher support and the association with academic functioning among elementary and middle school students. In the current study, the (Negative) Attitudes towards Teachers subscale of the BASC-2 SRP-A was used to assess the student-teacher relationship, with higher scores indicative of stress/strain. Bivariate correlational analyses revealed significant concurrent and longitudinal negative associations between negative attitudes towards teachers and life satisfaction ($r = -.33$ and $r = -.25$, respectively) and significant positive associations (both concurrently and longitudinally) with internalizing ($r = .49$ and $r = .32$, respectively) and externalizing problems ($r = .13$ and $r = .18$, respectively). When regression analyses were completed, attitudes towards teachers remained a significant unique predictor of externalizing problems at Time 2, even after controlling for Time externalizing problems ($\beta = .16$, $p < .01$), indicating that students manifest additional acting out behaviors following negative

perceptions of the student-teacher relationship. Perceiving negative relations with teachers accounted for 2% of the variance in teacher-rated externalizing problems one year later, and was the only stressor that appeared to be a unique predictor of any mental health variable explored in the current study. This finding of a strong association between poor student-teacher relations and students' manifestations of disruptive behaviors is consistent with prior research that found dissatisfaction with teachers accounted for 2 to 12% of the variance in mental health problems, with the largest associations with conduct problems (i.e., externalizing problems; Murray & Greenberg, 2001). Extending on these cross-sectional findings, Rudasill and colleagues (2010) found teacher-student relationship quality predicted risky behavior (i.e., smoking cigarettes, drinking alcohol, stealing, getting into gang fights) two years later among a sample of 4th through 6th grade students. The current study extended conclusions from these earlier findings by demonstrating the positive link between stress in teacher-student relations and later externalizing behavior among high school students.

In multivariate regression analyses that controlled for baseline levels of life satisfaction, this stress variable did not emerge as a unique predictor of students' life satisfaction one year later. In fact, the only significant predictor of students' Time 2 life satisfaction was initial life satisfaction scores; the stability of this wellness construct poses challenges with identifying predictors of change. A previous study that also investigated student-teacher relationships and mental health (i.e., internalizing, externalizing, life satisfaction), but within a younger sample (i.e., students in grades 5-8), yielded similar correlational findings in that perceived alienation from teachers was negatively associated with life satisfaction ($r = -.33$) and positively associated with

depression ($r = .36$) and teacher rated externalizing problems ($r = .26$; Murray & Zvoch, 2011). However, regression analyses revealed that alienation in the student-teacher relationship significantly predicted depression and conduct problems ($\beta = .49$ and $\beta = .45$, respectively) but not life satisfaction ($\beta = -.11$, $p > .05$). Importantly, these findings support the current results in that conflict within student-teacher relationships predicted externalizing problems but did not predict life satisfaction. The aforementioned study was the only one to date to explore both positive and negative indicators of mental health in relation to negative student-teacher relationships. The current study expanded on these findings by utilizing a larger, older, longitudinal, and more diverse sample of students.

Perceived stress. Research on perceived stress in relation to adolescent functioning has focused more on physiological outcomes versus psychological outcomes. The current study explored the associations between adolescent perceived stress, measured by student self-report on the PSS, and positive and negative indicators of mental health. Results of bivariate correlational analyses indicated significant negative associations, both concurrently ($r = -.57$) and longitudinally ($r = -.37$), between perceived stress and students' life satisfaction. These findings corroborate those from other studies with middle school students (Alleyne et al., 2010; Schiffrin & Nelson, 2010; Yarcheski et al., 2010) and high school students (Suldo et al., 2008) that consistently found a significant negative association between perceived stress and life satisfaction.

With respect to associations with psychopathology, in the current study perceived stress was positively associated with concurrent ($r = .69$) and later ($r = .48$) levels of internalizing problems reported by students. In fact, perceived stress was the stress factor with the strongest correlation with internalizing problems at both time points.

Interestingly, perceived stress yielded little to no associations with teacher-rated externalizing problems at either time point. The lack of relationship between perceived stress and externalizing problems is somewhat surprising given previous research in which several types of anger (a form of externalizing psychopathology) were positively correlated with perceived stress ($r = .28$ to $.51$; Carlozzi et al., 2010). However, that study only examined concurrent associations between these two variables and gathered information on anger from youth self-report.

Regarding perceived stress in relation to internalizing problems, the results of the current study are consistent with previous research linking these two variables (Moeini et al., 2008; Segrin et al., 2009). For instance, Moeini and colleagues found a correlation of similar strength ($r = .59$) between students' perceived stress and internalizing problems (i.e., somatic symptoms, anxiety, social dysfunction, and depression) among 148 students high school seniors. The current study extended this line of research by looking at the relationship between perceived stress and complete mental health over time. A previous study of high school students that also examined mental health comprehensively yielded results somewhat discrepant from those obtained in the current study. Specifically, among a sample of general education and high-achieving high school students, perceived stress (assessed with the same indicator used in the current study) evidenced a strong, negative association with life satisfaction ($r = -.63$) as well as large positive correlations with student self-reported internalizing ($r = .72$) and externalizing ($r = .40$) symptoms (Suldo et al., 2008). The discrepant findings pertinent to externalizing problems may reflect the current study's design feature of only collecting data on teachers' perceptions or observations of youth externalizing problems; stronger associations may have emerged

if students were permitted to disclose the full extent of their covert and overt acting out behaviors.

