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Abstract

Prevalence estimates indicate 11% of youth meet the criteria for a major depressive disorder with approximately 8% experiencing impairment (Merikangas et al., 2010). Depression in youth is a debilitating condition that is associated with co-morbid conditions such as substance abuse and anxiety and one of the most serious correlates is suicide. Adolescent onset depression often leads to depression in adulthood, truncated educational attainment, poor interpersonal relationships, and increased reliance on social systems.

Given the extent of impairment related to depression, identifying risk and protective factors is critical. Using the ecological perspective (Bronfenbrenner, 1979), the literature on risk and protective factors for adolescent depression point to individual (e.g., temperament), family (e.g., conflict), peer (e.g., peer victimization), school (e.g., teacher support), community (e.g., violence), and broad societal factors (e.g., poverty) associated with youth vulnerability to depression and depressive symptoms (Dallaire et al., 2008; Gilbert, 2004). The impact of individual and family characteristics on adolescent depression is frequently studied in the literature (Betts et al., 2009; Branje et al., 2010). However, although less explored, the school context also exerts a significant influence on youth development including depression (Gadeyne, Ghesquiere, & Onghena, 2006). As a result, the school context is important for reducing risk for depression among adolescents (Caldwell et al., 2007; Fleming et al., 2007).

The focus of the current study was the relationship between school climate and adolescent depressive symptoms. School climate was conceptualized with five constructs:
perceived school connectedness, perceived teacher support, harshness of discipline policies, presence of mental health and social services, and median school-level income. Data from Waves I and II of the National Longitudinal Study on Adolescent Health were used to examine the extent to which school climate dimensions were associated with depressive symptoms in adolescents and the extent to which this relationship varied for racial and sexual minority youth compared to majority youth.

All statistical analyses were performed using Stata 12. Multilevel linear regression was employed to answer the research questions. The school climate dimensions primarily associated with depression included: perceived school connectedness, perceived teacher support, and median school-level income. Controlling for individual demographic characteristics, higher perceived school connectedness and perceived teacher support were associated with fewer depressive symptoms among all youth in the study. Median school-level income was associated with fewer depressive symptoms among all youth. Harshness of discipline policies and the presence of mental health and social services were not associated with depression. The relationship between the school climate dimensions and depressive symptoms did not significantly vary for sexual and racial minority youth compared to majority youth.

The results from the current study provide implications for school social work practice, policy, and research. School social workers play a critical role in promoting adolescent connectedness to school and fostering positive student-teacher relationships. Policies to support school climate initiatives in relation to accountability and technical support are needed. Directions for future research are provided including additional
exploration of school discipline policies and depression in youth. Ultimately, school climate is critical to adolescent development and impacts depressive symptoms.

This research uses data from Add Health, a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and funded by a grant P01-HD31921 from the National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth@unc.edu).
Dedication

This document is dedicated to my loving and supportive parents, David and Jeri Drew, without whom this accomplishment would not have been possible. I will never be able to pay you back but I will do my very best to pay it forward.
Acknowledgments

Growing up, I was always excited to see back to school commercials at the end of every summer. The fun of new school supplies and the excitement and energy of a new school year were never lost on me. Because of this, “school” was one of my favorite activities to play and on occasion, I could even convince my brother to join me. In the back of my young mind, I thought how much I would love to be a college professor. Ultimately, my education path led me to the social work profession and I have never once regretted this decision. After graduating with my MSW, I practiced as a medical social worker at Dayton Children’s Medical Center. Working at Dayton Children’s showed me the significant impact of trauma and poverty on the mental health of children and adolescents prompting a strong interest in understanding how to cultivate contexts that promote and enhance youth mental health. This interest led me to the social work doctoral program at The Ohio State University, a place where my two interests, social work and academia merged. As I look toward the future, I would like to thank the people who participated in my social work and academic journey.

I would like to thank my social work family at Dayton Children’s Medical Center. Thank you for playing an instrumental role in sharpening my social work skills, modeling culturally competent and ethical practice, teaching me how to be a member of a multidisciplinary team, and encouraging me to advocate for the social work profession.
inside and outside the hospital. On a personal note, thank you for supporting me during joyous occasions and difficult ones.

I am also grateful to Theresa Early, my chair and advisor, for the number of hours (in person and on Skype!) spent reviewing research concepts, discussing my dissertation, and learning the Add Health dataset. Thank you for your time, patience, and sincere interest in my success.

I would also like to thank Dawn Anderson-Butcher for her support in the writing of my dissertation. In particular, I would like to thank her for her investment in my overall professional development. Thank you for knowing when to push me and providing me with numerous opportunities for professional growth and development.

I would like to acknowledge the support and guidance of Tamara Davis. Thank you for opening my eyes to how context may be experienced differently for individuals who belong to a minority group. During one of the first times we met, we discussed risk and protective factors and, you asked, “This is protective for whom?” Your influence will undoubtedly impact my future research.

I also want to acknowledge and thank Michael Paktinat and Lauren Haas-Gehres from the College of Social Work for their technical support and assistance with the Add Health dataset. I would also like to thank Joyce Tabor at the UNC Carolina Population Center for her willingness to answer my questions about the Add Health data.

I would also like to thank my social work colleagues and friends, Anna Ball, Becky Wade-Mdivanian, Allie Riley, and Megan Lehnert. Through research projects,
social events, major life events, and the doctoral program, thank you for laughing with me, saving me from my neurotic tendencies, and cheering me on.

Above all I would like to recognize my family. Thank you to my Dad for his quiet support and always insightful suggestions. Thank you to my Mom for her positive outlook, energy, and endless support. Thank you to my brother, Brian, for encouraging me not to waver in my self confidence and find my passion. Finally, thank you to my future husband, Kevin, his sense of humor and love helped me cross this finish line.
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Publications


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CHAPTER 1

Introduction

Depression is a debilitating condition that is increasingly recognized among youth, especially adolescents (Williams et al., 2009). Nearly a third of adolescents experience a depressive episode by age 19 (Hankin et al., 1998; Lewinsohn, Rohde, & Seeley, 1998) and an increasing number of youth experience depressed mood, subsyndromal symptoms, and minor depression (Lewinsohn, Shankman, Gau, & Klein, 2004). The prevalence of depression is particularly high among female (Zeiss, 2006), racial minority (Allen & Astuto, 2009) and sexual minority youth (D’Augelli, 2002). Adolescent onset depression has a chronic and recurrent course (Merry, McDowell, Wild, Bir, & Cunliffe, 2004), leads to impaired functioning in multiple life domains (e.g., interpersonal, academic) (Pomerantz & Rudolph, 2003), and creates an economic strain on family and societal systems (Lynch & Clark, 2006). Adolescent depression is also associated with increased risk for substance use, high-risk sexual behaviors, problems at school, problems with peer and family relationships, and suicide attempts (Bhatia & Bhatia, 2007; Fleming et al., 2007; Keenan-Miller, Hammen, & Brennan, 2007). Given the significant public health burden of depression, identifying risk and protective factors for adolescent depression is particularly imperative.

The ecological perspective (Bronfenbrenner, 1979) provides a framework for organizing the biological and psychological systems of the individual that act in combination with the social systems of the family, school, neighborhood, community, and society (Jackson & Nuttall, 2001). The literature describes the risk and protective
factors within these individual and social systems (Gilbert, 2004). Using the ecological perspective (Bronfenbrenner, 1979), the extensive literature on risk and protective factors for adolescent depression point to individual (e.g., temperament), family (e.g., conflict), peer (e.g., peer victimization), school (e.g., teacher support), community (e.g., violence), and broad societal factors (e.g., poverty) associated with youth vulnerability to depression and depressive symptoms (Dallaire et al., 2008; Gilbert, 2004). The impact of individual and family characteristics on adolescent depression and depressive symptoms is frequently studied (Betts et al., 2009; Branje et al., 2010). However, although less explored, the school context also exerts a significant influence on youth development including depression (Gadeyne, Ghesquiere, & Onghena, 2006). Compared to students with externalizing behaviors, students with internalizing symptoms such as those related to depression often feel less well liked by peers and teachers (Talbott & Fleming, 2003). As a result, the school context is important in reducing risk for depression and depressive symptoms among adolescents (Caldwell et al., 2007; Fleming et al., 2007). The focus of the current study was the relationship between the school context and adolescent depressive symptoms (Allen & Astuto, 2009; D’Augelli, 2002).

In the United States, school-age children and adolescents spend nearly half of their waking hours in school, and schools represent a critical setting for developing youth (Smith, Boutte, Zigler, & Finn-Stevenson, 2004; U.S. Department of Health and Human Services, 2001). As such, the school is a critical context for risk and protective factors and is second only to families in shaping children’s development (Cowen et al., 1996). Specifically, school climate, is a multidimensional construct that encompasses interpersonal, organizational, and instructional dimensions (Kupermine, Leadbeater, &
Blatt, 2001). School climate refers to the perceptions of the physical and psychological school environment by a variety of individuals (i.e., teachers, students, parents, and principals) and influences youth development, including mental health outcomes (Kuperminc et al., 1997, 2001; Loukas & Robinson, 2004). Dimensions of school climate include school connectedness, teacher support, and school policies and programs (Cohen et al., 2009). Adolescent experiences of a positive school climate often lead to improved academic achievement (MacNeil, Prater, & Busch, 2009), decreased behavioral problems (Wang, Selman, Dishion, & Stormshak, 2010), and overall positive health and well being (Mostin & Ostberg, 2009).

Much of the current empirical literature on school climate and youth outcomes investigates academic (MacNeil et al., 2009), behavioral (Wang et al., 2010), and general measures of health and well-being outcomes (Konu et al., 2002; Modin & Ostberg, 2009) among youth. The available research on school climate dimensions and depressive symptoms indicates that high school connectedness and teacher support decrease adolescent depression and depressive symptoms (Anderman, 2002; Shochet et al., 2006; LaRusso, Romer, & Selman, 2008). However, there are gaps in the current literature including under explored dimensions of school climate such as school policies and programs and few studies on teacher support and depressive symptoms. School policies such as discipline policies relate to the clear communication and consistent enforcement of rules which may have an impact on how safe youth feel at school and safety is related to depressive symptoms (Gregory & Cornell, 2009; Ozer & Weinstein, 2004). Tolerant disciplinary practices are also associated with higher school connectedness (McNeely, Nonnemaker, and Blum, 2002). Further, adolescents are differentiating from their parents...
and seeking other relationships putting teachers in a critical position to build relationships with students. Positive, close relationships with schools and teachers may serve as a protective factor against depressive symptoms (Resnick et al., 1997). Given the findings and gaps in the current literature, further study is warranted into the relationship between school climate dimensions and depressive symptoms in youth (Shochet et al., 2006).

Additionally, there is a need for further examination into whether certain subgroups of youth such as sexual or racial minority youth within the school context are at greater risk or will benefit more from specific factors relative to depressive symptoms (Kupermine et al., 2001; Masten & Coatsworth, 1998; Resnick, 2000). This is particularly important as racial and sexual minority youth are at greater risk to experience depressive symptoms. This is also an important line of inquiry given sexual and racial minority youth are at risk for a number of negative school experiences. For instance, sexual minority youth are at risk for bullying, harassment, and lack of acceptance (Kociw et al., 2010). Racial minority youth may experience racism, discrimination, and harsh discipline practices (Losen, 2011; Wong, Eccles, Sameroff, 2003). Such experiences may lower school connectedness and decrease teacher-student relationships potentially resulting in more depressive symptoms.

Identifying the association between school climate and adolescent depressive symptoms could help to inform school wide interventions for youth to help prevent or minimize depressive symptoms in youth. Yet, the current literature reveals gaps in the knowledge base on the association between school climate and adolescent depressive symptoms, including a dearth of studies on school policies and programs, few studies use multilevel modeling analyses, and few studies employ a full measure of depression. To
address these gaps, using the ecological perspective (Bronfenbrenner, 1979, 1994), the current study employed multilevel modeling to examine the association between underexplored dimensions of school climate and depressive symptoms among adolescents using a full measure of depression.

Purpose

The current study had two key purposes: 1) To examine the relationship between school climate dimensions and adolescent depressive symptoms and 2) To identify differences in the association between school climate dimensions and adolescent depressive symptoms among racial and sexual minority youth compared to majority youth.

Study Rationale

The rationale for the current study is rooted in a number of understandings that are established in the current literature base. Ecological theory is used because it is a well-known framework for organizing the influences of social contexts on youth development (Jozefowicz-Simbeni & Allen-Meares, 2002). The current study focused on the school context as it exerts a significant influence on a number of youth outcomes (e.g., academic, emotional) even when individual-level circumstances are taken into consideration (Gadeyne, Ghesquiere, & Onghena, 2006; West et al., 2004). Sellstrom and Bremberg (2006) systematically reviewed seventeen multilevel studies on school contextual effects on student outcomes finding that having a health policy or antismoking policy, a good school climate, high average socioeconomic status, and urban location had a positive effect on pupil outcomes including well-being (as measured by items from the Beck Depression Inventory). Furthermore, research supports the potential for school-
level characteristics to predict individual-level psychological outcomes during adolescence (Anderman, 2002). The current study sample included adolescents as the school context is particularly important for adolescents. Adolescents separate from their family of origin on a pursuit for individuation (Buhrmester, 1990). This individuation elevates the importance of alternative contexts such as the school as youth may increasingly rely on these contexts for support (Buhrmester, 1990).

Because youth experience and react to contexts in different ways depending on individual characteristics (Kuperminc et al., 2001), the current study considered group differences in the association between school climate dimensions and adolescent depressive symptoms for racial and sexual minority youth. Prior research suggests that racial minority youth perceive a more negative school climate compared to their white peers (Watkins & Aber, 2009) and gay, lesbian, bisexual, and transgender (GLBT) youth are at increased risk for bullying at school (Goodenow et al., 2006). Therefore, further research is necessary to understand group differences in the association between school climate dimensions and adolescent depressive symptoms (Kuperminc et al., 2001).

Statement of Potential Significance

The current study offers three contributions to the current literature on the school context and adolescent depression. The current study included a large sample that allowed for an assessment of how the impact of school climate dimensions on depressive symptoms differed as a function of race and sexual minority status. The current study employed multilevel modeling and contributed to the limited number of school climate and depression studies that have used multilevel modeling (Ellonen, & Kaariainen, 2008; Goodman et al., 2003; Roeger, Allison, & Martin, 2001). The current study considered
the association between school policies and programs and adolescent depressive symptoms. With the exception of Anderman’s (2002) study which found increased depressive symptoms in students in schools with busing practices, such influences are underexplored in relation to depressive symptoms in adolescents.

Further, the current study offers potential practical contributions. Mental health is critical for thinking and communication skills, learning, emotional growth, resilience, and self-esteem (U.S. Department of Health and Human Services, 1999). Emotional health problems such as depression negatively influence such skills and create significant barriers to academic success and positive school outcomes (Trout, Nordness, Pierce, & Epstein, 2003). Specifically, depression is associated with low levels of academic achievement (Haines, Norris, & Kashy, 1996), decreases in grade point average (Shahar et al., 2006); diminished perceptions of academic competence (Kaltiala-Heino, Rimpelae, & Rantanen, 1998), dropout and higher absenteeism (Allen & Pfeiffer, 1991; Egger, Costello, & Angold, 2003; Fortin et al., 2006; Knitzer, 1993; Saxe, Cross, & Silverman, 1988), and failure to enter and complete college (Kessler, Foster, Saunders, & Stang, 1995). As a result, schools have a vested interest in promoting the mental health of their students, especially in light of increased accountability standards and performance expectations (Sipple & Banach, 2006).

The current study points to school-level factors that impact depressive symptoms among youth. Such factors could be the target of school improvement efforts. Further, given the current study examined the association between multiple school contextual levels and adolescent depression; the current study could provide implications for school social workers looking to widen intervention efforts to target broader school contextual
influences. This is critical as school social workers are increasingly asked to intervene at multiple contextual levels beyond the individual level to improve student outcomes (Frey & Dupper, 2005; Kelly, Berzin, Frey, Alvarez, Shaffer, & O’Brien, 2010). Additionally, the current study may help to inform school climate initiatives to improve the psychological climate of the school thus improving the overall emotional health of youth in schools. Improving the emotional health of youth is essential to improve school retention and graduation rates, to promote success in higher education, to enhance future employment opportunities, and to decrease reliance on costly societal systems. The current study reinforces the importance of assessing and improving school climate to promote youth mental health outcomes.

**Research Questions**

Drawing from research examining the etiology of depressive symptoms, and using Bronfenbrenner’s ecological perspective as a theoretical guide (Bronfenbrenner & Evans 2000), the current study examined school climate dimensions associated with adolescents’ depressive symptoms in a nationally representative sample of adolescents to answer two key research questions:

1. To what extent is school climate (as conceptualized by perceived school connectedness, perceived teacher support, harshness of school discipline policies, presence of mental health and social service programs, and school-level socioeconomic status) associated with depressive symptoms in adolescents in the United States?
a. To what extent are perceived school connectedness and perceived teacher support associated with depressive symptoms in adolescents in the United States?

b. To what extent are the harshness of school discipline policies, presence of mental health and social service programs, and school-level socioeconomic status associated with depressive symptoms in adolescents in the United States?

2. To what extent does the association between school climate dimensions (i.e., perceived school connectedness, perceived teacher support, harshness of discipline policies, and the presence of mental health and social service programs, and school-level socioeconomic status) and depressive symptoms vary for racial and sexual minority youth compared to majority youth?
CHAPTER 2

Children’s Mental Health

More than 450 million people worldwide suffer from one or more mental health disorder (World Health Organizations, 2010). Of that number, approximately 20% are children and adolescents (World Health Organization, 2010). In the United States, lifetime prevalence estimates indicate one in every 4-5 youth experiences a mental health disorder with severe impairment across their lifetime (Merikangas et al., 2010). Mood disorders are one of the most common mental health disorders among youth (U.S. Department of Health and Human Services, 1999). Depression is one such mood disorder. Worldwide depression affects approximately 121 million people, including adolescents, and is the fourth leading cause of disability (World Health Organization, 2010). Within the global context, depression is identified as a priority disorder among adolescents due to its higher frequency of occurrence, degree of associated impairment, therapeutic possibilities and long-term care consequences (World Health Organization, 2003). In the United States, depressive disorders are among the most common types of psychopathology (Kessler et al., 2003).

Depression

Defining Depression

Depression is a mental health disorder largely marked by alterations in mood (U.S. Department of Health and Human Services, 1999). However, depression is defined in a variety of manners which include:

- a transient mood or affective state
• a syndrome of related symptoms
• a clinical disorder or diagnosis (Rudolph & Lambert, 2007).

If the definition used is “depressed mood,” depression is regarded as an individual symptom of unhappiness, which is often measured using self-reports (Rudolph & Lambert, 2007). The second definition, which focuses on the depressive syndrome, considers depression in terms of a set of empirically-derived behaviors and emotions that cluster together in multivariate analyses (Rudolph & Lambert, 2007). The third conceptualization, which centers on depression as a diagnosis, identifies depression as a categorical disorder that is distinguished along quantitative (e.g., number of symptoms) and qualitative dimensions (e.g., change in functioning) (Rudolph & Lambert, 2007).

Diagnoses of depression are assessed through structured, clinician-administered interviews (Rudolph & Lambert, 2007). Major depressive disorder is characterized by the presence of a major depressive episode. Youth who experience a major depressive episode have five depressive symptoms such as depressed mood, excessive guilt, recurrent thoughts of death, suicide ideation, or suicide attempt that occur during the same two week period (American Psychological Association (APA), 2000). Symptoms are endured nearly every day, are observable to others, and constitute a change in functioning (APA, 2000). Dysthymic disorder is considered the “low grade fever” (M. Fristad, Spring 2010, personal communication) of depressive disorders. Youth with dysthymic disorder experience a depressed or irritable mood for most of the day, for more days than not, as indicated either by subjective account or observation by others, for at least one year (APA, 2000). During this period, youth experience symptoms such as, poor appetite or overeating, insomnia or hypersomnia, and low self esteem (APA, 2000).
Some youth experience brief, recurrent episodes of depressive symptoms and fall into the category of Depressive Disorder Not Otherwise Specified. For example, youth who experience minor depressive disorder have episodes of at least 2 weeks of depressive symptoms but with fewer than the five symptoms required for the diagnosis of Major Depressive Disorder (APA, 2000). In addition, some youth may experience recurrent brief depressive disorder characterized by depressive episodes lasting from 2 days up to 2 weeks (APA, 2000).

In addition to diagnosable depression, youth experience depressed mood, subsyndromal symptoms, and mild depression (Rudolph & Lambert, 2007). This has sparked debate regarding whether depression is best conceptualized as a discrete category or as a continuum of symptoms (Klein et al., 2005). One side of the argument contests that clinical depression and subsyndromal symptoms are qualitatively different and therefore different phenomenon. On the other hand, subsyndromal forms of depressive disorder are associated with significant functional impairment and future risk for major depression (Angt et al., 2000; Pine et al., 1999). Therefore, the evidence suggests that it is important to assess not only clinical depression but also the presence of mild, enduring symptoms that might lead to functional impairment and a more severe disorder in the future (Rudolph & Lambert, 2007). Given the research evidence suggesting significant impairment related to subsyndromal depressive symptoms and the future risk for major depression, in the current study, depression refers to the presence of depressive symptoms.
Prevalence

In 2009, an estimated 2 million adolescents aged 12-17 had a major depressive episode in the last year (Substance Abuse and Mental Health Services Administration, 2011). Merikangas and colleagues (2010) presented the most recent estimates of lifetime prevalence of DSM-IV mental health disorders with and without impairment using the National Comorbidity Survey-Adolescent Supplement (NCS-A), a nationally representative face-to-face survey of 10,123 adolescents aged 13 to 18 years in the United States. DSM-IV mental disorders were assessed using a modified version of the fully structured World Health Organization Composite International Diagnostic Interview. Merikangas et al. (2010) found that mood disorders affected 14.3% of the total sample, corresponding to 11.7% who met criteria for major depressive disorder or dysthymia with 8.7% experiencing severe impairment (Merikangas et al., 2010).

These figures however, may be an under estimate of the true nature of emotional difficulties in the community, with many children and adolescents exhibiting elevated, but subclinical, levels of depressive symptoms (Bayer & Sanson, 2003; Gonzalez-Tejera et al., 2005; Gotlib, Lewinsohn, & Seeley, 1995). For instance, depending on the informant (e.g., youth or parent), age, and gender, 10-40% of youth experience an unhappy, sad, or depressed mood (Achenbach, 1991; Compas et al., 1993). Use of formal diagnostic criteria indicates that 10-20% of youth experience sub-syndromal levels of symptoms or minor depression (Kessler & Walters, 1998; Roberts, Lewinsohn, & Seeley, 1991), whereas self-reports of symptoms indicate 20-50% of youth exceed conventional cutoffs for clinically significant levels of depression (Kessler et al., 2001). The discrepancy between self-report symptom scores and diagnostic interview classifications
might be explained by over reporting of mild mood difficulties. Alternatively, a substantial proportion of young people might suffer from subthreshold depression.

Prevalence rates vary depending on gender, race (Merikangas et al., 2010), and sexual orientation (Meyer, 2003). Lifetime prevalence of affective disorders is twice as high in women as men (Kessler et al., 1994). Merikangas et al. (2010) found that 15.9% of the female adolescents surveyed experienced major depression compared to 7.7% of the male adolescents who experienced major depression. This difference appears to emerge in early adolescence between the ages of 12 and 14 (Hankin & Abramson, 2001; Twenge & Nolen-Hoeksema, 2002).

The prevalence of most adult psychiatric disorders varies across racial/ethnic groups; however the research on racial/ethnic differences in the prevalence of internalizing symptoms and disorders in adolescents is less consistent or lacking (McLaughlin, Hilt, & Nolen-Hoeksema, 2007). To address this gap, McLaughlin, Hilt, and Nolen-Hoeksema (2007) examined the prevalence of these symptom groups in a large sample of 6th-8th graders in which the three major racial/ethnic group youths in the United States, White, Black, and Hispanic/Latino, were well-represented. Hispanic females reported experiencing higher levels of depression and co-morbidity than other groups. Black males reported the highest levels of overtly aggressive behavior and also reported higher levels of physiologic anxiety and disordered eating than males from other racial/ethnic groups. Allen and Astuto (2009) summarized the prevalence estimates of depression among racial minority youth using studies that provided specific information on rates from racial and ethnic samples in the United States, including large (at least 500 participants), community-and school-based samples from epidemiological studies that
provide prevalence estimates for each group studied and included at least two groups. Merikangas (2010) found higher rates of mood disorders among Hispanic adolescents compared with non-Hispanic white adolescents.

In addition, sexual minority individuals are twice as likely as heterosexual individuals to have a lifetime mood disorder (Meyer, 2003). In a study of depression and gay youth, Hammelman (1993) found depression impacts gay youth four to five times more severely than their non-gay peers. Recent point prevalence estimates suggest 15% of sexual minority youth have depression (Mustanski et al., 2010). Table 1 provides a summary of the lifetime and point prevalence rates for depression across different subgroups of youth.

Table 1. Lifetime and Point Prevalence Estimates of Depression across Subgroups of Youth

<table>
<thead>
<tr>
<th>Study</th>
<th>Subgroup</th>
<th>Prevalence</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merikangas et al (2010)</td>
<td>Boys</td>
<td>Lifetime</td>
<td>7.70%</td>
</tr>
<tr>
<td>Merikangas et al (2010)</td>
<td>Girls</td>
<td>Lifetime</td>
<td>15.90%</td>
</tr>
<tr>
<td>Allen &amp; Astuto (2009)</td>
<td>Non-Latino White</td>
<td>Point</td>
<td>18-36%</td>
</tr>
<tr>
<td>Allen &amp; Astuto (2009)</td>
<td>African American</td>
<td>Point</td>
<td>15-44%</td>
</tr>
<tr>
<td>Allen &amp; Astuto (2009)</td>
<td>Latino</td>
<td>Point</td>
<td>13-48%</td>
</tr>
<tr>
<td>Allen &amp; Astuto (2009)</td>
<td>Asian American</td>
<td>Point</td>
<td>17-47%</td>
</tr>
<tr>
<td>Allen &amp; Astuto (2009)</td>
<td>American Indian</td>
<td>Point</td>
<td>58%</td>
</tr>
<tr>
<td>Mustanski et al (2010)</td>
<td>Sexual Minority</td>
<td>Point</td>
<td>15%</td>
</tr>
</tbody>
</table>

1 Allen and Astuto (2009) summarized the point prevalence of depression using multiple studies

*Increased prevalence.*

A growing body of literature suggests an increase in the prevalence of depression in recent birth cohorts (Kessler et al., 2001; Kessler et al., 2003). For example, Kessler et al. (1996b) used the National Comorbidity Survey (NCS) data to argue that depression is
a growing public health problem because about 20% of respondents born before 1965 had their onset of pure or primary major depressive disorder by age 18, whereas in the youngest cohort, born between 1965 and 1974, 50% had their first episode by age 18. However, there is some debate regarding whether this trend is the result of truly higher rates of depressed symptoms or rather the product of improved detection and awareness (Costello, Erkanli, & Angold, 2006). Further, investigators point out that these trends are based on methodological weaknesses including asking adults up to 90 years of age to recall the earliest episode of a psychiatric disorder. Dating of symptoms is often unreliable and varies with the age of the respondent and the time elapsed since the occurrence (Angold et al., 1996; Sanford et al., 1999). As a result, oldest cohorts may have forgotten how young they were at their first episode creating the appearance that fewer children and adolescents in earlier-born cohorts had psychiatric disorders than do today’s youths (Pickles et al., 1998). If there is not an actual increase, depression is more prevalent than previously thought. Nevertheless, the prevalence of major depression and depressive symptoms among adolescents is a significant concern given persistent course and degree of related current and future impairment.

Onset & Course

To reiterate, major depression and subthreshold depressive symptoms often first appear during the adolescent years (Lewinsohn & Essau, 2002). Rates of depression steadily increase from ages 12 to 15 (SAMHSA, 2011). Based on retrospective studies (Lewinsohn & Essau, 2002) of depressed adults and prospective studies of youth, major depression is most likely to emerge during the mid-adolescent years (ages 13-15) (Hankin et al., 1998; Lewinsohn & Essau, 2002). Prospective studies that follow the same children
over time reveal a dramatic increase in the prevalence of major depressive episodes after age 11 and again after age 15, with a flattening of rates in young adulthood (Kim-Cohen et al., 2003). Large-scale studies of community samples (Lewinsohn, Rohde, Klein, & Seeley, 1999; Pine, Cohen, Gurley, Brook, & Ma, 1998) and studies of clinical samples (Birmaher et al., 2002; Weissman et al., 1999) demonstrate significant continuity in depressive disorders from adolescence through young adulthood. This evidence suggests that adolescent-onset depression is likely to foreshadow depression in adulthood (Birmaher et al., 2002; Klein et al., 2005; Lewinsohn, et al., 1999; Reinherz et al., 2006). The course of adolescent depression leads to impairment across multiple domains (Bayer & Sanson, 2003).

**Impairment**

Depression is one of the major causes of morbidity among adolescents, with the disorder often taking a chronic, recurrent, and episodic course (Merry, McDowell, Wild, Bir, & Cunliffe, 2004). Globally, depression represents a significant contributor to disability burden of disease. In 2000, as measured by years lived with the disability (YLD), depression was the leading cause of disability and the fourth leading contributor to the global burden of disease as measured by Disability Adjusted Life Years (DALYs). Today depression is the 2nd cause of Disability Adjusted Life Years (DALYs) (i.e., the sum of potential life lost due to premature morbidity and the years of productive life lost due to disability) in the age category of 15-44 for both sexes combined (World Health Organization, 2010). It is expected that by the year 2020 depression will reach 2nd place in the ranking of DALYs calculated for all ages and both sexes (World Health Organization, 2010).
Empirical evidence suggests that depression in adolescence interferes with both individual and social functioning and predicts subsequent difficulties in psychological, academic, and social areas (Cole, Martin, Peeke, Seroczynski, & Hoffman, 1998; Pomerantz & Rudolph, 2003). Some of the negative outcomes associated with adolescent depression include attempted and completed suicide, co-morbid disorders, poor academic performance, family and social dysfunction, occupational difficulties, and economic costs (Merry, McDowell, Wild, et al., 2004; McGorry, Purcell, Hickie, & Jorm, 2007). These difficulties are also often evident in children and adolescents with subclinical levels of depression (Gotlib et al., 1995), and can continue into adulthood where further occupational, economic and interpersonal difficulties can arise (Bayer & Sanson, 2003; Cicchetti & Toth, 1998).

Suicide.

One of the most serious correlates of depression is suicidal behavior including suicide ideation and attempts (Fleming et al., 2007; Fordwood et al., 2007; Fotti et al., 2006; Rudolph & Lambert, 2007). Using a nationally representative sample of adolescents, Waldrop and colleagues (2007) found depression to be a significant risk factor for both suicide ideation and suicide attempts (Waldrop, Hanson, Resnick, & Kilpatrick, 2007). Given the feelings of hopelessness and worthlessness that often accompany depression, depression places youth at heightened risk for suicide ideation and attempts. Indeed, suicide is the third leading cause of death among 15-24 year olds (Institute of Medicine, 2002) and the fourth leading cause of death among 10-14 year olds in the United States (Anderson & Smith, 2003). Sexual minority (i.e., gay, lesbian, bisexual) youth are at particularly high risk for suicide ideation and attempts (Garofalo et al., 1999; Kosciw et al., 2010). Further, suicide appears to be more common in cases of
comorbidity (Small et al., 2008; Wunderlich et al., 1998). In particular, higher rates of suicidal ideation may be seen particularly in youth with co-morbid depression and anxiety (Krishnan, 2003; Mineka et al. 1998; Seligman and Ollendick 1998).

Co-morbidity.

Youth who experience depression, are at increased risk to develop co-morbid diagnoses, especially anxiety, behavior disorders (e.g., attention-deficit/hyperactivity disorder), and substance abuse (Lewinsohn, Rohde, Klein, & Seeley, 1999; Weissman, et al., 1999). Depression is significantly co-morbid with anxiety disorders (OR=8.2), conduct/oppositional disorders (OR=6.6), and attention-deficit/hyperactivity disorder (OR=5.5) (Angold, Costello, & Erkanli, 1999; Chavira et al., 2004; O’Neil et al., 2010; Wolff & Ollendick, 2006). In addition, depression frequently co-occurs with substance use disorders in adolescents (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). In particular, early depressive symptoms are associated with and predict the use of substances in youth (Diego, Field, & Sanders, 2003; Siholva et al., 2008). The co-occurrence of substance use disorders and depression in adolescents is associated with earlier onset and more severe alcohol- and drug-related problems (Rao et al., 1999; Rohde et al, 1996), more prolonged and recurrent depressive episodes (Rao et al., 2000; Rao et al., 2003), increased frequency of behavioral problems (King et al, 1996), more severe impairment in interpersonal and academic competencies (Rao et al., 2000), increased utilization of mental health services (Kessler et al., 1996a; Rao et al., 1999; Rohde et al., 1996), as well as elevated risk for suicidal behavior (Lewinsohn et al., 1995). In general, co-morbidity is associated with more severe symptom profiles, increases in disability, higher service utilization, poorer treatment outcomes, and added
economic and psychosocial burden (Andrews et al., 2002; Canavera, 2010; Krueger et al., 1998; Rao, 2006).

**Academic.**

Youth with depression often experience academic difficulties such as low grades, inadequate problem solving skills, difficulty concentrating, inability to work with others, and poor performance on assignments and tests (Stark, 1990). Self-reported symptoms of depression are associated with low levels of academic achievement (Haines, Norris, & Kashy, 1996), decreases in grade point average (Puig-Antich et al., 1993; Shahar et al., 2006); and diminished perceptions of academic competence (Kaltiala-Heino, Rimpelae, & Rantanen, 1998). The association between depression and academic achievement is established using objective (e.g., grade point average, numerical evaluation) and subjective (e.g., perceived performance of achievement) measures (Alva & de Los Reves, 1999; Bandura et al., 1999; Puig-Antich et al., 1993).

Although deficits in academic achievement cause adolescent depression (Patterson & Capaldi, 1990), deficits in academic achievement are also a consequence of adolescent depression (Marcotte, Levesque, & Fortin, 2006; Strauss et al., 1982). Symptoms germane to depression such as impaired ability to concentrate and loss of interest may disturb cognitive functioning and diminish learning (Frojd et al., 2008; Hammen, 1998; Kovoacs & Goldston, 1991). Depression impairs cognitive functioning when the depressed adolescent focuses on negative interpretations or when depression blocks cognitive resources (Frojd et al., 2008).

In addition to academic performance, depression is associated with school dropout and higher absenteeism (Allen & Pfeiffer, 1991; Egger, Costello, & Angold, 2003; Fortin et al., 2006; Knitzer, 1993; Saxe, Cross, & Silverman, 1988). Specifically,
mood disorders are significant predictors of failure across three educational transitions including failure to complete high school, to enter college, and to complete college (Fletcher, 2008; Kessler, Foster, Saunders, & Stang, 1995). Truncated educational attainment is problematic as it often contributes to societal consequences such as a less trained workforce and greater demands on social welfare agencies (Kessler et al., 1995).

Interpersonal.

Adolescents with depression are more likely to have severe difficulties in family and peer relationships (Alva & de Los Reves, 1999; Puig-Antich et al., 1993). Youth who experience depression are less likely to spend time with, become attached to, and derive emotional support from friends (Armsden, McCauley, Greenberg, Burke, & Mitchell, 1990). Depressed mood is associated with less optimal peer relationships and having fewer friends (Field et al., 2001). Further, elevated depressive symptoms predict friendship instability (Chan & Poulin, 2007). Chan and Poulin (2007) examined the directionality of influence between depression and peer relationships. Results revealed that elevated depressive symptoms at one time point significantly predicted an increase in friendship instability by the following month, whereas friendship instability at one time point did not predict an increase in depressive symptoms the next month (Chan & Poulin, 2007). This is particularly concerning as cultivating and managing peer relationships are central developmental tasks of adolescence (Falci & McNeely, 2009).

A variety of explanations help to understand the interpersonal deficits among youth. For instance, depressed youth may elicit rejection through inappropriate self-disclosure and self-criticism, which are manifestations of depression. This leads others to feel uncomfortable and to avoid the depressed adolescent (Rudolph & Lambert, 2007; Puig-Antich et al., 1985a, 1985b). Another explanation is that depressed youth have poor
social skills (e.g., aggression), which lead them to receive less positive reinforcement from the environment (Rudolph & Lambert, 2007). Subsequently, the depressed adolescent will withdraw from social interaction due to their perceived inefficacy to form and maintain social relationships (Alva & de Los Reves, 1999; Lewinsohn, 1974). A third explanation is that depressed youth have a pessimistic cognitive style believing that they are unable to influence their social worlds in positive ways and consequently may not take actions to develop and maintain social support networks (Ciarrochi & Heaven, 2008). Given the interpersonal skill deficits, individuals who are depressed endure peer rejection and poorer quality peer and romantic relationships (Rudolph & Lambert, 2007).

*Occupational.*

Adolescent depression often leads to lowered rates of employment, and little success finding employment after leaving school (Allen & Pfeiffer, 1991; Knitzer, 1993; Saxe, Cross, & Silverman, 1988). Lower educational attainment and 12% to 18% lower annual earnings for women with early-onset depression also factor into the cost burden of early-onset depression (Berndt et al., 2000).

*Short term and long term social and economic costs.*

Finally, depression in adolescence creates significant clinical and social burden on individuals, families, and societies (Chisholm et al., 2004). Estimates of economic costs should take into consideration patterns of service use, disparities, individual family costs (e.g., missing work; involvement with the juvenile justice system), and racial and ethnic disparities in referral and treatment (Lynch & Clarke, 2006). Limited information is available on the economic costs of depression in childhood (Lynch & Clarke, 2006). However, studies on the cost of depression in adults (Druss et al., 2000; Ringel & Sturm,
2001; Simon, 2003) and the cost of child mental health problems in general (Rupp et al, 1998) indicate that the burden is likely to be substantial.

Specifically, some studies suggest that medical expenditures for children with depression are significantly higher compared to children with other mental health conditions (Glied, 2001; Mandell, 2003; Nabors, 2001). In addition to short term costs, there are also long term economic and social costs to adolescent depression that persists into adulthood, particularly health care costs and lost worker productivity. For example, the economic burden of adult depression was estimated at $83.1 billion in 2000 in the United States (Druss et al., 2000). Greenberg and colleagues (2003b) and others who examined the costs related to adult depression (Druss et al., 2000; Simon, 2003) found high productivity costs due to lost time from work and reduced productivity while at work. Further, Patten et al. (2009) found major depressive episodes to be associated with an increased risk of movement to nonworking status, especially among individuals ages 26 to 45.

*Impairment and subthreshold symptoms.*

Impairment is not only associated with youth meeting the criteria for major depressive disorder but also youth with mild or subthreshold symptoms (Angst et al., 2000). For example, using a sample of Puerto Rican adolescents 11 to 17 years of age, Gonzalez-Tejera and colleagues (2005) found that youth with minor depression had significant impairment and used more mental health services than those with major depression. In addition, adolescents with minor depression had similar outcomes when compared to those meeting full criteria for major depression in terms of psychosocial correlates and co-morbidity (Gonzalez-Tejera et al., 2005).
Given the degree of impairment, it is not surprising depressive disorders are among the top ten leading causes of disabilities in the world (Murray & Lopez, 1996). Therefore, it is increasingly important to understand the causes and correlates of adolescent depression among adolescent youth.