The current study also explored the effect of perceived stress over time beyond mere correlation analyses, and in particular by examining all stress factors simultaneously as predictors of later mental health (while controlling for baseline mental health). Results indicated that perceived stress did not uniquely predict later mental health, once initial levels of mental health were accounted for. One previous study that looked at the relationship between perceived stress and well-being found that perceived stress accounted for 20% of the variance in middle school students' wellness (Yarchski et al., 2010). This study however, did not look at this relationship over time and utilized a less valid measure of wellness. In the aforementioned cross-sectional study by Suldo and colleagues (2008), perceived stress remained a significant predictor of students' life satisfaction ($\beta = -.48$) and internalizing problems ($\beta = .65$) even after the influence of coping styles (i.e., positive appraisal, negative avoidance, family communication, anger) were considered. In sum, while cross-sectional studies indicate a strong concurrent association between perceived stress and students' mental health, it appears plausible that as time passes, high levels of perceived stress at one time point may not yield detrimental effects on students' later mental health. These results are in line with Arnett's (1999) notion that adolescence is not necessarily a time of storm and stress and that although adolescents may experience stress, there are over minimal negative effects as a result. It could also be that either the negative effects of feeling overwhelmed "wear off," and/or students' resources (for instance, social support, as discussed next) mitigate or offset the potential negative influence of stress.

Social Support as a Moderator between Stress and Later Mental Health

Teacher support. Previous research that explored teacher support as a predictor of mental health has indicated a main effect, in that greater perceptions of support from teachers are associated with lower psychopathology and greater well-being among adolescents (DeWit et al., 2011; Stewart & Suldo, 2011; Suldo et al., 2009). Other studies have also uncovered a protective function, in that social support acts as a buffer against the development of adverse outcomes among individuals experiencing stressors, such as conflictual parent and peer relationships, as well as negative life events (Crean, 2008; Desjardins & Leadbeater, 2011; Yang et al., 2010). Regarding the main effect of teacher support, the current study yielded significant correlations in the expected direction such that greater perceptions of support from teachers were associated with greater life satisfaction and fewer internalizing symptoms of psychopathology (but not initial or later externalizing problems). However, in regression analyses that controlled for baseline mental health (as well as the influence of stress factors), teacher support did not evidence a main effect on later mental health. This finding indicates that initial levels of perceived teacher support did not evidence a facilitative effect on students' later mental health, above and beyond the influence of students' initial mental health status.

In the current study, teacher support did not function as a protective factor in terms of moderating the relationship between any stress variable and students' later mental health. These results are in contrast to a different study with the same age group which found that teacher support moderated the relationship between peer victimization and psychopathology, albeit in a sample of German adolescents (Stadler et al., 2010). The discrepant findings could be due to the use of a more comprehensive model in the current

study; there may not have been enough power for teacher support to emerge as a significant protective factor against decreased mental health for adolescents experiencing several forms of stress, especially after controlling for baseline mental health. Of note, once some outlier cases were removed from the current dataset, the interaction between perceived stress and teacher support in the prediction of externalizing problems approached statistical significance ($p = .07$). Specifically, low teacher support appeared as a risk factor in the link between higher levels of perceived stress and increased externalizing behaviors, as perceived stress predicted adolescents' externalizing behaviors only in the case of low teacher support. As the current study is the first to explore perceived stress, support, and mental health outcomes in adolescents, more research is needed in order to determine if the identified trend for high teacher support to serve a buffering effect in the relationship between perceived stress and student externalizing problems is a reliable phenomenon.

Parent support. Literature has found clear support for the association between low levels of perceived parental support and diminished mental health, including depression, anxiety, externalizing problems, and lower well-being (Kerr et al., 2006; Malecki & Demaray, 2010; Needham, 2008; Suldo et al., 2009). In the current study, multivariate regression analyses found parent support to be a unique predictor of reduced levels later internalizing problems, even after controlling for initial levels of internalizing problems. This main effect is consistent with previous research longitudinal research exploring the relationship between parent support and depression among over 10,000 adolescents (average age of 15; Needham, 2008). In that study, low parental support co-occurred with higher initial levels of depressive symptoms as well as significantly

predicted depressive symptoms six years later. A trend also emerged in the current study in the unexpected direction for increased parent support predicting increased externalizing problems one year later. The trend towards predicting teacher-rated externalizing behaviors identified in the current study is not supported by previous results of cross-sectional research in which parent support emerged as a significant unique predictor of students' teacher-rated externalizing problems, in the expected direction (Stewart & Suldo, 2011). The current study's unconventional finding could be due to the fact that students who act out at school (as perceived by teachers), are the same students in which parents need to be more involved. Therefore, the students may perceive having high levels of parent support.

Prior research has established parent support as a moderator between experiencing stress and adverse outcomes, such as poor mental health (Crean, 2008; Taske-Tate et al., 2010). In the current study, parent support was examined as a moderator of the link between four initial stress factors and three indicators of later mental health, yielding 12 interaction terms. Moderated regression analyses conducted with the full sample, which controlled for initial mental health and baseline levels of stress and parent support, indicated trends for two of these interaction terms that approached statistical significance. One such trend involved the interaction between initial major life events and parent support in the prediction of later life satisfaction. Specifically, Time 2 life satisfaction was greatest for students who experienced the combination of high perceived parent support and few major life events. In contrast, life satisfaction was low for students who, despite an absence of major life events, perceived low support from their parents. Thus, high levels of parent support appeared to facilitate life satisfaction for students who

experienced few major life events, but the absence of stressful life events was not sufficient to guarantee greater life satisfaction (parent support was necessary).

The second interaction term that trended towards significance was between stressful student-teacher interactions and parent support in the prediction of later externalizing behaviors. This study found that high parent support served as a buffer in the link between higher levels of negative relations with teachers and increased externalizing behaviors; specifically, negative relations with teachers predicted more externalizing behaviors only for students who perceived low parent support. In contrast, for students who reported high levels of parent support, poor student-teacher relations were not linked to externalizing behaviors. This finding is important because it represents an example of how parent support serves a protective role against adverse outcomes for students experiencing a chronic stressor: negative student-teacher relationships.