**Theoretical Literature Review**

*Bronfenbrenner’s Ecological Theory*

Many perspectives and theories are used to understand depression in adolescents including genetics (e.g., heredity), biology (e.g., neurochemistry), cognitive theories (e.g., negative self schemas), and behavioral and emotional vulnerability (e.g., temperament). Other theories such as attachment theory (Bartick-Ericson, 2006) and self determination theory (Van Ryzin, Gravely, & Roseth, 2009) are used to understand the relationship between school factors and youth outcomes. However, these perspectives primarily focus on factors intrinsic to the individual.

Social work has a unique perspective from other disciplines in that an adolescent’s behavior is considered in the context of the social environment, such as the school setting (Corcoran & Franklin, 2002). Also, given that school social work practice is expanding to involve not only intervening at the individual level but also with larger groups and settings that impact youth outcomes (Frey & Dupper, 2005; Kelly et al., 2010), a broader theoretical perspective that encompasses the setting is helpful. The potential complexity with so many factors to consider means that a way to conceptualize and understand the array of potential influences on youth outcomes must be employed.

One such theoretical model is Urie Bronfenbrenner’s ecological systems theory (Bronfenbrenner, 1979). Bronfenbrenner was concerned that developmental
psychologists paid little attention to environmental influences on human development.

Bronfenbrenner (1979) wrote:

> The understanding of human development demands more than the direct observation of behavior on the part of one or two persons in the same place; it requires examination of multiperson systems of interaction not limited to a single setting and must take into account aspects of the environment beyond the immediate situation containing the subject. (p. 21)

Therefore, Bronfenbrenner’s theory embraces the person-in-environment perspective by focusing on the individual and the context in which the individual functions (Fraser, 2004). Specifically, Bronfenbrenner (1979) argued that children’s development is strongly influenced by the family, school, peer, neighborhood and community contexts in which they live and interact. These environments significantly contribute to the healthy development of youth. Such environments have the opportunity to promote or cultivate positive overall youth development. In contrast, disruptions and instability in the primary settings (i.e., family, school, community) in which adolescents’ competence and character are developed are risk factors inhibiting the healthy development of young people (Bronfenbrenner & Morris, 1998).

Bronfenbrenner’s theory views adolescents as developing within a complex system of relationships influenced by multiple levels of the surrounding environment (Bronfenbrenner & Morris, 1998). Each system has a significant impact on not only each other but also on individual development (Berk, 2009; Fraser, 2004). Bronfenbrenner’s theory is often depicted in an illustration of concentric circles or nested ecologies with the individual youth in the center (Berk, 2009; Bronfenbrenner, 1979). In Bronfenbrenner’s original (1979) conceptualization of ecological theory, the environmental contexts
included the microsystem, mesosystem, exosystem, and macrosystem (Bronfenbrenner, 1979).

- **Microsystem**: the most immediate context for individual development (e.g., family, school, peers). Microsystem contexts consist of the activities, roles, and interpersonal relationships of the individual.

- **Mesosystem**: the interaction between two or more microsystems (e.g., parent involvement in schools, school-community partnerships)

- **Exosystem**: one or more settings that do not involve the developing person but may indirectly impact the person (e.g., school policies, neighborhood programs).

- **Macrosystem**: the broadest level, the wider social environment (e.g., cultural values; poverty)

Beginning with the individual’s immediate context and expanding in broadening circles, Bronfenbrenner’s environmental contexts were classified according to their level of influence (i.e., proximal; distal) (Bronfenbrenner, 1979). The microsystem and mesosystem have the most direct or proximal influence on adolescent development, while the exosystem and macrosystem exert an indirect impact on adolescent development. To illustrate this, the systems are typically depicted as nested layers of influence with the individual in the middle (Darling, 2007 (Figure 1).
Fraser (2004) recognized the difficulty and potential confusion in categorizing contextual influences into Bronfenbrenner’s system levels and instead adopted a similar “multisystemic” perspective (p. 6). Fraser (2004) asserted, “At some level above the family, it becomes quite difficult to identify higher-and lower-order systems” (p. 6). To illustrate this point, Fraser (2004) acknowledged the difficulty in determining what constitutes the school system, the classroom, the actual building, or the school district (p. 6). In response, Fraser (2004) moved away from the nested structure of contextual influences and modified Bronfenbrenner’s ecological framework into three system-related domains, individual, family, environmental conditions (Fraser, 2004, p. 36).

- **Individual Psychosocial and Biological Characteristics**-gender, race, genetics, self esteem, intelligence
- **Family Conditions**-child maltreatment, parental conflict, effective parenting
- **Environmental Conditions**-poverty, racial discrimination, few opportunities for education and employment, collective efficacy
Others retain Bronfenbrenner’s terminology and nested contextual influences; however these researchers define the system levels differently (Corcoran, 2000; Corcoran & Franklin, 2002; Voisin et al., 2006). For example in their work on adolescent pregnancy, Corcoran (2000) and Corcoran and Franklin (2002) conceptualized individual-level characteristics of the developing person as the microsystem (Corcoran, 2000; Corcoran & Franklin, 2002) and the mesosystem as the immediate social environment or setting within which an individual is involved and interacts (Bronfenbrenner, 1979; Corcoran & Franklin, 2002). In this conceptualization, family, peers, and school are mesosystems, not microsystems.

- **Microsystem**-individual characteristics; roles
- **Mesosystem**-the immediate social environment
- ** Macrosystem**-broad community

In later versions of Bronfenbrenner’s work, he became concerned that the individual was being lost in the emphasis on context and stressed that the individual is an active, not passive, participant in environmental interactions (Darling, 2007). Therefore, instead of the environment, the person is the center of later iterations of Bronfenbrenner’s bioecological model of development (e.g., Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Morris, 1998). The current study retained Bronfenbrenner’s later emphasis on the individual in addition to the original four contextual systems as illustrated in Figure 2. The individual and system level influences are further defined.
Individual.

At the core of Bronfenbrenner’s model are individual characteristics which play out in various contexts. The individual component of Bronfenbrenner’s (1979, 1993) ecology model can be considered to be the personal experiences and characteristics that students bring with them to their school experiences. Bronfenbrenner (1993) posited that, “the attributes of the person most likely to share the course of development, for better or for worse, are those that induce or inhibit dynamic dispositions toward the immediate environment,” and he called these key attributes “developmentally instigative characteristics” (p. 11). Individual level characteristics may include factors such as gender, race, and sexual orientation in addition to the adolescent’s ability to illicit positive responses from the environment.

Microsystem.

The microsystem represents the innermost level of the environment and the immediate context of development which includes the direct or face-to-face settings containing the adolescent (Bronfenbrenner, 1979). The microsystem represents the
pattern of activities, roles, and interpersonal relationships experienced by the developing person in the individual’s immediate surroundings, such as the school (Bronfenbrenner, 1979). Other critical microsystems include family and peers. Bronfenbrenner emphasized that to understand this level, it is important to keep in mind that all relationships are bidirectional and reciprocal. That is, parents, teachers, and peers affect the adolescent's behavior, but the adolescent's characteristics (e.g., personality style, way of thinking) also influence the behavior of others (Bronfenbrenner, 1995). Microsystem level influences for adolescents in school may include relationships with teachers, peer relationships, involvement in extracurricular activities, and perceived school connectedness.

*Mesosystem*

The mesosystem involves the interaction of two or more microsystems in influencing behaviors (Bronfenbrenner, 1995). The joint contributions of two or more microsystems such as family and school can have a powerful impact on the development of adolescents (Bronfenbrenner, 1995). Mesosystems for adolescents in school may include parent involvement in an adolescent’s school such as reinforcing academics at home and communicating with teachers. The messages adolescents receive in one microsystem (e.g., school) about the importance of an education may be supported or challenged by the messages received in another microsystem (e.g., family). Still other messages may come from peers, extended family members, or afterschool program staff. Other examples include negative peer influences impacting family relationships, parental rejection causing a child to have academic difficulties at school, and relationships between teachers and school administrators.
Exosystem.

The exosystem refers to social settings that do not necessarily contain adolescents, but that affect their experiences in immediate settings (Bronfenbrenner, 1995). The exosystem is a more distal context that may not directly include youth but may significantly impact them (Bronfenbrenner, 1979). Examples of exosystem level influences for adolescents include a parent’s job experiences that impact family experiences and relationships and state or local funding for recreational facilities and libraries. Exosystem factors in the school include among other things the effect of school policies and programs that shape schools and exert an influence on specific behaviors of students. Examples of such school policies include cigarette smoking on school grounds and discipline policies. Examples of school programs include Gay-Straight Alliances and anti-bullying programs.

Macro system.

Unlike the other systems, the macrosystem, the outermost level of Bronfenbrenner’s model, is not a specific context. The macrosystem is comprised of the “overarching patterns of micro-, meso-, and exo- system characteristics of a given culture, or other extended social structure” (Bronfenbrenner, 1993, p. 25). The macrosystem then refers to the values, laws, and customs of a particular culture (Bronfenbrenner, 1979). The macrosystem consists of factors affecting an adolescent’s well being in the more distant and least directive manner. According to Bronfenbrenner and Morris (1998), aspects of the broader cultural environment can interfere with the development of children and adolescents. The priority that the macrosystem gives to the youth's needs affects the support they receive at lower levels of the environment (Bronfenbrenner, 1995). Macrosystem level influences in relation to schools include the
value of post secondary education, federal and state education policies, and school funding. In addition to cultural values, laws, and beliefs, the macrosystem represents the wider social environment (Bronfenbrenner, 1979; Corcoran & Franklin, 2002). Characteristics of the school including the average socioeconomic status of its students, size, location, and type are representative of the broader environmental context (e.g., neighborhoods, communities) where schools are situated.

**Bronfenbrenner’s Ecological Theory and Risk and Protective Factors**

Bronfenbrenner’s ecological model can be used as a way to conceptualize and organize factors associated with any complex social problem including adolescent depression (Copeland-Linder, Lambert, & Ialongo, 2010; Corcoran & Franklin, 2002; Moscardino et al., 2010). Depression is often understood from a risk and protection framework that is informed by an ecological and multi-systems perspective (Bronfenbrenner, 1979; Dallaire et al., 2008; Fraser, 2004). Risk and protective factors for depression are present at each system level. Using the above definitions of the individual, microsystem, mesosystem, exosystem, and macrosystem, the risk and protective factors for adolescent depression are identified and discussed.

Risk factors are defined as, “any influences that increase the chances for harm or, more specifically, influences that increase the probability of onset, digression to a more serious state, or maintenance of a problem condition” (Fraser et al., 2004, p. 14). Risk factors frequently co-occur and increase individuals’ chances of encountering stress and decrease their ability to deal with the stress once it occurs (Garber, 2006; Rutter, 2001). Some researchers have emphasized the importance of discriminating among the various forms of risk (Doll & Lyon, 1998; Offord, 1996). The type of risk factor has implications
for designing prevention and intervention efforts, with some maintain that risk removal programs should be developed based on casual risk factors as they represent the most scientifically credible means of preventing undesirable outcomes (Doll & Lyon, 1998; Offord, 1996). For example a correlate risk factor is associated with an outcome but not a known cause while a causal risk factor has proven causal to a specific outcome (Doll & Lyon, 1998).

Although there is no clear and consistent definition of protective factors, Fraser et al. (2004, p. 28) defined protective factors as “both internal and external resources that modify risk.” Similar to risk factors protective factors are domain specific with some protective factors exerting a global influence on an individual’s overall functioning (e.g., efficacy) and other protective factors exerting a specific impact on a developmental outcome. For example, individual resources and social capital promote academic achievement (Fraser et al., 2004).

Garmezy (1985) referred to three broad categories of protective variables that promote resilience including dispositional attributes (e.g., temperamental factors), the family milieu (e.g., positive relationship with at least one parent), and the attributes of the extra-familial social environment (e.g., external resources and social supports). Garmezy’s categorizations of protective factors are clearly aligned with Bronfenbrenner’s system levels as they refer to multisystemic levels of influence. Protective mechanisms include reduction of risk impact, reduction of negative chain reactions, development of positive self perceptions, especially self-esteem and self-efficacy, and opening opportunities (Fraser et al., 2004). Risk and protective factors are sometimes viewed as existing at opposite ends of the same continuum where the absence of a risk factor
represents a protective factor. Some argue that this viewpoint blurs risk and protective factors (U.S. Department of Health and Human Services, 2001) and others say that this conceptualization does not contribute to understanding but rather introduces confusion (Rutter, 2000).

Risk and Protective Factors and Adolescent Depression

The research on risk and protection identifies several factors that promote positive youth development. In particular, large research groups such as the Social Development Research Group (SDRG) and Search Institute examine the key risk and protective factors that inhibit or enhance positive youth development. For example, Search Institute (2006) aims to promote a comprehensive vision of what young people (ages 12-18) need to thrive and has identified building blocks of healthy development, referred to as developmental assets.

The developmental assets, which emerged out of three types of applied research (i.e., positive youth development, prevention, and resilience), are divided into external (e.g., caring school climate, other adult relationships) and internal assets (e.g., self esteem, school engagement). Further, the Social Development Research Group (SDRG) identified a set of risk factors (e.g., drug abuse, delinquency) for adolescent health and behavior problems and protective factors (e.g., bonding to prosocial family, school, and peers), and clear standards or norms for behavior and processes (e.g., opportunities for involvement in prosocial activities) that prevent youth who are exposed to risk from developing health and behavior problems (Catalano et al., 2004; Lonczak et al., 2001). Such initiatives point to indicators of overall positive youth development. However, of importance, such developmental assets may not be available to all youth. For instance,
Search Institute surveys have primarily been administered to white youth and sexual orientation has not been considered.

Empirical studies on adolescents identify key risk and protective factors that lie within the individual (e.g., self-esteem), micro (e.g., school), meso (e.g., parent involvement), exo (e.g., school busing practices), and macro (e.g., poverty) system levels that put youth at risk for or protect youth from experiencing depressive symptoms and developing major depression. In the following discussion these risk and protective factors for depression are organized and reviewed within Bronfenbrenner’s levels of influence, individual, micro, meso, exo and macro.

*Individual-Level Influences*

*Individual-level: Risk factors.*

Age.

As noted previously, rates of depression increase dramatically between the ages of 12 and 15 (from 3.6 to 10.4 percent) (SAMHSA, 2011). Retrospective studies of depressed adults and prospective studies of youth suggest that the onset for major depression is most likely to emerge between 13- and 15-years of age (Rudolph & Lambert, 2007; Kerig & Wenar, 2006). As such, middle adolescence may represent a period of vulnerability to depression due to the greater risk for depression onset (Hankin et al., 1998). Some research suggests that rates of depression begin to increase as early as 12 years of age, as children approach puberty (DeRose, Wright, & Brooks-Gunn, 2006). Across studies there is a convergence of findings that reaching puberty early is a risk factor for depression (Garber & Flynn, 2001). In some cases, pubertal status is a better predictor of depressive symptoms than chronological age (Hayward et al., 1999). For example, using a national probability sample of girls in grades 5th through 8th, Hayward et
al. (1999) examined the importance of chronologic age versus pubertal status (e.g., timing of menarche) in predicting adolescent girls’ depressive symptoms (as measured by the Child Depression Inventory) in different ethnic groups. Among Caucasians, post-menarcheal adolescent girls had higher depression scores than did same-aged pre-menarcheal girls. Boys and pre-menarcheal girls had similar depression scores in most age groups. Among African-Americans and Hispanics, there were no menarche-associated differences in depressive symptoms (Hayward et al., 1999). Therefore, pubertal stage in Caucasian girls but not African American or Hispanic girls was a better predictor of depressive symptoms than chronological age (Hayward et al., 1999).

Gender.

Gender plays a critical role in the development of depressive symptoms. In fact, the emergence of higher rates of depression in girls than in boys at about 13-15 years of age is one of the best established findings in depression research (Hankin et al., 1998). Females are more than twice as likely as their male counterparts to have a major depressive episode in the last year (SAMHSA, 2011). This trend is evident across a variety of conceptualizations of depression (i.e., mood, syndrome) (Compas et al., 1997). However, this difference is not evident in pre-pubertal children (Garber & Flynn, 2001). The 2:1 ratio does not emerge until adolescence (Garber & Flynn, 2001). By age 16, girls are more than twice as likely as boys to be diagnosed with depression (Hankin et al., 1998). Further, female gender is even more predictive of recurrent depression than of the first episode (Zeiss, 2006).

Researchers have attempted to explain the gender difference in depression rates. One explanation suggests that while both girls and boys experience pubertal changes, girls are more likely to dislike the changes in their bodies. A second explanation asserts
that social relationships are especially important to girls (Rudolph, 2002). As a result, girls may have stronger emotional reactions (i.e., a depressed mood) to disruptions in these relationships (Crawford, Cohen, Midlarsky, & Brook, 2001). Yet a third perspective points to the emergence of gender differences in depressive symptoms as partly due to girls entering early adolescence with a style of responding to distress that is less efficacious and action-oriented than boys (Nolen-Hoeksema, 1994). Specifically, girls have a more ruminative style to responding to stressful events leading to internalizing emotions. For example, Li, DiGiuseppe, and Froch (2006) found that adolescent girls used more emotion-focused and ruminative coping than did boys. Higher levels of ruminative coping were related to high levels of depressive symptoms (Li, DiGiuseppe, & Froch, 2006). Further, there are different social roles and expectations for females and males. These roles often give privilege to males which may contribute to higher levels of depression for females.

Race.
Research on adolescent mental health suggests that prevalence rates for depressed mood are not uniformly distributed across all populations (Paxton et al., 2007). Paxton et al (2007) utilized The 2003 National Youth Risk Behavior Survey to examine the association between depressed mood and demographic variables. Paxton et al (2007) found Caucasians and African Americans were significantly less likely to report depressed mood when compared to Hispanics and others. Garcia et al. (2008) conducted a secondary analysis of the 2004 Minnesota Student Survey sample of Latino 9th- and 12th-grade students. Nearly 1 in 5 Latino high school students had suicidal thoughts in the past year (Garcia et al., 2008). Most concerning are ninth-grade Latino girls, a group in which 30-40% reported suicidal thoughts and 14-19% reported attempting suicide in the
past year (Garcia et al., 2008). High rates of suicidal ideation, suicide attempts, and emotional distress were also found among students who self-identified as being of mixed ethnicity (Garcia et al., 2008).

In addition to varying prevalence rates across racial demographics, vulnerability factors for depression may differ for youth from different races (Van Voorhees et al., 2009). For instance, Van Voorhees et al. (2009) compared the prevalence, relative risk, and population-attributable risk (PAR) of baseline vulnerability factors predicting depressive episodes at 1-year follow-up in a nationally representative sample of African American and white European American adolescents. Van Vorhees and colleagues (2009) examined a range of vulnerability factors including cognitive, behavioral, interpersonal, and parent/family factors. The leading vulnerability factors for African American adolescents were demographics (e.g., parent education), while the top vulnerability factors for European American youth were current depressed affect and low perceived family connectedness. Parent education, believing one’s self unintelligent, and running away from home were identified as unique vulnerability factors for African American youth (Van Vorhees, Panuesku, Fogel, & Bell, 2009). Avoidant problem solving, divorce, poor residential father relationship, sexual relationships, and delinquent behaviors did not predict depressive episodes in African American adolescents but did in European American (Van Vorhees et al., 2009). Despite differences, common vulnerability factors include low family and peer connectedness (Van Voorhees et al., 2009).

Sexual orientation.

Sexual identity development is a natural process that occurs in middle school and early adolescence however this process is even more stressful for sexual minority youth if
they feel pressure to hide their sexual identities (Harrison, 2003). Hiding one’s sexual identity and subsequent social isolation can create additional problems such as risk for violence and discrimination (Harrison, 2003) while openly gay youth experience verbal and physical abuse at school (Russell et al., 2001). Ethnic minority adolescents have additional complications related to disclosure of their sexuality as they may feel compelled to choose between their cultural community and being gay (Harrison, 2003).