Because the current study is the first to explore a comprehensive model of students' stress in relation to their social support and mental health, it is not possible to directly compare the findings discussed above with those obtained in previous published studies. However, studies that explored social support as a moderator between different forms of stress and any mental health outcome are generally consistent with the current findings. For example, maternal support emerged as a moderator in the relationship between negative life events and later student depressive symptoms (Traske-Tate et al., 2010). Further, parent support from one parent, was a protective factor for students experiencing conflict with the other parents, from developing externalizing problems (Crean, 2008). Notably, no published studies could be located that examined the

protective role of parent support in the face of negative student-teacher relations as a stressor. Thus, the trend identified in the current study suggests parent support may protect students from one additional source of stress- chronic strain in the student-teacher relationship.

Peer support. Supportive peer relationships have been linked with a host of positive outcomes in youth (i.e., decreased psychopathology and increased well-being). There has been an abundance of literature that has found support for peer support predicting lower levels of internalizing and externalizing problems among middle and high school samples (Demaray et al., 2005; De Witt et al., 2011; Rueger et al., 2010; Way et al., 2007). Recent examination of peer support in relation to students' well-being has found social support from peers to be a significant predictor of well-being (i.e., life satisfaction; Stewart & Suldo, 2011). Findings pertinent to the main effect of peer support in the current study are consistent with this body of research. Specifically, peer support emerged as a statistically significant main effect in the prediction of greater life satisfaction one year later. The trend towards predicting internalizing problems was somewhat weaker ($p = .11$). Thus, even after students' baseline levels of mental health and stress were considered, greater perceptions of social support from classmates predicted better student-rated mental health the next year. This finding confirms peer support as a promotive factor for high school students, particularly with respect to their later life satisfaction. These results are consistent with relationships identified among middle school students, in which perceived social support from peers was a unique predictor of concurrent life satisfaction (Stewart & Suldo, 2011).

Peer support was also examined as a moderator of the link between five initial stress factors and three indicators of later mental health, yielding 15 interaction terms. Moderated regression analyses conducted with the full sample, that controlled for initial mental health and baseline levels of stress and peer support, indicated trends for two of these interaction terms that approached statistical significance. First, students with the greatest life satisfaction at the end of the study experienced a combination of no peer victimization and high peer support the year prior. In contrast, students who experienced either frequent peer victimization or low classmate support were likely to have low life satisfaction the next year. In sum, high levels of classmate support were most facilitative of life satisfaction in tandem with the absence of peer victimization. Although peer support was not exactly a buffer in the relationship between peer victimization and life satisfaction, the current study extends on previous research that has found parent support to be a moderator of this relationship (Desjardins & Leadbeater, 2011), by exploring other sources of support as well as stress.

The second moderator that emerged as a trend in the data involved the interaction between stressful student-teacher relations and peer support in the prediction of internalizing problems. Somewhat surprisingly, the fewest internalizing symptoms of psychopathology were reported by students who experienced high peer support, but also high conflict with teachers, one year earlier. Subsequent levels of internalizing distress were invariant for students who reported low student-teacher stress, regardless of their level of peer support. The moderating effect of peer support was thus evidenced among students with more stress in their student-teacher relations. Specifically, among students with high negative attitudes towards teachers, peer support appears protective in that the

higher the level of peer support, the fewer internalizing problems the student subsequently reports. Conversely, low peer support is a risk factor in that symptoms of internalizing distress increase along with worse student-teacher relations. One hypothesis for this finding is negative relationships with teachers may be experienced by several students and may be a stressor that students can bond over. Therefore, students with negative student- teacher relations may have opportunities to receive greater support from their peers, which could help buffer them against adverse outcomes such as internalizing problems. Another possible explanation is that high school students with the more negative attitudes towards teachers may be the popular students who gain more peer attention and in turn support. It was interesting that peer support did not emerge as a moderator between experiencing stressful life events and internalizing problems, given that previous research has found peer support to be a protective factor in this relationship (Yang et. al., 2010). Some possible explanations for the difference in findings is that Yang and colleagues utilized a smaller sample of students attending school in China and also measured a 70 stressful life events, significantly more than what was measured in the current study.

In sum, the current study is the first to explore a comprehensive model of stress in relation to students' social support from multiple sources, and subsequent mental health outcomes. Although research has indicated longitudinal relationships among these classes of variables, the current study found that the strongest predictor of later mental health was mental health status one year earlier. Once controlling for initial mental health, it was difficult to find another predictor with enough power to account for a significant amount of variance in later mental health. However, correlational analyses support that

significant across-time relationships do exist between different forms of stress, social support from different sources, and multiple indicators of mental health. Stress in the parent-child relationship had the strongest correlations with concurrent and longitudinal mental health, particularly life satisfaction. Greater stress in the student-teacher relationship uniquely and significantly predicted more externalizing problems for students one year later. Finally, the current study identified support from teacher, parents, and peers as potential moderators in the relationship between specific stress factors and later mental health. Two such moderator effects represented situations in which superior life satisfaction was evidenced among students with low levels of a specific stress type (i.e., peer victimization, accumulation of major life events) in combination with high social support from classmates and parents, respectively. The protective nature of social support was evidenced most clearly in interactions between support and chronic stress in the student-teacher relationship. Specifically, negative relations with teachers predicted students' externalizing behaviors only in the case of low parent support. Last, high social support from peers protected students who held negative attitudes towards teachers from subsequently manifesting increased internalizing symptoms.