Then it is not surprising that sexual minority youths report greater feelings of hopelessness, helplessness, worthlessness, alienation, and extreme loneliness compared to heterosexual youths (Savin-Williams, 1994). Specifically, sexual minority adolescents appear to be at increased risk for internalizing disorders relative to their heterosexual peers (Cochran & Mays, 2000; Cochran, Mays, & Sullivan, 2003; Gilman, Cochran, Mays, Ostrow, & Kessler, 2001; Sandfort, de Graaf, Bijl, & Schnabel, 2001). A meta-analysis found that sexual minority individuals are twice as likely as heterosexual individuals to have a lifetime mood disorder (Meyer, 2003). Population-based and community studies found higher levels of suicide attempts (D’Augelli et al., 2001; Garofalo et al., 1999; Remafedi et al., 1998), substance use (Garofalo et al., 1998; DuRant et al., 1998; Rosario et al., 1997), symptoms of depression and mental health problems (D’Augelli & Hershberger, 1993; D’Augelli, 2002) among sexual minority youth. Further, gay and lesbian youth are two to three times more likely to commit suicide than other youth (Gibson, 1989; Kosciw et al., 2010). In fact, thirty percent of all completed youth suicides are related to issues of sexual identity and suicide is the leading cause of death among sexual minority adolescents (Gibson, 1989; Savin-Williams, 1994).
This increased risk may be in part attributed to the heightened risk for bullying at school (Goodenow et al., 2006), societal non-acceptance and prejudice (Ryan & Futterman, 1997; Perrin, 2002; Bontempo & D’Augelli, 2002), and family and peer non-acceptance (Ryan et al., 2009). Therefore, the presence of risk factors and the absences of critical protective factors increase sexual minority youth’s susceptibility to internalizing symptoms. To support this, a study by Williams and colleagues (2005) of a high school based sample of sexual minority youth suggest that depressive symptoms are largely developed as a result of victimization and lack of support (from peers and family members) rather than sexual orientation itself.

Subclinical depressive symptoms and prior psychopathology. Prior depressive symptoms are the strongest predictor for later depression (Keenan et al., 2009). Using a sample of 938 students, Mazza et al (2009) examined the longitudinal relationship of early elementary (1\textsuperscript{st} and 2\textsuperscript{nd} grade) predictors (data collected from parents, teachers, and youth self reports) of self-reported adolescent depression 7 years later. Results showed that the risk factors predominately in the individual characteristic group (depression, anxiety, and antisocial behavior) were predictive of depression 7 years later (Mazza et al., 2009). In a prospective study assessing adolescents (N=1,508) at Time 1 and after 1 year (Time 2) on psychosocial variables hypothesized to be associated with depression, many of the depression-related measures also acted as risk factors for future depression (n=112), especially past depression (Lewinsohn et al., 1994). Genetics.

It is well established that a family history of depression is an important predictor of emotional and behavioral problems in children (Merikangas, Prusoff, & Weissman, 1988; Kim-Cohen, Caspi, Rutter, Tomas, & Moffitt, 2006; Pilowsky et al., 2008). Twin
and adoption study findings suggest that genetic factors account for approximately 50% of the variance in the hereditability of mood disorders (Parker & Roy, 2001). The offspring of depressed parents have a 3-to-6 fold increase in the odds of experiencing depression themselves (Lewinson & Essau, 2002). Both paternal and maternal depression significantly predicts adolescent depression (Cote et al., 2009; Ohannessian et al., 2005); however maternal depression is particularly implicated as a strong predictor of adolescent depression (Reinherz, et al., 2006). Depression in adolescence is more likely if the parent themselves experienced early onset of their first depressive episode or recurrent depression (Ohannessian, et al., 2005; Warner, Mufson, & Weissman 1995). Childhood and adolescence onset of depression are more familial than adult onset depressions (Kovacs, et al., 1997; Moldin, Reich, & Rice, 1991). In particular, early onset (i.e., < 20 years old) depressions are associated with greater risk for depression in family members (Weissman, Warner, Wickramaratne, & Prusoff, 1988).

However, the pathways of transmission of depression, through genetics or environmental risk, from parent to child are complex and not fully understood (Reinherz, et al., 2006; Silberg et al., 2010) with research supporting both genetic (Halligan, Murray, Martins, & Cooper, 2007; Hammen, Burge, & Adrian, 1991) and environmental modes of transmission (Elgar, Mills, McGrath, Waschbusch, & Brownridge, 2007; Johnson, Cohen, Kasen, Smailes, & Brook, 2001; Silk et al., 2009). Ultimately, it is believed that parental depression has both an environmental and genetic impact on children’s behavior (Silberg et al., 2010).

Neurobiological dysregulation. Depression reflects an underlying neurobiological vulnerability that may predispose individuals with high vulnerability to chronic, recurrent episodes (Rao et al.,
Research on the neurobiological vulnerabilities to depression has primarily focused on dysregulation in neuroendocrine and neurochemical systems, growth hormones, and disturbances in sleep patterns, (Garber & Flynn, 2001). Many studies find a link between hyperactive functioning of the hypothalamic-pituitary-adrenal (HPA) axis, the endocrine axis responsible for stress regulation and depression in youth (Ryan et al., 1994). Dysregulation of other hypothalamic-endocrine axes (e.g., thyroid) also is a risk factor for childhood and adolescent depression (Brooks-Gunn, Auth, Petersen, & Compas, 2001). Findings indicate that dysregulated levels of growth hormones secreted mostly nocturnally by the pituitary gland as a growth stimulating agent during adolescence are found in depressed youth (Birmaher et al., 1999). Another important area of biological dysregulation among depressed individuals is their neurochemistry, with serotonin, norepinephrine, and acetylcholine particularly implicated in the pathophysiology of mood disorders (Gold, Goodwin, & Chrousos, 1988). Rao et al (2010) examined whether cortisol measures are associated with the clinical course of depression in adolescents. The study evaluated whether the relationship between cortisol and clinical course is moderated by environmental stress and/or social support (Rao et al., 2010). Higher cortisol levels were associated with a longer time to recovery from the index depressive episode. However, the effect of cortisol on recovery was moderated by social support. The combination of elevated cortisol and recent stressful experiences predicted recurrence, whereas a higher level of social support was protective against recurrence. Sleep disturbances are common in major depressive disorder (MDD) (Lopez et al., 2010). Low sleep spindle activity (SPA), which is associated with neuroplasticity mechanisms during brain maturation and is more abundant in childhood and adolescence.
than in adulthood, characterizes youths with MDD and those at high risk for MDD, particularly girls, suggesting that early-onset depression and risk for the MDD are associated with decreased neuroplasticity (Lopez et al., 2010). Similar to adults depressed children and adolescents show some sleep anomalies, including prolonged sleep latencies, reduced rapid eye movement (REM) latencies, and decreased sleep efficiency (Dahl, & Ryan, 1996).

Temperament/personality. Behavioral and emotional vulnerability factors including temperament, internalizing or externalizing style, and a lack of emotional reliance are often personality characteristics of adolescents prone to depression (Rohde, Lewinsohn, Tilson, & Seeley, 1990). Internalizing behaviors such as shy, anxious, or being a “worrier” in addition to externalizing behaviors such as conduct problems are associated with negative mood or depression (Reinherz et al., 2000; Reinke & Herman, 2002a, 2002b). An internalizing style is often associated with cognitive preoccupations related to unpopularity, insecurity, and having a low self-esteem, which increase the risk of depression in adolescents (Reinherz et al., 2000) and may represent aspects of a common temperamental core (Neiss et al., 2009). The lack of an easy temperament is linked to greater difficulty in negotiating and adapting to change and eliciting positive responses from peers and adults (Chess & Thomas, 1996), which in turn may increase depressive symptoms (Laser et al., 2007). Longitudinal studies show that a difficult temperament at 5 months of age distinguishes youth with increased depressive symptoms from youth with moderate and low levels of depressive symptoms (Cote et al., 2009). Also, research indicates in addition to specific temperament characteristics (e.g., flexibility), certain emotional
regulation (e.g., higher levels of expressive suppression) strategies are associated with varying levels of depressive symptoms in adolescents (Betts et al., 2009).

Negative cognitions.
Extensive research demonstrates the relationship between negative cognitive style and adolescent depression (Erduer-Baker, 2009; Gladstone, Kaslow, Seeley, & Lewinsohn, 1997; Gotlib, Lewinsohn, Seeley, Rohde, & Redner, 1993; Lau & Eley, 2008; Marcotte et al., 2006; Morris et al., 2008). Cognitive theories of depression such as Beck’s cognitive theory and Seligman’s learned helplessness theory are potent predictors of future increases in depressive symptoms and disorder in adolescents (Hankin et al., 2009; Kaslow et al., 2000). Cognitive theories explain depression by understanding the cognitions that control an individual’s views of the self and world and how information about the self and world are processed. A variety of processes and factors contribute to the emergence and stabilization of these cognitive risk factors such as genetic factors, temperament, parents and peers, and stressful life events (Garber, 2000; Hankin et al., 2009). Individuals prone to depression often have pervasive negative views of the self, the world, and the future, creating a cognitive triad (Beck, 1967, 1976; Kaslow et al., 2000). Individuals with depression often have a negative cognitive style including, low self-esteem, self-criticism, perceived lack of control over negative events, negative attributions, hopelessness, and a pessimistic style (Garber & Flynn, 2001). Negative cognitions tend to be internal (i.e., specific to self), stable (i.e., consistent over time), and global (i.e., generalized across life domains) (Garber & Flynn, 2001). A negative cognitive style is linked to depression through the mediation of negative coping styles and a low sense of self efficacy (Muris et al., 2001). Attentional bias to negative stimuli (Bower, 1981; Kaslow et al., 2000), attributional style (Lau & Eley, 2008), and
rumination (Erduer-Baker, 2009) are each associated with depressive symptoms in adolescents.

Stressful life events.
Early childhood adversities (e.g., child maltreatment) and recent negative life events (e.g., romantic breakup) are also strong predictors of major depression in adolescents (Buzi et al., 2007; Garber, 2006; Goodyer et al., 2000; Hammen, 2005; Kessler & Magee, 1993; Kessler et al. 1997; Locke et al., 2007; Mazure, 1998; Murberg & Bru, 2009; Naar-King et al., 2002; Nolen-Hoeksema, 1992). In particular, studies identify disappointments, loss, separation, and interpersonal conflicts with family and friends (Cuffe et al., 2005; Monroe et al., 1999; Olsson et al., 1999; Shih, Eberhart, Hammen, & Brennan, 2006) as sources of stress associated with depression in adolescents. Stressors in close relationships and social networks are especially predictive of depression for girls (Shih et al., 2006). Continued stress exposure (i.e., discrete stressful events and chronic, ongoing stress) proximal to depression onset largely explains the relationship between early adversity (e.g., financial hardship, child chronic illness, parental discord) and depression in late adolescence (Hazel, Hammen, Brennan, & Najman, 2010).

Cognitive vulnerability often interacts with stressful life events to produce depressive symptoms in adolescents (Lakdawalla, Hankin, & Mermelstein, 2007). For instance, Lakdawalla, Hankin, & Mermelstein (2007) examined the effect sizes in 20 longitudinal studies, that investigated the relation between the cognitive vulnerability–stress interaction and its association with future increases in depression after controlling for initial levels of depressive symptoms among children (age 8-12) and adolescents (age 13-19). The results of this review suggest that across theories there is a small relation
between the vulnerability–stress interaction and elevations in depression among children (pr = 0.15) and a moderately larger effect (pr = 0.22) among adolescents (Lakdawalla, et al., 2007). When confronted with stressful life events, the use of active coping strategies (for European American adolescents) and avoidant coping (for African American adolescents) are related to greater coping efficacy, which in turn, are associated with less depressive symptomatology (Mosher & Prelow, 2007). Further, seeking parental support as a coping style is a negative predictor of later depression, while aggressive coping styles are potential risk factors for depressive symptoms (Murberg & Bru, 2005).

Self esteem and self efficacy. Using a sample of 12 and 13 year olds, MacPhee & Andrews (2006) identified salient risk factors for depression in early adolescence from a group of common predictors such as perceived quality of peer relationship, perceived parental nurturance, and self-esteem. Self-esteem emerged as the strongest predictor of depression in both genders (MacPhee & Andrews, 2006). Further, low self efficacy is associated with depression (Muris et al., 2001). Low self efficacy is believed to result from experiences of an uncontrollable event leading one to the expectation that no response can control future events (Seligman, 1975). This often leads to feelings of powerlessness and hopelessness and then depressive symptoms (Seligman, 1975). Such experiences also may lead adolescents to believe that the outcome of a negative event is only uncontrollable for some people including themselves (Abramson, Seligman, & Teasdale, 1978).

Academic achievement. Poor academic achievement is a predictor of and a consequence of depressive symptoms in adolescents. For example, Field and colleagues (2001) found high school
seniors who score above the clinical cutoff for depression on the CES-D (n = 29) spend less time doing homework and have a lower grade point average (Field et al., 2001). A low grade point average (Frojd et al., 2008; Undheim & Sund, 2005), perceived loading of schoolwork, and self-reliant school performance significantly predict self-reported depression (Frojd et al., 2008). For the most severe cases of self-reported depression, there is some evidence of gender differences in the impact of school performance on depressive symptoms (Frojd et al., 2008). For instance, subjective school performance is more strongly associated with severe depression in girls than in boys (Frojd et al., 2008). In addition, objective school performance is protective for severe depression in boys but not in girls. Further, there is a strong relationship between academic stress and suicide ideation (Ang & Huan, 2006). This relationship is partially explained by self-reported depressive symptoms (Ang & Huan, 2006).

School failure or leaving school before graduating may also represent risk factors for depressive symptoms. For example, adults who leave high school without graduating are significantly more depressed with lower life satisfaction than graduates (Liem et al., 2010). Additionally, adolescent school failure may predispose girls to depression in young adulthood (McCarty et al., 2008).

Personal academic standards are also of importance (Accordino et al., 2000). In a sample of 123 tenth-through twelfth-grade students, Accordino et al (2000) found students’ personal standards were significant predictors of academic achievement and motivation. As students’ personal standards increase, their levels of depression decrease and self-esteem increase (Accordino et al., 2000). However, when students experience a
discrepancy between their personal standards and actual performance their depression levels increase and self-esteem decrease (Accordino et al., 2000).

Achievement orientations are also important predictors of depressive symptoms in adolescents (Maatta et al., 2007). Using a sample of 734 Swedish adolescents, Maatta, Murmi, and Stattin (2007) found that optimistic and defensive-pessimistic achievement orientations at Time 1 predicted an increase in engagement with school and a decrease in depressive symptoms later on, whereas self-handicapping and learned helplessness predicted a decrease in engagement with school and increases in depressive symptoms. Entity theory (i.e., the belief that intelligence is a fixed trait) is a significant negative predictor of academic performance and a significant positive predictor of depression (Da Fonseca et al., 2009). Adolescents who consider their academic abilities to be a fixed trait may be more likely to develop depressive symptoms, which in turn may decrease academic performance (Da Fonseca et al., 2009).

**Individual-level: Protective factors.**

Cognitions. Life satisfaction, optimism (Piko et al., 2009) and a positive outlook on life (Cowen et al., 1996; Garmezy, 1993) are significant protective factors against adolescent depression. Further, positive appraisals of the self (Carbonell et al., 2002) and perceptions of competence in areas such as physical appearance, behavioral conduct, peer likability, athletic competence, scholastic competence, and social competence are protective against depression (Harter & Marold, 1992; Zeiss, 2006). Social competence in particular is protective against the onset of depressive symptoms (Zeiss, 2006). Such feelings of competence across domains lead to a personal sense of self-efficacy which is also protective against depression. In addition, high self-esteem and a positive self-
concept are protective against depression (Bell & Suggs, 1998; Cowen et al., 1996; Rutter, 1987; Zeiss, 2006). Further, cognitive abilities such as the ability to self-reflect (Garmezy, 1993), presence of high intelligence (Fergusson & Lynskey, 1996) and problem-solving abilities (Beardslee & Podoresfsky, 1988; Garmezy, 1991, 1993) are protective against depression. When faced with stressful life events, personal disposition such as a positive sense of self worth and an inner locus of control (i.e., belief in one’s ability to affect the environment to maximize rewards and control life events) are protective against adverse mental health outcomes among youth (Kaslow et al., 2000; Werner & Smith, 1982, 1992, 2001).

Physical and behavioral. Physical health (i.e., absence of physical illness) and safety (i.e., feeling physically safe from violence and harm in the home, school, and community) are also critical protective factors against depression (Lewinsohn et al., 1994). Further, behavioral qualities including, being self-reliant and able to think and act independently (Cowen et al., 1996; Masten, Best, & Garmezy, 1990) are protective against depression. An easy temperament is associated with better functioning among youth in the United States (Chess & Thomas, 1996; Compas, Connor-Smith, & Jaser, 2004). Positive coping skills are also important protective factors. For example, for Caucasian youth active coping (opposed to passive and avoidant coping) is protective against depression while avoidant coping is protective for African American youth (Herman-Stahl, Stemmler, & Petersen, 1995; Herman-Stahl & Petersen, 1996; Mosher & Prelow, 2007). Social skills, particularly, the ability to interact positively with others (Cowen & Work, 1988; Hechtman, 1991) is protective against depression. Protective mechanisms to modify internalizing symptoms include increasing positive affect and extraverted approach.
behaviors and decreasing the amount of negative emotion experienced by others (Hakim-Larson & Essau, 1999). Having high levels of activity (Garmezy, 1993; Margolin, 2006) particularly outside the family context where children can obtain positive feedback (Werner, 1989) such as team sports involvement (Gore et al., 2001) are also protective against depression.

Microsystem Level Influences

Family: Risk factors.

The literature indicates that an array of parent and family factors are associated with youth risk for depression, ranging from parental pathology to parental cognitive style to family emotional climate (Sander & McCarty, 2005). In particular, family relationships and interactions are relevant to understanding depression in adolescents (Cote et al., 2009; Field et al., 2001; Sheeber et al., 1997; Sheeber et al., 2001).

Family environments that are less supportive and more conflictual are associated with greater depressive symptoms both concurrently and prospectively in male and female adolescents (Sheeber et al., 1997; Sheeber & Sorenson, 1998). Starr and Davila (2008) investigated the psychosocial correlates of depression in early adolescent girls. Depressive symptoms (controlling for social anxiety) were strongly related to family variables such as lower trust, greater alienation and conflict. Assessing longitudinal associations between family risk factors and child and parent depression in 302 urban, low-income, African American adolescents (ages 9–15) and their parents, Sagrestano et al (2003) found increases in family conflict were concurrently associated with changes in depression for both children and parents. Among urban African American youth, female gender, living with an adult with a substance abuse problem, and greater exposure to
physical violence are associated with greater depressive symptoms (Tandon & Solomon, 2009).

In addition to the family environment, parenting behavior (e.g., rejection) and style (e.g., permissive) are important risk factors for adolescent depression (Cote et al., 2009; MacPhee & Andrews, 2006; Muris, Schmidt, Lambrichs, & Meesters, 2001). Relationships with parents are important for adolescents’ development of emotional stability (i.e., calmness, freedom from anxiety, and depression) (Hay & Ashman, 2003). Specifically, suboptimal maternal care (Patton et al., 2001), parental inefficacy (Cote et al., 2009), decreases in parental monitoring (Sagrestano et al., 2003), low nurturance and overprotectiveness (Betts et al., 2009), permissive parenting style (Milvesky et al., 2007), and parenting stress (Van oort et al., 2010) are associated with depression and depressive symptoms in adolescents.