Implications for School Psychologists

The changes that occur during adolescence, which is a critical stage in development, can affect youth functioning in multiple domains. Adolescents' psychological functioning is of utmost concern to school psychologists due in part to the fact that students with the best mental health have the greatest academic functioning (Suldo & Shaffer, 2008). Recent calls in the professional literature have urged towards conceptualizing mental health as not only the absence of psychopathology but also the

presence of positive indicators of mental health (i.e., life satisfaction). This focus on adolescents' wellness aligns with the current paradigm shift in the field of psychology that stresses the importance of attending to students' strengths (Doll & Cummings, 2008). Previous literature has established clear links between adolescent mental health and the presence of many types of stressors (Carlozzi et al., 2010; Essex et al., 2011; Klahr et al., 2010; Reijntjes, 2010; Suldo & Huebner, 2004; Wong et al., 2010). The current study augments a growing body of research indicating that students experiencing specific kinds of stress (i.e., major life events, conflict with parents, teachers, and peers, and perceived stress) also report higher levels of psychopathology and lower life satisfaction. Importantly, one stressor (conflict with teachers) exerted an effect on mental health one year later even after considering students' baseline mental health levels. Most of the findings in the current study suggest an optimistic picture with respect to students' resilience; with the exception of the long-term effect of negative student-teacher relations, stressors appear to have primarily an immediate impact on students' mental health, as students may return to their "set-point" of life satisfaction and internalizing symptoms. Notably, the relationship between stressors and mental health could possibly be bi-directional, in that previous research has found that diminished mental health (specifically, low life satisfaction) predisposes youth to experience later peer victimization, but not vice versa (Martin & Huebner, 2008).

By delineating specific stress variables that link to students' mental health and which sources of social support buffer against declined mental health, school psychologists have a clearer idea of where they should focus their efforts in terms of youth or family-focused prevention and intervention targets. School psychologists have

further evidence-based rationale to spend more time providing parent and teacher consultation, as well as individual or group counseling to provide skills and resources matched to the student's need. Specifically, school psychologists could provide teacher consultation services to (a) assist in the identification of students who are experiencing high levels of stress, in particular specific students that appear to have aversive student-teacher relationships, and (b) help teachers embrace strategies to build supportive relationships (and reduce negative interactions) with students. For example, students perceive teacher support when teachers attempt to connect with students on an emotional level, use diverse and best practice strategies, acknowledge students' academic success, demonstrate fairness, and encourage student questioning (Suldo et al., 2009). Another study that utilized focus groups to ask students characteristics that represent a support teacher found that caring teachers listen to and show interest in students' personal problems, and attend extracurricular events (Ferreira & Bosworth, 2001).

Practitioners can also help at-risk students strengthen their support networks in line with findings that greater social support from parents and classmates buffers students from experiencing diminished mental health in the face of negative student-teacher relations. After students are identified as having negative relations with teachers, school psychologists are well positioned to provide information to parents regarding the importance of perceiving a supportive parental relationship on children's development, and the adverse effects of stress. School psychologists can reiterate that having a supportive relationship with one's parents can act as a buffer from the adverse effects of experiencing stressful life events and negative student-teacher relationships. Other ways of increasing parent support include the promotion of characteristics that represent

authoritative parenting, such as acceptance and involvement, behavioral control, and psychological autonomy granting (Silk et. al., 2003). Parents should be encouraged to support and guide their children as they begin to independently make decisions and express their individuality.

Further, school psychologists can work with students to provide them with coping strategies to deal with stressful experiences, for example, by turning to others (in particular, family members or specific classmates) who can provide students with supportive relationships that may buffer students from experiencing increases in psychopathology or declines in life satisfaction. For example, greater peer support was a significant predictor of increased life satisfaction one year later. This is important due to the positive outcomes that high life satisfaction has been associated with, such as higher academic success (Suldo, Thalji, & Ferron, 2011). Strategies for increasing classmate support include but are not limited to cooperative learning strategies, student cross-grade level partnerships (Lehr & Christenson, 2002), and providing youth with social skills training (Gresham, 2002). Additionally, bullying prevention programs are also a critical aim in promoting positive peer relationships and supportive relationships between classmates (Espelage & Swearer, 2003; Olweus, 2003). In sum, the current study provides school psychologists with an understanding of the environmental factors that place students at risk, as well as promote wellness. This knowledge of likely intervention targets augments school psychologists' likelihood of facilitating students' complete mental health most efficiently.

Contributions to the Literature

The current study augments the available knowledge on the associations between stress and adolescents' complete mental health, as indicated by both psychopathology and life satisfaction. This is the first known study to investigate stress comprehensively in accordance with the psychological and environmental models of stress. Further, the handful of studies that have explored the relation between an indicator of stress and adolescents' complete mental health have all been cross-sectional in design, and primarily examined middle school students. The current study adds to the existing literature by investigating stress among high school students utilizing a longitudinal design. Although the current study found only one instance in which stress was a significant unique predictor of later mental health (after accounting for initial mental health), findings are still important and possibly paint a more positive picture in that stress may not have a large effect on adolescents' mental health after accounting for baseline psychological functioning. This notion is in line with the more recent view that adolescence is no longer a time of storm and stress (Arnett, 1999). Further, this study contributes to the literature by determining which sources of social support serve as protective factors against adverse mental health outcomes (i.e., high levels of psychopathology, low levels of happiness) among students that experience various forms of stress. In particular, parent and peer relationships appear to have an influence and are potential buffers against negative outcomes for students experiencing stress, particularly in the student-teacher relationship. The current study found further support for how stress affects students' life satisfaction, and identified parent and peer support as buffers against low reports of happiness, which is critical in light of the growing body of research that

links student wellness and complete mental health with academic and social-emotional benefits (Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008; Suldo, Thalji, & Ferron, 2011; Suldo, Thalji, Frey, McMahan, Chappel, & Fefer, 2011). By identifying the relationship between stress and subsequent mental health, as well as potential protective factors, educators can be more equipped to assist students identified as at-risk, as well as promote positive mental health via universal prevention efforts targeting the strengthening of social connections with peers and adults.

Limitations and Delimitations

One limitation of this study pertains to the generalizability, or population validity, of findings because the sample consisted of youth from only two high schools located in a single school district. As the sample was recruited from schools that are primarily low SES, caution should be taken when attempting to generalize findings to students from wealthier communities. Finally, this study utilized a convenience sample; the participants that obtained parental consent and agreed to participate in the study may be uniquely different from the students who chose not to participate in the study in unknown ways. Therefore, precautions should be taken when attempting to generalize the results of this study to other populations of students. Of note, the current sample was comparable to both district and state populations.