Of importance, research demonstrates a clear link between specific parental and caregiver rejecting behaviors and negative health problems in young lesbian, gay, and bisexual adults (Ryan et al., 2009). For example, Ryan et al (2009) examined specific family rejecting reactions to sexual orientation and gender expression during adolescence as predictors of current health problems in a sample of 224 white and Latino self-identified lesbian, gay, and bisexual young adults. Higher rates of family rejection were significantly associated with poorer health outcomes (Ryan et al., 2009). On the basis of odds ratios, lesbian, gay, and bisexual young adults who reported higher levels of family rejection during adolescence were 8.4 times more likely to report having attempted suicide and 5.9 times more likely to report high levels of depression compared with peers from families that reported no or low levels of family rejection. Family reactions may
vary based on ethnicity as Ryan and colleagues (2009) found Latino men reported the highest number of negative family reactions to their sexual orientation in adolescence (Ryan et al., 2009).

Finally, family poverty predicts higher rates of adolescent depression (Najman et al., 2001). In particular, increased frequency of youth exposure to poverty is a consistent predictor of adolescent depression (Najman et al., 2010). In one study of inner city, low income African American youth, family stress significantly mediated the relationship between poverty and adolescent depressed mood, explaining 50% of the total effect (Hammack et al., 2004b).

**Family: Protective factors.**

Adolescents’ perceptions of parents and siblings as sources of support are key factors in protecting youth from the onset of depression (McFarlane, Bellissimo, & Norman, 1995; Zeiss, 2006). Using longitudinal study designs, strong family relationships (Paaunesku et al., 2008), family cohesion (Carbonell et al., 2002), family support (Liem et al., 2010), and greater cohesion with grandparents (Ruiz & Silverstein, 2007) are significantly protective against developing depression and depressive symptoms. This research was conducted with racially diverse samples suggesting the protective value of family relationships is similar across different races. Among African American adolescents, having a positive ethnic identity that is cultivated by family relationships is strongly associated with psychological adjustment (Street et al., 2009). Among urban African American youth, home assets (e.g., having an adult in the home to talk to) are associated with lower depressive symptoms (Tandon & Solomon, 2009). Family relationships may be particularly critical for sexual minority youth. For lesbian, gay, bisexual, and transgender youth, family acceptance of the adolescents’ sexual
orientation is particularly important as it predicts greater self-esteem and protects against depression, substance abuse, and suicidal ideation and behaviors (Ryan et al., 2010).

Family support and involvement may exert a protective influence by fostering active coping strategies that are protective against developing depression and depressive symptoms (Mosher & Prelow, 2007). The types of family activities that are protective for youth may differ by gender. For example, one study found having dinner together with one’s family was a significant protective factor for boys, whereas talking about problems with parents was a significant protective factor for girls (Piko et al., 2009). Additionally, the same study found social support from the same-sex parent lowered depressive symptoms (Piko et al., 2009). Family involvement and connection is not only protective against developing depression and depressive symptoms but also against sad mood in adolescents (Locke et al., 2007).

**Peers: Risk factors.**

Depressive symptoms are negatively correlated with peer social support (Weber et al., 2010). Difficulties in social relationships significantly predict self-reported depression (Frojd et al., 2008). For example, controlling for baseline depressive symptoms, Eberhart and Hammen (2006) found a wide variety of interpersonal factors predicted depressive symptoms, including poor peer relationship quality, difficulty being close to others, and difficulty depending on others (Eberhart & Hammen, 2006). Furthermore, in an 8-year prospective study, enduring peer-related loneliness, characterized by youth’s perceived dissatisfaction with aspects of their social relationships, constituted an interpersonal stressor that predisposes adolescents to depressive symptoms (Qualter et al., 2010).

The quality of the friendships and romantic relationships is also of importance. For example, LaGreca and Harrison (2005) found negative qualities (measured with five
negative qualities such as conflict, criticism, and pressures) of best friendships and romantic relationships predicted depressive symptoms (LaGreca & Harrison, 2005). Peer acceptance is of paramount importance to many youth, and rejection by peers and peer victimization often contribute to feelings of loneliness, sadness, and self-doubt (Laser et al., 2007), correlate with self-derogations and depression (Alsaker, 2003; Alsaker & Olweus, 2002; LaGreca & Harrison, 2005), and predict depressive symptoms (LaGreca & Harrison, 2005). Using regression analyses, Klomek et al (2008) indicated that exposure to all types of peer victimization (e.g., hit, slapped, punched, spread rumors or mean lies), even infrequent victimization, was related to a high risk for depression compared to students not victimized.

Greater peer delinquency is also associated with higher depressive symptoms among urban African American youth (Tandon & Solomon, 2009). Among urban African American youth living in public housing, exposure to delinquent peers is a risk factor for depressive symptoms (Nebbitt & Lombe, 2007). However, parental monitoring buffers this risk (Nebbitt & Lombe, 2007).

Peer contagion of depressive symptoms and depressogenic attributional style is also a risk factor for depressive symptoms in adolescents. For example, using a sample of 398 adolescents in grades sixth through eighth, Stevens and Prinstein (2005) examined longitudinal associations between adolescents’ and their friend’s depressive symptoms and depressogenic attributional style. Stevens and Prinstein (2005) found best friends’ reported level of depressive symptoms was prospectively associated with adolescents’ own depressive symptoms and with adolescents’ depressogenic attributional style. In girls, susceptibility to peer contagion was associated with higher levels of social anxiety,
while among boys, higher levels of friends’ peer perceived popularity and lower levels of positive friendship quality were associated with greater susceptibility to depressive symptom contagion (Stevens & Prinstein, 2005).

Sexual minority youth report that having friends is important to their sense of trust and closeness. Many sexual minority youths, however, also report that they feel insecure in their friendships (Savin-Williams, 1990). Hershberger and D’Augelli (1995) reported that one-third of their participants, recruited from gay metropolitan community centers, feared losing friends, while almost half reported having lost friends. Sexual minority youths who seek counseling from social service agencies identify social isolation and a lack of supportive friends among the most difficult issues they face (Martin and Hetrick, 1988). In one study, over 95% reported frequently feeling alienated from their peers because of their feelings of “differentness” (Martin and Hetrick, 1988). Friendship networks and the perception of friendship closeness and support are thus important foci to consider in addressing contextual peer factors and adjustment.

**Peer: Protective factors.**

Peer support and affiliation with a high-status peer crowd protects youth against adverse mental health consequences such as depression (LaGreca & Harrison, 2005; Liem et al, 2010). Further, high levels of peer affection and acceptance are associated with fewer depressive symptoms (Beam et al., 2002; Formoso, Gonzales, & Aiken, 2000). In some cases, same sex and opposite sex peer relationships are more influential in the formation of adolescents’ emotional stability than parental relationships (Hay & Ashman., 2003). Perceptions of belongingness, conceptualized beyond the school-centered peer acceptance to include parents, extended family, siblings, students outside school, teachers, non-teacher adults in school, and adults in the community may buffer
against the adverse impact of low peer acceptance and loneliness on adolescent depression in a multicultural youth (Baskin et al., 2010).

School: Risk factors.

With regard to the school context, the focus of the current study, students with internalizing mental health problems feel more anonymous and less well liked by peers and teachers than students with externalizing behaviors (Talbott & Fleming, 2003). As a result, the school context is implicated as important for reducing risk for depression among adolescents (Caldwell et al., 2007; Fleming et al., 2007). In particular, student perceptions of teachers being fair and feeling safe at school are independently associated with decreased rates of suicide attempts providing support for the importance of the school environment in reducing risk (Fleming et al., 2007).

In addition, specific school-related factors, such as low school connectedness (Line et al., 2008) and interpersonal problems with teachers (Hammen & Rudolph, 2003) are predictive of depressive symptoms in adolescents. For example, in a prospective study of 198 Norwegian senior high school students, teacher support and school-related stress were predictive of depressive symptoms (Murberg & Bru, 2005). Further, perceived teacher support may buffer against negative life events that may lead to depressive symptoms (Murberg & Bru, 2005). Additionally, Ward et al (2010) sought to define conceptual sets of school-based predictor variables that reliably predict depressive symptoms in early adolescence. Ward et al. (2010) found the best group of predictors of depression in early adolescents included low ratings of teacher rated academic competence, social skills, critical events, self-reported loneliness, self image, and self-concept. Early teacher ratings of adaptive behavior are predictive of both initial status and growth for depressive symptoms (Montague et al., 2008).
Also of importance, frequent exposure to victimization and/or bullying at school are potential risk factors for adolescent depression (Klomek et al., 2007; Olweus, 2001a, 2001b). Both victims and bullies are at high risk for depression and depressive symptoms however the most troubled adolescents are those who are both victims and bullies (Klomek et al., 2007). Childhood bullying may have an enduring effect on adolescents’ emotional and social functioning (Haddow, 2006).

Sexual minority youth are at greater risk to experience a negative school climate, characterized as hearing biased or homophobic remarks at school and feeling unsafe in school due to personal characteristics such as sexual orientation, and experiencing harassment and assault (Kosciw, Greytak, Diaz, & Bartkiewicz, 2010). Such hostile experiences lead many sexual minority students to miss classes or entire days of school to avoid the hostile environment, to have lower academic successes and educational aspirations, and to experience higher levels of depression (Kosciw et al., 2010). In contrast, a positive school climate, with low levels of homophobic teasing, fosters fewer depressive symptoms (Birkett et al., 2009).

In addition, racial minority youth may experience racial discrimination within the school climate that impacts their psychological well being. For example, using two waves of data from a longitudinal study of an economically diverse sample of African American adolescents, Wong, Eccles, and Sameroff (2003) examined whether experiences with racial discrimination at school predicted changes in African American adolescents’ academic and psychological functioning and whether African American ethnic identity buffered these relations. As expected, experiences of racial discrimination at school from
one’s teachers and peers predicted increases in depression and anger and decreases in self-esteem and psychological resiliency (Wong, Eccles, & Sameroff, 2003).

**School: Protective factors.**

School-related factors, in particular perceived school connectedness and teacher support, play a role in reducing depressive symptoms (CDC, 2009; Hall-Lande, 2007). Prior studies provide empirical evidence that teacher support and a good relationship within the school are protective factors for adolescents’ behavioral and mental health outcomes (Bowen et al. 1998; Fottland and Matre 2005; Murdock 1999; Vedder et al. 2005). Perceived teacher support may buffer against the impact of negative life events on depressive symptoms (Murburg, & Bru, 2009). Further, positive relationships with the school (i.e., happy at school, teachers are caring) are associated with lower depressive symptoms (Moon & Rao, 2010). Youth-school relationships may exert a larger influence compared to youth-family relations for white and African American youth compared to Asian and Hispanic groups (Moon & Rao, 2010).

A positive school climate that is safe, caring, and responsive to student needs is protective against health risk behaviors such as substance abuse, truancy, and violence (Catalano et al., 2004; Coker & Borders, 2001; Kuperminc et al., 1997, 2001; Loukas & Robinson, 2004; Maddox & Prinz, 2003; Roeser & Eccles, 1998; Roeser et al., 2000). Positive perceptions of school climate also serve as a buffering quality against adverse mental health outcomes such as internalizing symptoms (Kuperminc et al., 2001). Specific dimensions of school such as climate, school mastery goal structure, promotion of autonomy and discussion, and teacher emotional support, are negatively related to adolescent depression, while performance goal structure is positively related to depression (Wang, 2009). Further, two aspects of school climate, commitment to school
and positive feedback from teachers, exert a positive influence on students’ self-esteem, an important concept related to depression (Hoge et al., 1990).

**Mesosystem Level Influences**

Mesosystem influences consist of interactions between microsystems (e.g., family, school, neighborhoods) within which adolescents develop. Interactions between microsystems may put youth at risk for or buffer against depressive symptoms. A review of the literature demonstrates the common microsystem interactions that impact adolescent depression and include peer and family, family and school, and school and community interactions.

**Peer and family.**

Liu (2006) found adolescents with secure attachments to parents reported higher peer support, fewer negative expectations, and fewer depressive symptoms. Therefore, secure attachments impact future peer relationships (Liu, 2006). In addition, parent support and anticipated peer support interact to predict depressive symptoms and depression diagnosis in adolescents (Young et al., 2005). Specifically, research suggests the impact of peer support on subsequent depressive symptoms is moderated by the level of parent support (Young et al., 2005). For adolescents with high parent support, high anticipated peer support is associated with lower levels of depression at Time 2 (Young et al., 2005). However, for adolescents with low support from parents, high anticipated support from peers is associated with more depressive symptoms 2 years later (Young et al., 2005). This suggests that when relationships with parents are non-supportive, adolescents may turn to peers for support but these relationships do not buffer them from mental health difficulties (Young et al., 2005). This may be because peers do not have the requisite knowledge and experience to help each other. Further, this may occur because
these adolescents are affiliating with deviant peers, as is suggested in the literature (Scholte et al., 2001). In summary, high anticipated peer support is protective among adolescents with high parental support, but may act as a risk factor for adolescents with low parental support (Young et al., 2005).

*Family and school.*

Supportive parent involvement in school enhances the academic achievement of children with mental health problems (Pomerantz et al., 2005; Rogers et al., 2009). For instance, implementing family interventions in schools promotes self-regulation (i.e., the ability to manage behavior and affect in settings with high distractibility) which subsequently decreases depression in youth (Stormshak et al., 2010). Further, parent involvement in school is critical to enhance school success, which serves an important role in improving youth mental health outcomes (Hawkins, 1997; Larson & Ham, 1993). Moreover, when an adolescent experiences a negative home environment, the school can be protective. Research demonstrates the school environment may actually serve as a buffer against delinquency if an adolescent can connect with pro-social peers and supportive school staff (Desimone, 2001; Kenny, Gallagher, Alvarez-Salvat, & Silsby, 2002).

*School and community.*

The interaction between schools and communities is also critical for youth development. A safe school environment may be a particularly influential setting for resource-poor communities characterized by high levels of violence and depletion of prosocial organizations and institutions (Ozer & Weinstein, 2004). Ozer and Weinstein (2004) found perceptions of safety at school are protective against psychological problems such as depression among adolescents exposed to violence.
Exosystem Level Influences

Exosystem: Risk factors.

Examples of exosystem risk factors include school policies and programs and parental employment. Research indicates that a parent’s appraisal of his/her interactions at work will affect the child’s sense of well-being (Perry-Jenkins & Gillman, 2000). Further, parental unemployment may cause additional stressors on the family subsequently negatively impacting an adolescent’s psychological state and overall well being (Sleskova, Salonna, Geckova, Nagyova, Stewart, van Dijk, & Groothof, 2006).

Also, school and community policies and programs represent critical exosystem level influences on youth development. Such policies may place youth at risk or protect youth from depressive symptoms. For example, Anderman (2002) found depression is higher in youth who attend schools that report using busing practices than those that attend schools that do not use busing practices. Further, although the research is limited and largely correlational, studies suggest a link between school discipline with mental health disorders such as posttraumatic stress disorder (PTSD) and depression (Camerson, 2006; Hyman & Person, 1998).

Exosystem: Protective factors.

School policies and practices may also serve as protective factors for youth. For example, Weist et al (2009) identified best practices in the implementation of a school-based sexual violence prevention education. Compared to schools with no programming, school staff in a school with a Sexual Harassment/Assault Prevention Project (SHAPP), report better school climate and safety, and student participants report more positive opinions about their school’s prevention efforts (Weist et al., 2009). Weist and colleagues’ (2009) research demonstrates the implementation of such programs may
result in a more positive school climate, a sense of safety among students and staff, and fewer incidents of bullying and harassment, which is important to enhancing youth mental health outcomes. Also of note, spending three or more hours per week in sports, clubs, or organizations at school and/or in the community contributes to positive youth development (Search Institute, 2006). Further, the opportunity to serve in the community is also a developmental asset for youth (Search Institute, 2006). Therefore, the presence of such programs may represent an important exosystem level influence.

**Macrosystem Level Influences**

*Macrosystem: Risk factors.*

Neighborhood poverty, social isolation, and exposure to community violence are among those neighborhood or community risk factors associated with depression in adolescents (Garber, 2006; Lewinsohn et al., 1998; Tandon & Solomon, 2009). Exposure to community violence is significantly associated with depressive symptoms in low income African-American youth (Paxton et al, 2004). Boynton-Jarret et al (2008) aimed to determine whether cumulative exposure to violence in childhood and adolescence contributes to disparities in self-rated health among a nationally representative sample of US adolescents (N=8,224). The findings indicate cumulative violence exposures (e.g., witnessed gun violence, threat of violence, repeated bullying, perceived safety, and criminal victimization) are associated with increased risk for poor health (Boynton-Jarret et al., 2008). In comparison with subjects with no violence exposure, risk for poor self-rated health was 4.6 times greater among subjects who reported 5 forms of cumulative exposure to violence, controlling for demographic features and household income (Boynton-Jarret et al., 2008). Scoring higher on a poverty index is significantly
associated with increased reports of depressed mood among low-income, inner-city African-American adolescents (Hammack et al., 2004a).

Finally, broad social conditions such as few opportunities for education and employment, racial discrimination, and stigma are risk factors for serious social problems among youth (Davis & Stevenson, 2006; Fraser, Kirby, & Smokowski, 2004; Safren & Heimberg, 1999). For example, Davis and Stevenson (2006) investigated the impact of racial socialization experiences on the depressive symptoms (e.g., low self-esteem, irritability, sad mood) of 160 Black adolescents. Their findings suggest cultural pride socialization is inversely related to adolescent reports of lethargy and low self-esteem while alertness to discrimination socialization is positively related to instrumental helplessness (Davis & Stevenson, 2006). Racial socialization experiences add significantly more predictability of depression symptoms over and above gender, neighborhood risk, and resources (Davis & Stevenson, 2006). Furthermore, the high risk for victimization and decrease in adolescent peer social support and family ties for sexual minority youth are largely associated with the societal stigma related to non-heterosexuality (Safren & Heimberg, 1999).