Another limitation of the current study pertains to the unexpectedly high correlations between some indicators of the theoretically separable constructs of interest. Specifically, because of the large correlations between indicators of stress and support in adolescents' relationships with parents and teachers, it was not possible to examine if positive aspects of those relationships buffered students who experienced stress in the

same relationship from worsened mental health (similar to how classmate support was facilitative when it co-occurred in the absence of victimization, a relationship that was able to be examined due to the small magnitude of the association between the two variables).

The current study also has several notable delimitations. First, not all potential sources of stress were examined. For example, sources of chronic stress such as academic demands were not included and therefore it is unknown how additional chronic stressors (beyond strained social experiences) experienced by high school students are related to subsequent mental health. Second, due to the fact that the current study is longitudinal, a small percentage of student data was lost as a result of the (anticipated) attrition associated with family mobility out of the district or students dropping out of school. Third, different teachers rated students' externalizing problems at Time 1 and Time 2. Although all participating teachers confirmed familiarity with the students (i.e., knew the students for at least six weeks), the accuracy of teachers' knowledge of students' externalizing behaviors is unknown. The moderate correlation ($r = .36$) between different teachers' ratings of the same student one year apart casts some doubt on the reliability of teacher reports of students' externalizing symptoms of mental health problems. It is unknown if stress would have appeared to exert a greater influence on subsequent conduct problems if they were assessed by student or parent report. Given best practice entails a multi-informant approach, future studies might consider gathering data from two different informants of the same type (e.g., two different teachers or two caregivers) and analyzing an average rater score for externalizing behaviors.

Future Directions

In order to provide further understanding of how stressors are linked to complete mental health there are several future directions for research. As stated previously, the current study is the first to explore a comprehensive model of both stress and mental health. In several instances, results obtained in this comprehensive investigation contradict previous research exploring more specific relationships between stress and mental health. Future studies are warranted that explore the psychological model of stress in relation to complete mental health, to gain further understanding of the relationship among these variables. Once a better understanding is established, more confident statements can be made regarding where to focus prevention and intervention efforts. Future research needs to continue to examine the relationship between stress and complete mental health over time to build empirical rationales of where to intervene and how to improve students' functioning. Further, future research needs to focus on the effectiveness of interventions that systematically increase social support and determine how such interventions effect students' mental health.

It would also be beneficial to explore the directionality of the relationship between forms of stress and complete mental health. Previous studies lend support for looking at whether stress predicts mental health or vice versa. For example, Martin and Huebner (2008) found that life satisfaction in fact predicted later peer victimization instead of peer victimization predicting later life satisfaction, after controlling for baseline levels of these constructs. A greater understanding of the directionality of the relationships would better inform prevention and intervention targets.

Although the current study is one of the first to include variables that represent the psychological model of stress, literature examining perceived stress in relation to mental health, not physiology, is limited and would benefit from more research. Additionally, it would be interesting to see if other environmental sources of stress are more uniquely linked to students' mental health beyond those included in the current study. Exploring the relationship between stress and mental health in a "high-stress" sample to see if sources of support are buffers in a particular sample of students experiencing high levels of stress is also a direction for future research. Further, the current study focused on life satisfaction as a positive indicator of mental health; examining all aspects of subjective well-being (i.e., frequency of positive affect in relation to negative affect, in addition to life satisfaction) may further add to the literature in exploring which positive indicator(s) of mental health is most associated with experiencing stress.

Other areas of expansion for future research could involve identification of other moderators that intervene in the relationship between stress and mental health. Potentially important sources of social support not measured in the current study include that from siblings, adult mentors, close friends and/or romantic partners. Identifying other important relationships and additional protective factors is critical during the developmentally sensitive period of adolescence.

Summary

In conclusion, the current study has expanded the available literature by examining the relationship between various forms of stress and adolescents' mental health. This study was the first to investigate the relationship between variables that represent the psychological model of stress (i.e., stressful life events, chronic stress in

terms of conflict within social relationships, and perceived stress) and complete mental health (i.e., life satisfaction, internalizing problems, externalizing problems). Stress in the student-teacher relationship was identified as a particular chronic environmental stressor that uniquely predicted later externalizing problems. Further, sources of support were examined as potential buffers against later adverse outcomes. Importantly, peer and parent support were tentatively identified as specific social resources that buffer students' experiencing stress from experiencing increased psychopathology or declines in life satisfaction one year later. Additionally, social support from parents and peers evidenced significant promotive effects on mental health, underscoring the positive main effect of these relationships.

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Appendices

Appendix A

Recruitment Script for Teachers

What research team said to teachers:

We (the USF research team) are requesting your assistance in recruiting students for participation in a study to understand how students' psychological wellness predicts their school performance, physical health, social relationships, and sense of self. We aim to recruit approximately 325 students who are currently in grades 9 through 11 at your school, so approximately 110 students in the grade level you teach. The administrative team at your school has selected your classroom for participation. Students in your identified classroom will be asked to take part this year by filling out a packet of paper-and-pencil surveys on one occasion. Next year, they will be asked to complete the same surveys so that we can track change in students' behavior over time. The USF research team will administer the surveys to large groups of students in a private location at the school (such as a media center). These surveys will ask students questions about their thoughts, behaviors, and attitudes towards school, family, and life in general, as well as physical health and after-school activities. Please follow the following steps to recruit students for participation in the survey. First, share the brief verbal description of the study (provided below) with the students. Then, distribute two copies of the parent consent forms to all students in your identified classroom. Ask the students to keep one copy of the form for their family's records; the second copy should be signed by parents/guardians and returned to you. Later in the school year, you will be asked to complete a questionnaire(s) about the behavior of each of your students who is a participant in the study. Completion of the questionnaire(s) is expected to take between 10 and 15 minutes. You will receive a \$5 gift card for each student that you rate. THANK YOU for your help with this important research study!