*Macrosystem: Protective factors.*

On the other hand, many opportunities for education and employment and growth and achievement represent protective factors against social problems among youth (Fraser et al., 2004). Moreover, fewer depressive symptoms are found in adolescents with strong attachments to individuals in the community setting and greater social support networks (Bond et al., 2005; DuMont & Provost, 1999). Further, strong social support may buffer against the negative impact of exposure to violence on depressive symptoms.
(Hammack et al., 2004a). Table 2 illustrates the risk and protective factors for adolescent depression and depressive symptoms within Bronfenbrenner’s system levels.
<table>
<thead>
<tr>
<th>System Level</th>
<th>Risk Factors</th>
<th>Protective Factors</th>
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<tbody>
<tr>
<td>Individual</td>
<td>• Female gender (Rushton et al., 2002)</td>
<td>• Life satisfaction (Piko et al., 2009)</td>
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<td></td>
<td>• Hispanic race (Garcia et al., 2008)</td>
<td>• Optimism (Piko et al., 2009)</td>
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<td></td>
<td>• LGBT youth (Meyer, 2003)</td>
<td>• Positive self appraisals (Carbonell et al., 2002)</td>
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<td></td>
<td>• Prior depressive symptoms (Lewinsohn et al., 1998)</td>
<td>• High self-esteem and a positive self-concept (Bell &amp; Suggs, 1998)</td>
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<td></td>
<td>• Subclinical depression level (Garrison, Jackson, Marsteller, McKeown, &amp; Addy, 1990)</td>
<td>• Team sports involvement (Gore et al., 2001)</td>
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<td></td>
<td>• Current other MH disorders (Lewinsohn et al., 1994)</td>
<td>• High level of activity outside the family context (Garmezy, 1993; Margolin, 2006)</td>
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<td></td>
<td>• Anxiety (Reinherz et al., 1989)</td>
<td>• Self efficacy (Laser et al., 2007)</td>
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<td></td>
<td>• Past suicide attempt (Lewinsohn et al., 1994) &amp; suicidal behavior (Johnson et al., 1990)</td>
<td>• Self-reliance (Cowen et al., 1996; Master et al., 1990)</td>
</tr>
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<td></td>
<td>• Cigarette smoking (Kandel &amp; Davies, 1986)</td>
<td>• High intelligence (Fergusson &amp; Lysney, 1996)</td>
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<td></td>
<td>• Negative cognitive style (Lewinsohn et al., 1998)</td>
<td>• Problem-solving abilities (Garmezy, 1991, 1993)</td>
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<tr>
<td></td>
<td>• Depressive attributional style (Dallaire et al., 2008)</td>
<td>• Perceptions of competence (Harter &amp; Marold, 1992)</td>
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<tr>
<td></td>
<td>• Low levels of perceived competence (Dallaire et al., 2008)</td>
<td>• Active and approach coping (Herman-Stahl &amp; Petersen, 1996)</td>
</tr>
<tr>
<td></td>
<td>• Stressful events (Nolen-Hoeksema, 1992)</td>
<td>• Easy temperament (Chess &amp; Thomas; Compas et al., 2004)</td>
</tr>
<tr>
<td></td>
<td>• Low self esteem and body image (Allgood-Merten et al., 1990).</td>
<td>• High self-consciousness (Hops et al., 1990)</td>
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<tr>
<td></td>
<td>• High self-consciousness (Hops et al., 1990)</td>
<td>• Reduced intellectual competence and coping skills (Block et al., 1991)</td>
</tr>
<tr>
<td></td>
<td>• Physical disability and poor health (Rushton et al., 2002)</td>
<td>• Physical disability and poor health (Rushton et al., 2002)</td>
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</tbody>
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Table 2. Risk and Protective Factors Related to Future and Current Depression and Depressive Symptoms
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<tr>
<th>Microsystem-Family</th>
<th>Microsystem-Peers</th>
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<tbody>
<tr>
<td></td>
<td>Low parental education (Velez, Johnson, &amp; Cohen, 1989)</td>
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<td></td>
<td>Weak family relationships (Rushton et al., 2002)</td>
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<td></td>
<td>Family conflict (Sagrestano et al., 2003; Starr &amp; Davila, 2008)</td>
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<td></td>
<td>Suboptimal maternal care (Patton et al., 2001)</td>
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<td></td>
<td>Parental inefficacy (Cote et al., 2009)</td>
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<tr>
<td></td>
<td>Decreased in parental monitoring (Sagrestano et al., 2003)</td>
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<td></td>
<td>Low nurturance and overprotective (Betts et al., 2009)</td>
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<td></td>
<td>Permissive parenting style (Milvesky et al., 2007)</td>
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<td></td>
<td>Parenting stress (Van oort et al., 2010)</td>
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<td></td>
<td>Parental rejecting reactions to sexual orientation (Ryan et al., 2010)</td>
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<tr>
<td></td>
<td>Family poverty (Najman et al., 2001)</td>
</tr>
<tr>
<td></td>
<td>Early death of a parent (Reinherz et al., 1989)</td>
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<tr>
<td></td>
<td>Peer support (LaGreca &amp; Harrison, 2005)</td>
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<tr>
<td></td>
<td>Peer affection and acceptance (Beam et al., 2002)</td>
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<td></td>
<td>Perceptions of belongingness (Baskin et al., 2010)</td>
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</tbody>
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### Table 2. continued

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<tr>
<th>Microsystem-School</th>
<th>Mesosystem</th>
<th>Exosystem</th>
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</thead>
<tbody>
<tr>
<td><em>School-related stress (Murberg &amp; Bru, 2005)</em></td>
<td><em>Low parental involvement in school (Pomerantz et al., 2005)</em></td>
<td><em>Harsh discipline policies in schools (Cameron, 2006; Hyman &amp; Peron, 1998)</em></td>
</tr>
<tr>
<td><em>School suspension (Rushton et al., 2002)</em></td>
<td><em>High anticipated peer support and low parental support (Young et al., 2005)</em></td>
<td><em>Few supportive programs for youth (Search Institute, 2006)</em></td>
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<tr>
<td><em>Bullying (Klomek et al., 2007)</em></td>
<td></td>
<td><em>School busing practices (Anderman, 2002)</em></td>
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<tr>
<td><em>Homophobic teasing (Kosciw et al., 2010)</em></td>
<td></td>
<td><em>Presence of supportive programs for youth (Search Institute, 2006)</em></td>
</tr>
<tr>
<td><em>Low school connectedness (Hall-Lande, 2007)</em></td>
<td></td>
<td><em>Anti-smoking policy (Selstrom &amp; Bremberg, 2006)</em></td>
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<tr>
<td><em>Safe school environment (Catalano et al., 2004; Loukas &amp; Robinson, 2004; Ozer &amp; Weinstein, 2004)</em></td>
<td><em>Parent involvement in school (Pomerantz et al., 2005; Rogers et al., 2009)</em></td>
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<tr>
<td></td>
<td><em>High school connectedness (CDC, 2009; Hall-Lande, 2007)</em></td>
<td><em>Safe school environment in a resource poor community (Ozer &amp; Weinstein, 2004)</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>High anticipated peer support and high parental support (Young et al., 2005)</em></td>
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</tbody>
</table>
Table 2. continued

| Macrosystem (i.e., Community, Broader Environment) | • High rates of community poverty (Dallaire et al., 2008)  
• High rates of community unemployment (Dallaire et al., 2008)  
• Racial discrimination (Wong et al., 2003)  
• Exposure to delinquent peers (Nebbitt & Lombe, 2007)  
• Social isolation (Garber, 2006; Lewinsohn et al., 1998)  
• Stigma related to non-heterosexuality (Safren & Heimberg, 1999) | • Strong attachments to community (Bond et al., 2005)  
• Supportive social networks (Bond et al., 2005)  
• Opportunities for education and employment (Fraser et al., 2004). |
The School Context

As illustrated in Table 2, numerous risk and protective factors for adolescent depression exist on the school-level. Given schools are where youth spend a majority of their time and are considered one of the most important and influential environments for children (Eccles et al., 1993a; Roeser et al., 2000), schools are in a position to target the risk and protective factors that are associated with adolescent depression. Moreover, schools have a vested interest in such programs as youth with depression struggle academically compared to their non-depressed peers (Marcotte et al., 2006; Shahar et al., 2006). In response, schools promote and address student mental health using several models of school-based mental health.

School Mental Health Models

In one model mental health services are provided to students through school-community collaborations (Adelman & Taylor, 2000) or community connection models (AAP, 2004). These models exist when a mental health agency or individual delivers direct services in the school part-time or full-time under a contract. Different school-community collaborations include school-linked services, systems of care, and wrap-around services. Additionally, the school or district may also have a formal arrangement with an off-site mental health professional and/or to a managed care organization (AAP, 2004).

Alternatively, in school-based or school-owned models, mental health services may be provided directly by the school systems. School-based services co-locate mental health in schools. In school-owned (Adelman & Taylor, 2000) or school-supported mental health models (AAP, 2004), social workers, guidance counselors, and school
psychologists are employed directly by the school systems. Most school-owned and operated services are offered as part of pupil-personnel services (Adelman & Taylor, 2000). Of note, a new national term, Specialized Instructional Support Personnel (SISP), is now used to describe professionals such as school social workers who were previously known as related service providers and/or pupil services personnel (American Council for School Social Work, 2011).

In addition to traditional methods, broader approaches that support prevention, identification of early signs, intervention, and the “linkage system” as youth transition between levels of services are used (AAP, 2004). In these broader approaches school mental health is often viewed as one component of a comprehensive school improvement model to eliminate non-academic barriers to learning. Comprehensive and integrated mental health programs provide a range of services including prevention strategies, screening, referrals, special education, address family and community issues, and deliver direct mental health services (AAP, 2004).

Examples of comprehensive models include school-based health centers, coordinated school health model, comprehensive school- and system-wide models, and expanded school mental health programs. Rooted in the traditions of school nursing and public health clinics, school-based health centers originated to meet the primary health care needs of adolescents, the most underserved age group (Flaherty & Osher, 2003). Recognizing the demand for mental health services, school-based health centers expanded their services to include mental health counseling (Flaherty & Osher, 2003). Characteristics of a school-based health center include: inside the school building or on the school campus, sponsored by a mainstream health organization, staffed by licensed
health professionals (i.e., nurse practitioner, master’s level mental health clinician), provide comprehensive services, and build partnerships with parents, schools, and communities (Lear, 2006). Mental health services, such as assessments, screenings, grief and loss therapy, and brief therapeutic interventions, are provided at a majority of school-based health centers (National Assembly on School-Based Health Care, 2003). The Coordinated School Health (CSH) model was designed to promote health and mental health in schools by addressing the physical, social, emotional, and general needs critical to student well being (Rosas, Case, & Tholstrup, 2009). The CSH model includes eight interrelated components of school health: nutrition, health, physical education, health education, family/community involvement, health promotion of staff, healthy school environment, and counseling, psychological, and social services (Rosas et al., 2009).

Expanded school mental health (ESMH) programs represent a framework that comprises the core elements of effective programs and services, especially school and community partnerships, a full continuum of evidence-based prevention, mental health promotion, early intervention and treatments, and services for all youth in general and special education (Weist, Lever, & Stephan, 2004). Expanded school mental health is rooted in ten principles for best practice, which demonstrate the importance of the ecosystems perspective with the inclusion of students, family, teachers, and other groups in the development of such programs (Weist, Lever, & Stephan, 2004). The eco-systems perspective is further upheld by the emphasis on coordination with related programs within the community. This approach consists of interventions that occur at multiple levels and engage multiple systems including individuals, families, communities, and schools. These interventions are organized into three tiers, primary (i.e., universal
programs targeted to all students), secondary (i.e., selective programs geared toward students at risk), and tertiary (i.e., indicated programs for students who have a learning disability or behavioral or emotional disorder) interventions.

**School Mental Health Programs**

According to Franklin and colleagues (2012), “school mental health services are not determined by or limited to any specific mental health diagnosis or intervention but instead are services that are self-defined as being a school-related, mental health service with specific focus on improving the social, emotional, and behavioral functioning of students” (p. 976). Response to Intervention (RTI), Positive Behavior Intervention Supports (PBIS), IDEA special education services and 504 plans represent three school mental health programs that encompass the three tiers (i.e., universal, selective, indicated) of interventions. Each are defined and discussed in relation to youth depression.

**Response to Intervention (RTI).**

According to the National Center on Response to Intervention (RTI) (2010), RTI integrates:

- assessment and intervention within a multi-level prevention system to maximize student achievement and to reduce behavioral problems. With RTI, schools use data to identify students at risk for poor learning outcomes monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student’s responsiveness, and identify students with learning disabilities or other disabilities. (p. 2)

The four essential components of RTI include: 1) School-wide, multi-level instructional and behavioral systems for preventing school failure, 2) screening, progress monitoring and data-based decision-making for instruction, 3) movement within the multi-level system, and 4) disability identification (National Center on Response to Intervention, 2010). On December 3, 2004, President George W. Bush signed into law the Individuals
with Disabilities Education Improvement Act (IDEA, 2004). The revised law is different from the previous version in at least one important respect. Whereas practitioners were previously encouraged to use IQ–achievement discrepancy to identify children with learning disabilities (LD), they now may use “Response to Intervention,” or RTI (Fuchs & Fuchs, 2006). It is also a means of providing early intervention to all children at risk for school failure (Fuchs & Fuchs, 2006).

Primary prevention within the RTI prevention framework typically includes: a core curriculum that is research-based, instructional practices that are culturally responsive, universal screening to determine students’ current level of performance, differentiated learning activities to address individual needs, accommodations to ensure all students have access to the instructional program, and problem solving to identify interventions, as needed, to address behavior problems that prevent students from reaching their academic potential (National Center on Response to Intervention, 2010). Secondary prevention typically involves small-group instruction that relies on evidence-based interventions that specify the instructional procedures, duration, and frequency of instruction (National Center on Response to Intervention, 2010). Tertiary prevention is the most intensive of the three levels and is individualized to target each student’s area(s) of need. At the tertiary level, the teacher begins with a more intensive version of the intervention program used in secondary prevention (e.g., longer session). Throughout this intervention, the student’s progress is frequently measured (National Center on Response to Intervention, 2010). School-based mental health professionals such as school social workers participate in RTI in number of ways such as attending RTI team meetings, identifying students for more intensive interventions, delivering universal and targeted
interventions, and collaborating with classroom teachers to implement behavior plans (Kelly, Raines, Stone, & Frey, 2010; Sabatino, 2009).

**Positive Behavior Intervention Supports (PBIS).**

Positive Behavioral Interventions and Supports (PBIS) is a universal, school-wide prevention strategy that is currently implemented in over 7,500 schools across the nation to reduce disruptive behavior problems through the application of behavioral, social learning, and organizational behavioral principles (Bradshaw et al., 2008). PBIS represents one of the leading comprehensive prevention programs (Handler et al., 2007; Sugai & Horner, 1999, 2006). PBIS aims to alter school environments by creating improved systems and procedures that promote positive change in student behavior by targeting staff behaviors (Bradshaw et al., 2008). Positive Behavior Intervention Supports (PBIS) is “the application of positive behavior intervention and systems to achieve socially important behavior change” (Sugai, Horner et al., 2000, p. 133). PBIS models include the design of individual student behavior support plans but have, as a primary goal, the implementation of prevention practices that target the entire school population (Luiselli et al., 2005). Critical components include:

- Setting census-driven behavior expectations
- Teaching critical interpersonal skills
- Providing systematic positive reinforcement for meeting and exceeding performance criteria
- Monitoring intervention efficacy continuously through data collection and analysis
- Involving all stakeholders (i.e., students, teachers, administrators, and parents) in the formulation of discipline practices
Reducing and eliminating reactive, punitive, and exclusionary strategies in favor of a proactive preventive and skills-building orientation (Horner & Sugai, 2000; Nelson, 1996; Taylor-Greene, et al., 1997; Walker et al., 1996).

Additional components include: a leadership team, a brief, overriding school-wide philosophy, specific behavioral guidelines for each area of the school (e.g., playground, buses, and cafeteria), individual classroom guidelines, and specific strategies for students who need extra attention (Sugai & Horner, 1999).

Positive behavior support includes a “broad range of systematic and individualized strategies for achieving important social and learning outcomes while preventing problem behavior” (Warren et al., 2003, p. 80). Positive behavior support includes implementing and assessing universal interventions (e.g., supports all students), interventions for groups of students who need additional support (e.g., classroom levels, function-based interventions), and intensive supports for individual students (Colvin, 1991; Hawken & Horner, 2002; Leddy, Bates, & Safran, 2004; Lewis & Sugai, 1999; Walker et al., 1996).

The implementation of PBIS is expected to lead to at least three outcomes for students: 1) improved academic achievement 2) enhanced social competence, and 3) safe learning and teaching environments (Office of Special Education Programs, 2002). The implementation of PBIS is associated with decreased discipline problems (e.g., office referrals, school suspensions) (Curtis et al., 2010; Luiselli et al., 2005; Sherrod et al., 2009), improved academic performance (e.g., standardized test scores in reading and math), and decreased number of students requiring secondary and tertiary supports (Bohanon et al., 2006). These results are found in elementary and secondary student populations (Curtis et al., 2010; Sherrod et al., 2006; Bohanon et al., 2006). In addition to
student-centered outcomes, Bradshaw et al (2008) examined the impact of PBIS on school organizational health using data from a large randomized controlled trial of PBIS conducted in 37 elementary schools. Multilevel analyses on data from 2,507 staff suggest a significant effect of PBIS on staff reports of the schools’ overall organizational health, resource influence, and staff affiliation over a 3-year period (Bradshaw et al., 2008). The study indicates that changes in school organizational health are important consequences of the PBIS whole-school prevention model, and might in turn be a potential mediator of the effect of PBIS on student performance (Bradshaw et al., 2008).

*Individuals with Disabilities Education Act (IDEA).*

In some cases an adolescent’s emotional problem severely disrupts his or her ability to learn in which case schools are mandated by law to provide mental health services and interventions (AAP, 2004). Using the Individuals with Disabilities Education Act (IDEA) definition, a school defines an emotional disturbance as a condition exhibiting one or more of the following characteristics:

- an inability to learn which cannot be explained by intellectual, sensory or health factors; an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; inappropriate types of behavior or feelings under normal circumstances; a general pervasive mood of unhappiness or depression; or tendency to develop physical symptoms or fears associated with personal or school problems (IDEA, 2004).

The characteristics occur over a long period of time, to a marked degree, and adversely affect a child’s educational performance (IDEA, 2004). In addition to IDEA, Section 504 of the Vocational Rehabilitation Act of 1973 (Civil Rights Law) designates that students with disabilities must be afforded an equal opportunity to participate in and benefit from all primary, secondary, and post-secondary education programs and activities (Rehabilitation Act of 1973). As such, academic requirements must be modified, on a
case-by-basis basis, to afford qualified students with disabilities an equal educational opportunity (Rehabilitation Act of 1973).

Services for students who qualify for special education due to a mental health disorder include classrooms with a high teacher-to-student ratio, special education teachers who are trained to deal with emotional problems and Individualized Education Plans (IEP) that include detailed behavior management plans (AAP, 2004). However, past prevalence estimates of youth served for an emotional disturbance are between 1-2 percent nationwide (Kauffman, 2001; U.S. Department of Education, 2003). More recent estimates suggest that 7.7% of youth between the ages of 6 and 21 receive services for emotional disturbance under IDEA (U.S. Department of Education, 2007). Using diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders 4th Edition-Text Revision, 20 percent of the school-age population could qualify for a psychiatric diagnosis. Therefore, there is a large disparity between the percentage of children and youth needing mental health services and those actually served in special education under the Individuals with Disabilities Education Act (IDEA).

Some attribute this disparity to limitations in the current definition of emotional disturbance (Gresham, 2005). For example, severity (i.e., “to a marked degree”), duration (i.e., over a long period of time”), and impact (i.e., “adversely impacts school performance) of the disturbance are defined in vague and subjective terms (Gresham, 2005). Another criticism is in regards to the impact of the emotional disturbance. Many youth perform adequately academically but have impairment in other domains of functioning such as in peer and family relationships (Gresham, 2005). Other definitions of serious emotional disturbance in youth are more inclusive. According to the Substance
Abuse and Mental Health Services Administration (1993; 2010), children with a serious emotional disturbance (SED):

Are from birth up to age 18, and currently have, or at any time during the last year, had a diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified within DSM-IV-TR.

School Mental Health Programs and Depression

The current models (e.g., PBIS) to identify students at risk and improve student behavior primarily focus on behavioral disorders (e.g., disruptive behavior). Behavioral disorders are not the same as mental health disorders (e.g., depression). Therefore, an argument can be made that these models are limited in their current applicability to students’ internalizing symptoms (e.g., sad, withdrawn) (Reinke et al., 2006). While PBIS has made positive gains in deterring externalizing behaviors, Reinke et al. (2006) pointed out that the student who engages in antisocial and disruptive behavior at school will naturally become a more immediate focus of concern than the student who is withdrawn, isolated, and socially neglected. Therefore, Reinke et al. (2006) recommended more research focused on the impact of PBIS on internalized problem behaviors and an expansion of the current PBIS model to explicitly target internalized symptoms such as those related to depression.

Although PBIS was developed to reduce students’ externalizing behaviors (e.g., discipline referrals; suspensions), positive school environments fostered by PBIS may also promote protective factors and reduce risk factors for depression (Herman et al., 2004). The PBIS model could be expanded to more specifically target adolescent depression in a number of ways. Herman and colleagues (2004) pointed out that initiatives to deter internalizing problems are consistent with those to reduce
externalizing behavior programs. Research argues that strategies to prevent school violence should include preventing internalizing problems given the relationship between negative mood and conduct problems (Reinke & Herman, 2002a; 2002b). Further, adolescents at risk for depression will potentially benefit from the social skills training component in most PBIS systems; however school-wide programs may need to target risk factors specific to depression such as negative cognitions (Herman et al., 2004). Also, school personnel can teach, model, and reinforce communication patterns, interpersonal skills, problem solving, and positive coping (Herman et al., 2004, Merrell, 2001; Tucker, 1999).