Appendix B

Parent Consent Form

Dear Parent or Caregiver:

This letter provides information about a research study that will be conducted in your high school by investigators from the University of South Florida. We are conducting the study to determine the links between students' psychological wellness and their school performance, physical health, social relationships, and sense of self.

- ✓ **Who We Are:** The research team is led by Shannon Suldo, Ph.D., a professor in the School Psychology Program at the University of South Florida (USF). Several graduate students in the USF College of Education are also on the team. We are planning the study in cooperation with the principal of your child's school to make sure that the study provides information that will be useful to the school.
- ✓ **Why We are Requesting Your Child's Participation:** This study is being conducted as part of a project entitled, "Subjective Well-Being of High School Students." Your child is being asked to participate because he or she is a student at a high school within Hillsborough County Public Schools (HCPS).
- ✓ **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 awareness of the importance of monitoring students' happiness during adolescence. In addition, group-level results of the study will be shared with the teachers and administrators at your high school in order to increase their knowledge of the relationship between specific school experiences and psychological wellness in students. 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 him/herself, school, teachers, classmates, family, and life in general. The surveys will also ask about your child's physical health and involvement in after-school activities. Completion is expected to take your child between 45 and 60 minutes. We will administer the questionnaires during regular school hours, to large groups of students who have parent permission to participate. Participation will occur during one class period this school year. If your child is enrolled in a HCPS high school next year, he or she will be asked to complete the same surveys again so that we can examine change over time. In addition to completing surveys, a small number of students selected due to their specific mental health profile will be asked to participate in one brief (30 minutes or less) interview. The interview will occur during regular school hours and consist of us asking students additional questions about the thoughts and behaviors that affect their happiness. In total, participation will take about 60 to 90 minutes of your child's time each year for the next two years. Another part of participation involves a review of your child's school records. Under the supervision of school administrators, we will retrieve the following information about your child: grade point average, FCAT scores, attendance, and discipline referrals. Finally, one of your child's teachers will be asked to complete a rating scale about your child's behavior at school.
- ✓ **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. Your decision to participate, not to participate, or to withdraw participation at any point during the study will in no way affect your child's student status, his or her grades, or your relationship with HCPS, USF, or any other party.

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Appendix B (Continued)

- ✓ **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, the USF Institutional Review Board and its staff, and other individuals acting on behalf of USF may inspect the records from this research project, but 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. All records from the study (completed surveys, information from school records) will be destroyed in four years. 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 relationships between students' psychological wellness (particularly their subjective well-being, also referred to as happiness) and optimal development with respect to academic achievement, physical health, social relations, identify formation, and engagement in meaningful activities. 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 Dr. Suldo at (813) 974-2223. 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 USF at (813) 974-9343.
- ✓ **Want Your Child to Participate?** To permit your child to participate in this study, please complete the attached consent form and have your child turn it in to his or her designated teacher.

Sincerely,

Shannon Suldo, Ph.D.
Associate Professor of School Psychology
Department of Psychological and Social Foundations

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
of child taking part in the study

Printed name of parent

Date

Note. This appendix has been modified in font size to comply with margin requirements.

Appendix B (Continued)

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
obtaining consent

Printed name of person
obtaining consent

Date

Note. This appendix has been modified in font size to comply with margin requirements.

Appendix C

Recruitment Script Teachers Read to Students

What teachers were instructed to say to students:

*Researchers from the University of South Florida want to find out more about the links between students' psychological wellness and their school performance, physical health, social relationships, and sense of self. You are being asked to participate because you are a student in this class. Participation will involve completing a packet of surveys during regular school hours on one occasion (during one class period) this year. The surveys ask questions about your thoughts, behaviors, and attitudes towards school, family, and life in general, as well as physical health and after-school activities. All responses to the survey will be kept confidential; because the USF research team is interested in general trends among teenagers, your responses will be combined with the surveys completed by all other students who take part in the study- you will not be identified by name. Next year, we will ask you to complete the same surveys so that we can track change in student behavior over time. It is your choice whether or not you want to participate. **All students who return completed parent consent forms (whether or not your parent gives you permission to participate) will be included in one of several drawings for \$50 gift cards to a local mall. Also, each student who completes the surveys will receive a pre-paid movie ticket.** Only students with written parent permission can participate, so please bring these consent forms home to your parents or guardians. Your parent should keep one copy for the family's records, and complete the other copy. Please return the copy that is completed by your parent or guardian to me as soon as possible.*

Appendix D

Teacher Consent Form

Dear Teacher:

This letter provides information about a research study that will be conducted in your high school by investigators from the University of South Florida. We are conducting the study to determine the links between students' psychological wellness and their school performance, physical health, social relationships, and sense of self.

- ✓ Who We Are: The research team consists of Shannon Suldo, Ph.D., a professor in the School Psychology Program at the University of South Florida (USF), and several doctoral students in the USF College of Education. We are planning the study in cooperation with the principal at your school to make sure that the study provides information that will be useful to the school.
- ✓ Why We are Requesting Your Participation: This study is being conducted as part of a project entitled, "Subjective Well-Being of High School Students." You are being asked to participate because you are a teacher of at least one student who is a participant in the project.
- ✓ Why You Should Participate: We need to learn more about what leads to happiness and health during the pre-teen years! The information that we collect from teachers may help increase our overall awareness of the importance of monitoring students' happiness. In addition, information from the study will be shared with you and other staff at your school in order to increase your knowledge of the relationship between students' mental health and their educational performance, physical health, and social relationships. Please note that you will be compensated \$5 for each rating scale you complete.
- ✓ What Participation Requires: You will be asked to complete a questionnaire(s) about the behavior of each of your students who is a participant in the study. Completion of the questionnaire(s) is expected to take between 10 and 15 minutes.
- ✓ Please Note: Your decision to participate in this research study must be completely voluntary. You are free to participate in this research study or to withdraw from participation 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 HCPS, USF, or any other party.
- ✓ Confidentiality of Your Responses: There is minimal risk for participating in this research. Your privacy and research records will be kept confidential to the extent of the law. Authorized research personnel, employees of the Department of Health and Human Services, the USF Institutional Review Board and its staff, and other individuals acting on behalf of USF may inspect the records from this research project, but your individual responses will not be shared with school system personnel or anyone other than the USF research team. Your completed questionnaire(s) will be assigned a code number to protect the confidentiality of your responses. Only the USF research team will have access to the locked file cabinet stored at USF that will contain all records linking code numbers to participants' names.

What We'll Do With Your Responses: We plan to use the information from this study to inform educators and psychologists about the relationships between students' psychological wellness (particularly their subjective well-being, also referred to as happiness) and optimal development with

Appendix D (Continued)

- ✓ respect to academic achievement, physical health, social relations, identify formation, and engagement in meaningful activities. The results of this study may be published. However, the data obtained from you will be combined with data from other people in the publication. The published results will not include your name or any other information that would in any way personally identify you.

Note. This appendix has been modified in font size to comply with margin requirements.

- ✓ 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) 974-2223 (Dr. Suldo). 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 USF at (813) 974-9343, or the Florida Department of Health, Review Council for Human Subjects at 1-850-245-4585 or toll free at 1-866-433-2775.

- ✓ Want to Participate? To participate in this study, please sign the attached consent form.

Sincerely,

Shannon Suldo, Ph.D.
 Associate Professor of School Psychology
 Department of Psychological and Social Foundations

Consent 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 consent form for my records.

Signature of teacher

Printed name of teacher

Date

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
obtaining consent

Printed name of person
obtaining consent

Date

Note. This appendix has been modified in font size to comply with margin requirements.

Appendix E

Student Assent Form

Today you will be asked to take part in a research study by filling out several surveys. Our goal in conducting the study is to determine the links between students' psychological wellness and their school performance, physical health, social relationships, and sense of self.

- ✓ Who We Are: The research team is led by Shannon Suldo, Ph.D., a professor in the School Psychology Program at the University of South Florida (USF). Several graduate students in the USF College of Education are also on the team. We are working with your principal to make sure this study will be helpful to your school.
- ✓ Why We Are Asking You to Take Part in the Study: This study is part of a project called, "Subjective Well-Being of High School Students." You are being asked to take part because you are a student at a high school within Hillsborough County Public Schools (HCPS).
- ✓ 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 collect may help us better understand why we should monitor students' happiness. In addition, results from the study will be shared with your high school to show them how happiness is related to school grades and behavior, physical health, social relationships, and identity. You will not be paid for taking part in the study.
- ✓ Filling Out the Surveys: These surveys will ask you about your thoughts, behaviors, and attitudes towards school, family, and life in general. The surveys will also ask about your physical health and after-school activities. It will probably take between 45 and 60 minutes to fill out the surveys. We will also ask you to complete these surveys again one year from now. A few months later, some students will be asked to participate in one brief (30 minutes or less) interview. If you take part in the interview, we will ask you additional questions about thoughts and behaviors that influence your happiness.
- ✓ 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- grades, discipline record, attendance, and FCAT scores. We will gather this information under the guidance of school administrators.
- ✓ Please Note: Your involvement in this study is voluntary (your choice). By signing this form, you are agreeing to take part in this study. Your decision to take part, not to take part, or to stop taking part in the study at any time will *not* affect your student status or your grades; you will not be punished in any way. If you choose not to take part, it will not affect your relationship with HCPS, USF, or anyone else.
- ✓ Privacy of Your Responses: 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, the USF Institutional Review Board, and its staff, and other individuals acting on behalf of USF may look at the records from this research project. However, 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 the ability to open 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. All records from the study (completed surveys, information from school records) will be destroyed

Appendix F

Demographic Form

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

PLEASE READ EACH QUESTION AND CIRCLE **ONE** ANSWER PER QUESTION:

1. I am in grade: 9 10 11 12

2. My gender is: Male Female

3. Do you receive free or reduced-price school lunch? Yes No

4. My race/ethnic identity is:

- | | |
|-------------------------------------|--|
| a. American Indian or Alaska Native | e. Native Hawaiian or Other Pacific Islander |
| b. Asian | f. White |
| c. Black or African American | g. Multi-racial (please specify): _____ |
| d. Hispanic or Latino | h. Other (please specify): _____ |

5. My biological parents are:

- | | |
|--------------|--------------------------------------|
| a. Married | d. Never married |
| b. Divorced | e. Never married but living together |
| c. Separated | f. Widowed |

6. I live with my:

- | | |
|--|---|
| a. Mother and Father | e. Father and Step-mother (or partner) |
| b. Mother only | f. Grandparent(s) |
| c. Father only | g. Other relative (please specify): _____ |
| d. Mother and Step-father (or partner) | h. Other (please specify): _____ |

7. My father's highest education level is:

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

8. My mother's highest education level is:

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

Note. This appendix has been modified in font size to comply with margin requirements.

Appendix F (Continued)

Sample Questions:

	Never	Almost Never	Sometimes	Fairly Often	Very Often
1. I go to the beach	1	2	3	4	5

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
2. Going to the beach is fun	1	2	3	4	5

Appendix G

Students' Life Satisfaction Scale (Huebner, 1991)

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 **strongly agree** with the statement your satisfaction with life. In answering each statement, circle a number from **(1)** to **(6)** where **(1)** indicates you **strongly disagree** with the statement and **(6)** indicates you

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

Appendix H

Life Events Checklist (LEC, Johnston & McCutcheon, 1980)

Below is a list of things that sometimes happens to people. Circle “**Yes**” next to each of the events you **have** experienced during the past year (12 months). Circle “**No**” for each event you **have not** experienced during the past year. Please read over the entire list before you begin.