RTI is a relatively new manner to determine eligibility for special education services to prevent school failure (Gresham, 2005). Preventing adolescent depression is critical to deterring school failure (Kessler et al., 1995). The premise behind RTI is that if students continue to display difficulty after the implementation of an evidence-based intervention, then the student is eligible for special education services (Gresham, 2005). Further, a critical element to RTI is screening and progress monitoring of students before and after the implemented intervention to identify who needs additional support (Gresham, 2005). Depressive symptoms could be screened for and assessed using self report measures such as the Center for Epidemiological Studies-Depression (CES-D) and parent and teacher reports (e.g., Internalizing Problems Scale) before and after an intervention such as cognitive or social skills training (Herman et al., 2004).

In summary, both RTI and PBIS models could be expanded to prevent internalizing disorders such as depression and to identify youth with emotional disturbances. A review of the literature yields empirical studies on school-based
indicated, selective, and universal programs that are designed to address adolescent depression. Such studies could provide direction for developing a continuum of support within the RTI and PBIS models to prevent internalizing symptoms (Herman et al., 2004).

School-Based Mental Health Depression Interventions

**Tertiary prevention.**

Indicated programs target adolescents who have a diagnosis of depression or have elevated or subclinical levels of depressive symptoms (Clarke et al., 1995; Jaycox, Reivich, Gilham, & Seligman, 1994; Levitt et al., 2007). Specific interventions at this level might include individual and group counseling, family therapy, or medication (Herman et al., 2004). Indicated programs consist of elements to address risk factors such as poor coping skills and promote protective factors among youth who have depression. Primary outcome measures of intensive interventions include behavioral observations of targeted outcomes such as increased social participation and decreased depressive symptoms (Herman et al., 2004).

Research on the impact of indicated intervention programs (e.g., Coping with Stress Course; relaxation training) on depressive symptoms in adolescents suggest decreases in depressive symptoms at follow-up (Clark et al., 1995; Reynolds & Coates, 1986). Mufson and colleagues (2004) conducted a randomized clinical trial of interpersonal therapy implemented in five school-based clinics in New York City using a sample of Hispanic adolescent females with depression. Their sample demonstrated significantly better outcomes than youth in the treatment as usual condition (Mufson et al., 2004). A study by Armbruster and Lichtman (1999) examined changes over time for students served in a school-based mental health clinic versus those students served in a
community-based clinic. Results indicated small but statistically significant improvement in both groups of students (Armbruster & Lichtman, 1999).

Secondary prevention.

Selective prevention programs (e.g., group training in social skills, cognitive restructuring) are designed for adolescents who are at particularly high risk for depression (Herman et al., 2004). Selective mental health screening measures target specific groups of youth (e.g., youth in special education; youth with depressed parents) who are at risk for developing depression (Levitt et al., 2007). Instruments to assess such risk may include, self-report measures (e.g., Center for Epidemiological Studies-Depression (CES-D) and parent and teacher reports (e.g., Internalizing Problems Scale) (Herman et al., 2004). Prior research supports the effectiveness of selective school-based interventions in reducing depressive symptoms among at-risk youth (Clark et al., 1995; Bearman, Tice, and Chase, 2003) and in preventing the worsening of symptoms (Gillham, Reivich, Jaycox, & Seligman, 1995). In fact, a recent systematic review of 42 school-based prevention and early intervention programs for depression found selective programs were the most effective, with effect sizes for all programs ranging from 0.21 to 1.40 (Calear & Christensen, 2010). Further, selective programs have a more prolonged impact on depressive symptoms overtime (Gillham et al., 1995; Jaycox et al., 1994). Due to the continued impact, some suggest that “psychological immunization” against depression can occur by teaching cognitive and social skills to children as they enter puberty (Gillham et al., 1995). Such selective programs aim to enhance protective factors at the individual level by teaching cognitive restructuring and interpersonal skills (Clark et al., 2001; Gillham et al., 1995; Jaycox et al., 1994).
Primary prevention.

Universal programs often consist of school-wide programs or classroom-delivered curricula that focus on preventing depression and other internalizing problems (Herman, Merrell, Reinke, & Tucker, 2004). Universal programs employ intervention strategies such as cognitive-behavioral therapy, problem-solving, coping skills, and psychoeducation (Clark, Hawkins, Murphy, & Sheeber, 1995; Herman et al., 2004; Horowitz, Garber, Ciesla, Young, & Mufson, 2007). School-related outcomes with demonstrated relationships to internalizing behaviors (e.g., school-wide absences and tardiness, visits to the school nurse, somatic complaints reported to teachers) are frequent outcome measures of universal program success in addition to reduction in depressive symptoms (Herman et al., 2004). Universal depression prevention programs demonstrate effectiveness in reducing depressive symptoms in adolescents although the intervention effects are not often maintained over time (Clark, Hawkins, Murphy, & Sheeber, 1995; Horowitz, Garber, Ciesla, Young, & Mufson, 2007; Merry, McDowell, Wild, Bir, & Cunliffe, 2004; Spence, Sheffield, & Donovan, 2003). For example, Horowitz, Garber, Ciesla, Young, and Mufson (2007) conducted a universal school-based cognitive behavioral therapy (CBT) intervention and a school-based interpersonal therapy intervention and found significant effects for depressive symptoms for both interventions; however no effects were found at follow-up. Cognitive behavioral treatment interventions in particular demonstrate effectiveness in reducing depressive symptoms (Merry, McDowell, Wild, Bir, & Cunliffe, 2004). Universal programs exert a positive impact on youth depression by increasing students’ coping skills and problem-solving skills (Klingman & Hochdorf, 1993; Peterson, Leffert, Graham, Alwin, & Ding, 1997; Spence, Sheffield, & Donovan, 2005). Universal programs may particularly benefit healthy youth
with no prior depressive symptoms (Shochet et al., 2001) and youth with low self-efficacy (Possel, Horn, Groen, & Hautzinger, 2004).

Despite the positive outcomes in single studies, systematic reviews of the literature concluded that effect sizes are weak for universal preventive interventions for adolescent depression (Calear & Christensen, 2010; Merry et al., 2006) and that targeted/selective and indicated prevention approaches appear to be more effective than universal approaches (Gladstone & Beardslee, 2009). However, Calear and Christensen (2010) noted that it would be “too hasty” (p. 435) to disregard the use of universal depression programs in favor of indicated programs as some universal programs are effective (Calear & Christensen, 2010). Therefore, they suggest that the quality of the universal programs being implemented is not producing the significant effects, rather than the universal delivery style itself (Calear & Christensen, 2010). To address this further research is needed to investigate the components of consistently effective programs (Calear & Christensen, 2010) and to demonstrate the effectiveness of youth depression prevention programs delivered in a range of settings by a variety of practitioners (Gladstone & Beardslee, 2009).

School Social Work

School social workers serve a critical role in the implementation of school mental health programs like those previously described. Between 2010 and 2020, the employment of social workers is expected to grow by 25%, faster than the average for all occupations (Bureau of Labor Statistics, 2012). This growth is in part explained by the increasing demand for school social workers as the number of youth with special needs goes up (Bureau of Labor Statistics, 2012). School social workers first began as “visiting
teachers” and conducted home visits and consulted with teachers and principals, activities still performed today by school social workers (Dupper, 2003). Throughout time this role shifted to working one-on-one with students experiencing an acute issue such as behavioral problems, difficulty in the classroom, and internalizing symptoms (Kelly, 2008). Largely due to changes in school-based mental health-related practice models such as PBIS and RTI, education policy (e.g., No Child Left Behind Act), and school-based research, there is a shift from a focus on clinical casework to engaging in primary prevention and addressing environmental factors affecting achievement and adjustment problems (Frey & Dupper, 2005; Kelly et al., 2010).

Given these changes school social work practice should encompass the range of social settings within the school environment rather than solely individual students. Ecological theory encompasses all of the systems that interact and affect the student or student groups who are identified as the "problem," therefore practitioners must work on a much broader level than they may be accustomed to. Fine (1992) observed the following:

> The locus of activity for most community-based and school-based consultants, such as clinical psychologists, school psychologists, counselors, and social workers, is likely to be the micro- and mesosystems. These are the systems within which the consultant has easiest access and can achieve some leverage for producing change. But it may be that for greater and more lasting change, the exo- and macrosystems need to change. (p. 8)

Taking into account the ecological aspects for school social work practice, Frey and Dupper (2005, p. 33) proposed a “clinical quadrant” to better conceptualize the complex and varied tasks and interventions required of school social workers and other mental health providers. According to Frey and Dupper (2005), school social workers should be able to intervene at micro and macro levels as the situation requires (Frey & Dupper,
2005). The clinical quadrant depicts two dimensions of practice: tasks and interventions based on with whom the social worker engages and tasks and interventions based on whether they promote change in the student’s environment or the student (Frey & Dupper, 2005). The clinical quadrant includes the following areas:

A. Interventions involve individuals, small groups, or families; targets environmental change

B. Interventions involve large groups or an entire system; targets systemic change

C. Interventions involve individuals, small groups, or families; target student change

D. Interventions involve large groups or entire systems; targets student change

(Frey & Dupper, 2005, p. 36)

School social workers typically conduct interventions that involve individuals, small groups, or families, and target student change (Quadrant C), rather than systemic or environmental change. However, school social work students also should be prepared to conduct system-focused interventions, to provide consultation to teachers, and to empower parents of at-risk students to participate in the decision-making about school policies and programs (Frey & Dupper, 2005).

In summary, school social workers may work to address adolescent depression through school-based indicated, selective, and universal programs. These programs primarily target the individual by promoting positive changes in thoughts and behaviors, enhancing knowledge and awareness of depression, and promoting coping, social, and
problem solving skills. Such interventions target risk and protective factors on the individual level.

While targeting individuals is important, schools play a critical role in promoting or inhibiting the social and emotional health of youth and as suggested by Frey and Dupper (2005), can be a target for intervention and change (Herman et al., 2004; Farmer & Farmer, 1999). A growing body of evidence indicates that schools can cause or exacerbate existing risk factors for developing behavior problems that children bring to school and that aspects of school can be modified to reduce risk (Farmer & Farmer, 1999; Reinke & Herman, 2002a). Less is known about how schools might contribute to internalizing disorders such as depression (Herman et al., 2004) though school climate is believed to exert an impact on youth outcomes including depression (Resnick et al., 1997; Kuperminc et al., 2001).

School climate policies and programs are often a part of school-based health and mental health efforts such as Positive Behavior Intervention Supports (PBIS; Sugai et al., 2000) and Coordinated School Health Programs (CSHPs) (Cohen et al., 2009). Additionally, states may incorporate school climate objectives into their character education, truancy programs, and dropout and violence prevention activities (Cohen et al., 2009, p. 191). To inform school climate programs for the benefit of adolescent mental health, it is important to identify the school climate factors that are associated with adolescent depression. One major challenge to conducting school climate research and to creating and implementing school climate policies is the inconsistency and inaccuracy in terms of school climate definitions (Cohen et al., 2009). It is necessary to
clarify the concept of school climate and distinguish it from other related terms such as culture.

School Climate

School climate is a notion that educators have recognized and focused on for 100 years (Perry, 1908). School climate research emerged from organizational climate research and school effects research (Anderson, 1982). Within the school context, organizational climate refers to a set of internal characteristics that distinguishes one school from another and influences the behavior of its members including students, teachers, administrators, and parents/caregivers (Halpin & Croft, 1963). School climate is referred to as the “personality” of the organization (Halpin and Croft, 1963, p. 1). Some researchers suggest that climate represents a broad term or concept encompassing the total environmental quality within an organization (Tagiuri, 1968; Anderson, 1982). According to Tagiuri (1968), the dimensions within the school climate include: ecology, milieu, social system, and culture (Tagiuri, 1968; Anderson, 1982). The environment is the broadest context and focuses on the school as the primary unit of concern (Anderson, 1982). The setting refers to the setting outside the school climate (i.e., neighborhood, community) (Anderson, 1982). The situation refers to the classroom climate and teacher process behavior (Anderson, 1982). Table 3 highlights this conceptualization of school climate (Tagiuri, 1968).
Table 3. Conceptualization of School Climate with Tagiuri's (1968) Taxonomy

<table>
<thead>
<tr>
<th>Categories</th>
<th>Environment</th>
<th>Setting</th>
<th>Situation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecology</td>
<td>Physical/material variables that are external to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>participants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mileu</td>
<td>Variables that represent characteristics of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>individuals in the school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social System</td>
<td>Variables that concern patterns or rules (formal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and informal) of operating and interacting in the</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culture</td>
<td>Variables that reflect norms, belief systems,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>values, cognitive structures, and meanings of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>persons within the school</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Adapted from Anderson, 1982
School climate and culture are terms often used interchangeably; however there are differences (Van Houtte, 2005). In some conceptualizations culture is subsumed under climate (Tagiuri, 1968; Anderson, 1982), while in others climate is considered a subset of culture (Schoen & Teddlie, 2008). In the latter case climate is considered to be a manifestation of culture (Schein, 1990; MacNeil, Prater, & Busch, 2009). In yet another conceptualization, according to Schein (1992), school climate and school culture are two parts of the same construct, organizational culture.

School Climate v. School Culture

School climate is an enduring quality of the school environment that is experienced by participants and affects their behavior (Hoy, 1990). School climate is the way students perceive the school including perceptions of values and beliefs (Hoy, 1990; Van Houtte, 2005). School climate is based on students’ collective perceptions of behavior in schools (Hoy, 1990; MacNeil, Prater, & Busch, 2009). An example item is, "Grades will not be very important in this class." Quantitative research methods are appropriate to study school climate (Hoy, 1990; Schoen & Teddlie, 2008). However, rich school climate data can also be obtained through qualitative methods.

School culture is comprised of the basic underlying assumptions (Hoy, 1990; Schein, 1992), beliefs (Schein, 1985) values, and norms (MacNeil et al., 2009) that are shared by members of an organization (Schein, 1985) and represents behavioral expectations and the way things are done (Van Houtte, 2005). School culture is measured with what members of an organization think, including values, meanings, beliefs (Van Houtte, 2005). An example item is, "To me, it is very important to get high grades." So, according to this conceptualization school culture refers to the culture of the people rather
than the administrative structure and policies. Qualitative methods (e.g., phenomenology; ethnography) are appropriate to studying values and norms (Hoy, 1990; Schoen & Teddlie, 2008). The thick description of qualitative studies is often necessary to map the cultures of schools, especially if the goal is to identify basic assumptions and common values (Schein, 1992). Table 4 presents a comparison between school culture and climate.

Table 4. A Comparison of School Culture and Climate (Hoy, 1990; Schoen & Teddlie, 2008; Van Houtte, 2005)

<table>
<thead>
<tr>
<th>Theoretical Perspective</th>
<th>Defined By</th>
<th>Research Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Culture</td>
<td>Anthropological</td>
<td>Student Values and Beliefs</td>
</tr>
<tr>
<td>School Climate</td>
<td>Psychological</td>
<td>Student Perceptions</td>
</tr>
</tbody>
</table>

School climate studies must consider whether climate is to be examined as an organizational feature (i.e., organizational climate) or an individual feature (i.e., psychological climate). To consider climate as an organizational feature (i.e., organizational climate), individual perceptions need to be aggregated. (Van Houtte, 2005). However, if climate is considered an individual feature (i.e., psychological climate), there is no need to aggregate (Van Houtte, 2005). Aggregating assumes individual perceptions describe the existent situation and are accurate, individual experiences of the same situation are likely to give a similar description of the situation and minimizes perceptual differences (Van Houtte, 2005). Psychological school climate
will one of the primary focuses of the current study and is further defined and discussed in the following section.

*Defining School Climate*

School climate is defined in several ways leading to confusion surrounding the term. Anderson (1982) attributed some of the confusion to the fact that school climate is defined in intuitive rather than empirical ways (Anderson, 1982). Further, defining school climate is a challenge due to striking a balance between affective and contextual qualities, social and physical aspects, and objectivity and subjectivity (Zullig et al., 2010). Despite confusion, many agree school climate is a multidimensional concept (Cohen, 2009). Some of the school climate literature equates the concept with single dimensions such as school connectedness and school safety; however school climate is not a one dimensional concept (Cohen et al., 2009). Cohen (2009) referred to school climate as the “quality and character of school life” composed of four concepts: safety, teaching and learning, relationships, and the environment (p. 100). School climate is based, in part, on people’s experiences of school life, the quality and consistency of interpersonal relationships and interactions, and organizational structures (Cohen, 2009, p. 180; Haynes et al., 1997; Koth, Bradshaw, & Leaf, 2008).

*Measuring School Climate*

The education reform legislation, No Child Left Behind (NCLB) mandates measures of reading and math (Zullig et al., 2010); however measuring school climate is not a requirement. As a result, it is often performed in inconsistent ways. When measuring school climate, two questions emerge: what to measure and how to measure it. A number of surveys exist to measure school climate including the California School
Climate and Safety Survey (Furlong et al., 2005) and the Inventory of School Climate (Brand et al., 2003). The surveys typically measure multiple dimensions of school climate and are completed by students, teachers and school personnel, and parents. Keeping in mind the complexity of defining school climate, there are common dimensions that are measured over time. Reviews by Cohen (2006) and Freiberg (1999) uncover at least five important school climate domains: order, safety, and discipline (Furlong et al., 2005; Wilson, 2004); academic outcomes (Loukas, Suzuki, & Horton, 2006; Worrell, 2000); social relationships (Furlong et al., 2005; Wilson, 2004); school facilities (Wilson, 2004); and school connectedness (Blum, 2005; Catalano, Haggerty, Oesterie, Fleming, & Hawkins, 2004; Whitlock, 2006).

One criticism of the available measures of school climate is that they are not psychometrically sound and have not been published in peer reviewed journals (Zullig et al., 2010). Zullig and colleagues (2010) sought to develop a psychometrically sound measure of school climate and conducted a search for the most widely cited school climate measurement tools. The authors derived items from five commonly used school climate surveys for their analyses. Using exploratory and confirmatory factor analyses, Zullig et al., (2010) identified eight domains of school climate: positive teacher-student relationships, school connectedness, academic support, order and discipline, school physical environment, school social environment, perceived exclusion/privilege, and academic satisfaction. Table 5 provides a list of school climate surveys, survey informants, and the dimensions measured.
<table>
<thead>
<tr>
<th>Survey Name</th>
<th>Informant</th>
<th>Dimensions Measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charles F. Kettering Ltd. (CFK) School Climate Profile (Johnson &amp; Johnson, 1997)</td>
<td>Teachers, Principals, Students</td>
<td>Respect, trust, high morale, opportunity for input, continuous academic and social growth, cohesiveness, school renewal, caring</td>
</tr>
<tr>
<td>The Comprehensive School Climate Inventory (The National School Climate Center) (Cohen et al., 2008/2009)</td>
<td>Students, Parent, School Staff</td>
<td>Safety, teaching and learning, interpersonal relationships, and institutional environment</td>
</tr>
<tr>
<td>National Education Longitudinal Study (NELS) (U.S. Department of Education, 1988)</td>
<td>Students</td>
<td>Order, safety, and discipline, academic outcomes, and school relationships</td>
</tr>
<tr>
<td>San Diego Effective Schools Study Survey (ESSS) (San Diego County, 1984)</td>
<td>Students</td>
<td>Order, safety, and discipline, academic outcomes, social relationships, school environment, school connectedness</td>
</tr>
<tr>
<td>NASSP Comprehensive Assessment of School Environments (Keefe &amp; Kelley, 1990)</td>
<td>Students</td>
<td>Order, safety, and discipline, academic outcomes, social relationships, school environment, and school connectedness</td>
</tr>
<tr>
<td>School Development Program School Climate Surveys (SDP) (Haynes et al., 2001)</td>
<td>Students, Parents, School Staff</td>
<td>Order safety, and discipline, academic outcomes, social relationships, school environment, and school connectedness</td>
</tr>
<tr>
<td>Organizational Climate Descriptive Questionnaire (Halpin &amp; Croft, 1963)</td>
<td>Teachers, Principals</td>
<td>Characteristics of faculty behavior (disengagement, hindrance, esprit, intimacy), characteristics of principal behavior (aloofness, production emphasis, thrust, consideration)</td>
</tr>
<tr>
<td>Organizational Climate Descriptive Questionnaire-Revised (Hoy &amp; Tarter, 1997)</td>
<td>Teachers, Principals</td>
<td>Supportive principal behavior, directive principal behavior, restrictive principal behavior, collegial teacher behavior, intimate teacher behavior, disengaged teacher behavior</td>
</tr>
</tbody>
</table>

Table 5. School Climate Measures
Table 5. continued

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Respondents</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Health Inventory (Hoy &amp; Hammen, 1997)</td>
<td>Teachers, Principals</td>
<td>Institutional integrity, principal influence, consideration, initiating structure, resource support, morale, academic emphasis</td>
</tr>
<tr>
<td>School Success Profile (Bown &amp; Richman, 2001)</td>
<td>Students</td>
<td>Perceptions of their social environments, including the school</td>
</tr>
<tr>
<td>The Safe Communities Safe Schools (SCSS) Survey (Wilson, 2004)</td>
<td>Students</td>
<td>Feelings and attitudes toward school, knowledge and fairness of discipline policies, student-teacher relationships, and respect for authority</td>
</tr>
<tr>
<td>Inventory of School Climate-Student (Brand et al., 2003)</td>
<td>Students</td>
<td>Teacher support, clarity of rules, participation in decision-making, and safety problems</td>
</tr>
<tr>
<td>California School Climate, Healthy and Learning Survey (CAL-SCHLS) (Furlong et al., 2005)</td>
<td>Students, Teachers, Parents</td>
<td>Order, safety, and discipline, social relationships</td>
</tr>
</tbody>
</table>

The Significance of School Climate

Although school climate was recognized as early as the 1900s, it was not until the 1970s that school climate was examined in relation to student outcomes (Zullig et al., 2010). Initially investigators focused on the relationship between school climate and academic outcomes; however school climate studies now also consider the relationship between school climate and behavioral and emotional outcomes among youth in addition to teacher and parent satisfaction.