EVENT:	Experienced in Past Year?	
1. Moving to new home	Yes	No
2. New brother or sister	Yes	No
3. Changing to new school	Yes	No
4. Serious illness or injury of family member	Yes	No
5. Parents divorced	Yes	No
6. Increased number of arguments between parents	Yes	No
7. Mother or father lost job	Yes	No
8. Death of a family member	Yes	No
9. Parents separated	Yes	No
10. Death of a close friend	Yes	No
11. Increased absence of parent from the home	Yes	No
12. Brother or sister leaving home	Yes	No
13. Serious illness or injury of close friend	Yes	No
14. Parent getting into trouble with law	Yes	No
15. Parent getting a new job	Yes	No
16. New stepmother or stepfather	Yes	No
17. Parent going to jail	Yes	No
18. Change in parents’ financial status	Yes	No

Appendix I

Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983)

The next 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.

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

Appendix J

Social Experiences Questionnaire-Self Report (Crick & Grotpeter, 1996)

Here is a list of things that sometimes happen to kids your age at school. How often do they happen to you at school?

<i>How many of your friends:</i>		Never	Almost Never	Sometimes	Almost All the Time	All of Time
1	How often does another kid give you help when you need it?	1	2	3	4	5
2.	How often do you get hit by another kid at school?	1	2	3	4	5
3.	How often do other kids leave you out on purpose when it is time to play or do an activity?	1	2	3	4	5
4.	How often does another kid yell at you and call you mean names?	1	2	3	4	5
5.	How often does another kid try to cheer you up when you feel sad or upset?	1	2	3	4	5
6.	How often does a kid who is mad at you try to get back at you by not letting you be in their group anymore?	1	2	3	4	5
7.	How often do you get pushed or shoved by another kid at school?	1	2	3	4	5
8.	How often does another kid do something that makes you feel happy?	1	2	3	4	5
9.	How often does a classmate tell lies about you to make other kids not like you anymore?	1	2	3	4	5
10.	How often does another kid kick you or pull your hair?	1	2	3	4	5
11.	How often does another kid say they won't like you unless you do what they want you to do?	1	2	3	4	5
12.	How often does another kid say something nice to you?	1	2	3	4	5
13.	How often does a kid try to keep others from liking you by saying mean things about you?	1	2	3	4	5
14.	How often does another kid say they will beat you up if you don't do what they want you to do?	1	2	3	4	5
15.	How often do other kids let you know that they care about you?	1	2	3	4	5

Appendix K

Child and Adolescent Social Support Scale (CASSS, Malecki, Demaray, & Elliot, 2002)

On this page, please respond to sentences about some form of support or help that you might get from either a parent, a teacher, or classmates. Read each sentence carefully and respond to them honestly. **Rate how often you receive the support described.** Do not skip any sentences. Thank you!

My Parent(s)		Never	Almost Never	Some of the Time	Most of the Time	Almost Always	Always
1	... show they are proud of me.	1	2	3	4	5	6
2	... understand me.	1	2	3	4	5	6
3	... listen to me when I need to talk.	1	2	3	4	5	6
4	... make suggestions when I don't know what to do.	1	2	3	4	5	6
5	... give me good advice.	1	2	3	4	5	6
6	... help me solve problems by giving me information.	1	2	3	4	5	6
7	... tell me I did a good job when I do something well.	1	2	3	4	5	6
8	... nicely tell me when I make mistakes.	1	2	3	4	5	6
9	... reward me when I've done something well.	1	2	3	4	5	6
10	... help me practice my activities.	1	2	3	4	5	6
11	... take time to help me decide things.	1	2	3	4	5	6
12	... get me many of the things I need.	1	2	3	4	5	6
My Teacher(s)		Never	Almost Never	Some of the Time	Most of the Time	Almost Always	Always
13	... cares about me.	1	2	3	4	5	6
14	... treats me fairly.	1	2	3	4	5	6
15	... makes it okay to ask questions.	1	2	3	4	5	6
16	... explains things that I don't understand.	1	2	3	4	5	6
17	... shows me how to do things.	1	2	3	4	5	6
18	... helps me solve problems by giving me information.	1	2	3	4	5	6
19	... tells me I did a good job when I've done something well.	1	2	3	4	5	6
20	... nicely tells me when I make mistakes.	1	2	3	4	5	6
21	... tells me how well I do on tasks.	1	2	3	4	5	6
22	... makes sure I have what I need for school.	1	2	3	4	5	6
23	... takes time to help me learn to do something well.	1	2	3	4	5	6
24	... spends time with me when I need help.	1	2	3	4	5	6

Note. This appendix has been modified in font size to comply with margin requirements.

Appendix K (Continued)

My Classmates		Never	Almost Never	Some of the	Most of the	Almost Always	Always
25	... treat me nicely.	1	2	3	4	5	6
26	... like most of my ideas and opinions.	1	2	3	4	5	6
27	... pay attention to me.	1	2	3	4	5	6
28	... give me ideas when I don't know what to do.	1	2	3	4	5	6
29	... give me information so I can learn new things.	1	2	3	4	5	6
30	... give me good advice.	1	2	3	4	5	6
31	... tell me I did a good job when I've done something well.	1	2	3	4	5	6
32	... nicely tell me when I make mistakes.	1	2	3	4	5	6
33	... notice when I have worked hard.	1	2	3	4	5	6
34	... ask me to join activities.	1	2	3	4	5	6
35	... spend time doing things with me.	1	2	3	4	5	6
36	... help me with projects in class.	1	2	3	4	5	6

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