School climate and academic outcomes.

A meta-analysis investigating the factors influencing student learning found many important factors are aspects of school climate, such as: classroom management, student-
teacher social interactions, school culture, classroom climate, and parental involvement policy (Wang, Haertel, & Walberg, 1997). Adolescents who express more positive perceptions of their school climate tend to earn higher grades in school (Stone & Han, 2005) and perform better on standardized tests (Eamon, 2005; MacNeil, Prater, & Busch, 2009). Specifically, in school climates where students feel safe, cared for, supported to learn, and in schools with minimal school disorder, school climate increases academic achievement (Chen & Weikart, 2008; Lee & Smith, 1999; McNeely, Nonemaker, & Blum, 2002; Whitlock, 2006) and improves student behavior (Bulach, Malone, & Castleman, 1995; Mattison & Aber, 2007). At the individual level, student perceptions of frequent victimization may predict lower individual engagement and reading and math achievement (Ripski & Gregory, 2009). At the school-level, collective perceptions of hostility may predict lower engagement and reading achievement (Ripski & Gregory, 2009).

In addition to promoting feelings of safety, a positive school climate promotes student learning by influencing student motivation to learn (Eccles et al., 1993b; Goodenow & Grady, 1993). Motivation to learn is facilitated by a school climate that encourages activities that promote cooperative learning, group cohesion, respect, and mutual trust (Finnan, Schepel, & Anderson, 2003; Ghaith, 2003). For example, activities like community service learning and student councils value student engagement and enhance the learning environment by providing students with opportunities to engage in the learning process and construct their own knowledge of social and government systems (Torney-Purta, 2002; Younisss et al., 2002). Further, a positive school climate is characterized by strong collaborative learning communities, such as classroom
communities (Center for Social and Emotional Education (CSEE), n.d.; Marzano, 2007). When students partner with educators and parents to improve school climate they promote essential learning skills (e.g., creativity; critical thinking skills) as well as life and career skills (e.g., flexibility and adaptability) that provide the foundation for 21st century learning (Partnership for 21st Century Skills, 2007). Students achieve higher scores on standardized tests in schools with healthy learning environments characterized by goal focus, adequate communication, cohesiveness, and moral (MacNeil, Prater, and Busch; 2009).

More positive perceptions of relationships with teachers and positive evaluations of schools’ interracial climates are also associated with higher grades in school (Crosnoe, 2004; Gutman & Midgley, 2000; Stolz et al., 2004; Stone & Han, 2005; Woolley & Grogan-Kaylor, 2006) and stronger achievement test performance (Gregory & Weinstein, 2004). In addition to improving grades and standardized test scores, several studies demonstrate the association between a positive school climate and lower levels of absenteeism (Rumberger, 1987; Sommer, 1985) and lower student suspension rates (Wu, Pink, Crain, & Moles, 1982).

In addition, structural features of school facilities such as attractive school building and adequate space are linked to student achievement in math and English (Uline & Tschannen-Moran, 2008). Quality facilities are significantly and positively related to three school climate variables, academic press, teacher professionalism, and community engagement (Uline & Tschannen-Moran, 2008). Therefore, school climate may act as a mediator between facility quality and student achievement (Uline & Tschannen-Moran, 2008). Similarly, Benner et al (2008) found school structural
characteristics (e.g., average school socioeconomic status; school size) influenced student engagement and grade point average indirectly through their influence on youth perceptions of belonging, fairness, academic climate, and interracial climate.

School climate and risk and healthy behaviors.

A positive school climate (i.e., safe, caring) has the potential to prevent risk behaviors and encourage healthy behaviors (Cohen, 2001; Juvonen, Le, Kaganoff, Augustine, & Constant, 2004; Najaka, Gottfredson, & Wilson, 2002). As such, a positive school climate is an important dimension of effective risk prevention, health promotion efforts, and learning (Najaka, Gottfredson, & Wilson, 2002; Wang & Haertel, 1993). Effective risk prevention and health promotion efforts are correlated with safe, caring, participatory, and responsive school climates (Catalano et al., 2002; Greenberg et al., 2003a). Specifically, school climate helps to prevent risk behaviors such as smoking, drinking, drug use, truancy, fighting, and weapon carrying (Catalano et al., 2004; Coker & Borders, 2001; Kuperminc et al., 1997, 2001; Loukas & Robinson, 2004; Maddox & Prinz, 2003; Roeser & Eccles, 1998; Roeser et al., 2000).

Patton and colleagues (2006) tested the efficacy of an intervention designed to promote social inclusion and commitment to education, in reducing health risk behaviors and improving emotional well-being. The main outcomes were recent substance abuse, antisocial behavior, initiation of sexual intercourse, and depressive symptoms (Patton et al., 2006). Intervention strategies ranged from establishing an inclusive classroom environment to creating opportunities for student participation in school life beyond the classroom, including a student curriculum that teaches interpersonal communication and emotional management (Patton et al., 2006).
School climate and mental health.

Poor school climate (i.e., poor teacher and peer relationships, bullying, and victimization) is related to mental health problems such as symptoms of depression, anxiety, and suicidality (Kuperminc et al., 1997, 2001; Loukas & Robinson, 2004; Roeser & Eccles, 1998; Roeser et al., 2000). Using a sample of sixth and seventh grade students, Kuperminc et al (1997) found even after controlling for student demographic and psychosocial variables (i.e., self-worth, academic self-concept), school climate perceptions accounted for variance in depression. Declines in dimensions of school climate such as teacher support, peer support, student autonomy, and clarity and consistency in school rules and regulations also are associated with declines in psychological adjustment (measured by depression and self esteem) overtime (Way, Reddy, & Rhodes, 2007). Further, other dimensions of school climate such as school mastery goal structure, promotion of autonomy and discussion, and teacher emotional support, are negatively related to adolescent depression, while performance goal structure is positively related to depression (Wang, 2009). Further, two aspects of school climate commitment to school and positive feedback from teachers impact student self-esteem (Hoge et al., 1990). Positive perceptions of school climate also serve as a buffering quality against adverse mental health outcomes. For instance, Kuperminc and colleagues (2001) found having a positive perception of the school climate moderates the impact of self-criticism on internalizing problems. Finally, research suggests a negative school climate characterized by bullying and victimization is associated with low self-esteem, depression, and suicide (Smith & Brian, 2000).
School climate and school connectedness.

A positive school climate (i.e., safe, caring, positive relationships) promotes school connectedness and attachment for students which is critical for positive youth outcomes. In fact, school connectedness is a powerful predictor of adolescent health and academic outcomes (McNeely et al., 2002; Shochet et al., 2006), violence prevention (Karcher, 2002), and is a protective factor against early sexual, violence, and drug-use behaviors (Catalano et al., 2004). In addition, connecting to or bonding with school represents an important area where bonding to positive adults can occur. Such bonds have the potential to decrease negative developmental experiences (Resnick et al., 1997) and buffer the effects of risk (Hawkins, Catalano, & Miller, 1992). Furthermore, evidence suggests attachments to adults other than one's parents have positive effects on a child's resilience to adversity (Resnick et al., 1997; Werner & Smith, 1992). For instance, Resnick and colleagues (1997) found school connectedness to be as protective as parent-family connectedness against health risk behaviors, including emotional distress, suicidality, violence, substance use, and sexual behaviors. Thus, school bonding appears to promote healthy development and to prevent problem behaviors (Catalano, et al., 2004). Ultimately, safe, caring, participatory, and responsive school climates tend to foster greater attachment to school as well as provide the optimal foundation for social, emotional, and academic learning (Osterman, 2000).

School climate, bullying, and victimization.

Aspects of school climate predict school disorder such as bullying and victimization. School climate (i.e., fairness of rules, clarity of rules, organizational focus, morale, planning, and administrative leadership) explains a substantial percentage of variance in measures of school disorder (i.e., teacher victimization, student victimization,
student delinquency), controlling for the effects of community characteristics and school student composition (Gottfredson et al., 2005). For instance, Gottfredson and colleagues (2005) found schools where students perceive greater fairness and clarity of rules have less delinquent behavior and less student victimization (Gottfredson et al., 2005).

Bullying increases among children who attend schools they perceive to be unpleasant, unfair, and unwelcoming (Barboza et al. 2009). DeRosier and Newcity (2005) surveyed both elementary and secondary school students and found that school climate, measured with the School Climate Survey, was significantly related to safety, measured by the School Safety Survey, particularly interpersonal and environmental safety. Alternatively, a negative school climate increases risk for serious violent offending (Farrell, Meyer, Kung, & Sullivan, 2001).

*School climate, teachers, and parent-school partnerships.*

Finally, in addition to positive outcomes for youth, school climate can promote parent-school partnerships (Cohen & Hamilton, 2009), prevent teacher burnout (Grayson & Alvarez, 2008), and promote teacher retention (Grayson & Alvarez, 2008).

*School Climate Dimensions*

School climate is comprised of numerous dimensions that can be characterized further into sub-dimensions (Cohen, 2009). Four key dimensions include: safety, relationships, teaching and learning, and environment (Cohen, 2009). Such dimensions commonly appear in often used measures of school climate (Zullig et al., 2010).

*Safety* is characterized with three sub-dimensions, 1) rules and norms, 2) sense of physical security, and 3) sense of social-emotional security. Indicators in relation to rules and norms include: clearly communicated rules about physical violence, verbal abuse, harassment, and teasing and clear and consistent enforcement and norms for adult
intervention. In a positive school climate, school rules are fair, clearly communicated and consistently enforced (Cohen et al., 2009; Ripski & Gregory, 2009; Way, Reddy, & Rhodes, 2007). A sense of physical safety refers to students and adults feeling safe from physical harm in the school (Cohen et al., 2009). In a positive school climate, students and staff in the school feel physically safe, which is often measured with perceptions of hostility (e.g., “I don’t feel safe at this school.”) and experiences of school victimization (e.g., “Someone bullied me or picked on me”) (Ripski & Gregory, 2009). A sense of social-emotional security refers to students’ feelings of safety from verbal abuse, teasing, and exclusion (Cohen et al., 2009).

*Teaching and learning* is characterized by five dimensions: 1) support for learning 2) social and civic learning 3) quality of instruction 4) professional development and 5) leadership (Cohen et al., 2009). Support for learning refers to the use of supportive teaching practices such as encouragement and constructive feedback, opportunities to demonstrate knowledge and skills, support for risk taking and independent thinking, atmosphere conducive for dialog and questioning, academic challenge, promotion of mastery goals over performance goals and individual attention (Anderman & Midley, 1997; Cohen et al., 2009; Roeser et al., 1998; Roeser et al., 2000; Way, Reddy, & Rhodes, 2007). Social and civic learning refers to support for the development of social and civic knowledge, skills, and dispositions including: effective listening, conflict resolution, self-reflection and emotional regulation, empathy, personal responsibility, and ethical decision-making (Cohen et al., 2009). Support for such learning demonstrates the value of varied “intelligences” (Cohen et al., 2009). Quality of instruction refers to high expectations for student achievement, all learning styles honored, help provided when
needed, learning linked to “real life,” engaging materials, use of praise/reward, opportunities for participation, varied teaching methods, instructional leadership, and creativity valued (Cohen et al., 2009). Professional development refers to standards and measures used to support learning and continual improvement, professional development is systematic and ongoing, data-driven decision making linked to learning, school systems evaluated, and teachers feel that this is relevant and helpful (Cohen et al., 2009). Leadership refers to a clearly communicated vision, administrative accessibility and support, and school leaders honor people at school (Cohen et al., 2009).

The relationships dimension is characterized by six sub-dimensions: 1) respect for diversity, 2) social support (adults), 3) social support (students) 4) professional relationships 5) school and community collaboration and 6) school connectedness/engagement (Cohen et al., 2009). Respect for diversity refers to indicators such as mutual respect for individual differences (e.g., gender, race, culture, etc.) at all levels of the school-student-student; adult-student; adult-adult, and overall norms of tolerance. Social support (adults) includes indicators such as a pattern of supportive and caring adult relationships for students, including high expectations for students’ success, willingness to listen to students and to get to know them as individuals, and personal concern for students’ problems (Cohen et al., 2009; Way, Reddy, & Rhodes, 2007). Teacher emotional support falls within this category and generally refers to the extent to which teachers are supportive, responsive, and committed to students’ well-being (Roeser et al., 2000; Wang, 2009; Way, Reddy, & Rhodes, 2007). Social support (students) includes indicators such as a pattern of supportive peer relationships for students, including friendships for socializing, for problems, for academic help, and for new
students. Professional relationships include positive adult-adult relationships between/among teachers, administrators, and staff (Cohen et al., 2009; Way, Reddy, & Rhodes, 2007). School community and collaboration includes several indicators such as mutual support and ongoing communication, school-community involvement, parent participation in school decision-making, shared parent-teacher norms vis-à-vis learning and behavior, and student and family assistance programs (Cohen et al., 2009). School connectedness/engagement refers to a positive identification with the school, students are engaged learners, staff are enthusiastic about their work, students connected to one or more adults, students/staff feel good about school and school community (Cohen et al., 2009). Finally, the environmental-structural dimension refers to the cleanliness, order, and appeal of facilities and adequate space, resources and materials, inviting aesthetic quality and size of school (Cohen et al., 2009).

**Conceptual Framework**

Based on a review of the risk and protective factors for adolescent depression and the school climate literature, school climate dimensions were selected and categorized within the relevant ecological systems level according to Bronfenbrenner’s conceptual framework. For the current study, perceived school connectedness, perceived teacher support, harshness of discipline policies, and presence of mental health and social service programs, and school-level socioeconomic status were used to conceptualize school climate. These dimensions were drawn from the safety, relationship, and environmental dimensions of school climate and are particularly relevant to adolescent depression. The dimensions were organized within the ecological model (Figure 3). The mesosystem is not included in the conceptualization as the current study focused on the microsystem,
exosystem, and macrosystem. The following sections expand upon these school climate factors and examine them in relation to the literature on the etiology of depressive symptoms.
Figure 3. Applying Ecological Theory to School Climate

**Individual-Level**

**Individual**
- Age (*control*)
- Grade (*control*)
- Gender (*control*)
- Prior depressive symptoms (*control*)
- Racial minority
- Sexual minority

**Microsystem**
- Parent-adolescent relationships (*control*)
- Perceived school connectedness
- Perceived teacher support

**School-level**

**Exosystem**
- Harshness of discipline policies
- Presence of mental health and social services

**Macrosystem**
- School-level socioeconomic status
- School size (*control*)
- School location (*control*)
- School type (*control*)

Depressive symptoms
Empirical Literature Review

Microsystem Level: Perceived school connectedness.

Definition.

School connectedness, also referred to as engagement, bonding, belonging, attachment, and commitment to school, is defined as the extent to which students feel personally accepted, respected, included, cared for, close to, and supported by others in the school social environment (Bonny et al., 2000; Goodenow, 1993). School connectedness is also defined in terms of academic and relationship features (Jimerson, Campos, & Greif, 2003; Libbey, 2004; Weiss, Cunningham, Lewis, & Clark, 2005). The academic features include: motivation to attend school, persistence in academic work, and a belief in the future importance of educational efforts (Weiss et al., 2005). The relationship features of school connectedness are the focus of the current study and include: perceptions of support and caring and a positive attitude toward school (Weiss et al., 2005).

Several student and school characteristics are positively associated with school connectedness. Student characteristics correlated with increased school connectedness include higher academic achievement (Battistich & Hom, 1997; Klem & Connell, 2004), participation in extracurricular activities (Battin-Pearson, Abbott, Hill, Catalano, Hawkins, & Newcomb, 2000; McNeely, Nonnemaker, & Blum, 2002), good attendance (Klem & Connell, 2004; McNeely, Nonnemaker, & Blum, 2002), and relationships with multiple social groups in school (Jennings, 2003). School connectedness (i.e., liking school; positive relations with teachers and peers) is greater among students with better academic performance, greater extracurricular involvement, students with more friends, student from 2-parent families, and students whose parents are more involved with school
(Thompson, Iachan, Overpeck, Ross, & Gross, 2006). Students’ higher school connectedness is influenced by greater levels of family connectedness, fewer classroom and peer problems, less difficult secondary school transition, fewer emotional problems, and greater prosocial skills (Waters, Cross, & Shaw, 2010). Liking school, feelings of belonging, believing teachers care about them and their learning, believing their education matters, having friends at school, believing discipline is fair, and having opportunities to participate in extracurricular activities all facilitate school connection (Blum, 2005). Some research suggests that the most important predictors of students’ satisfaction with school are students’ feeling that they are treated fairly, that they feel safe, and that they believe that teachers are supportive (Samdal et al., 1998).

School factors related to increased school connectedness include: small school size, effective classroom management strategies, and moderate, less harsh school discipline policies, opportunities for meaningful input into school policies, and the extent to which the class material engages student interests (McNeely, Nonnemaker, & Blum, 2002; Whitlock, 2006). Further, recent research suggest that the school’s size, socioeconomic status, and the extent to which the school prioritizes overall health and well being predicts school connectedness even after controlling for student-level predictors (Waters, Cross, and Shaw, 2010). Further, connectedness is greater in more racially homogeneous schools and schools with more students from relatively wealthier households (Thompson, Iachan, Overpeck, Ross, & Gross, 2006). Factors such as social isolation, lack of safety in school, and poor classroom management threaten school connection (Blum, 2005).
Measuring school connectedness.

Across the literature, the concept of school connectedness is measured in terms of five primary content areas: classroom behavior, academic performance, extracurricular involvement, interpersonal relationships, and school community (CSMHA, 2005). As conceptualized by Brown and Evans (2002), school connectedness is an overarching measure with four aspects: commitment, power, belonging, and belief in rules. Within these domains survey questions explore student willingness to follow rules, teacher support, and student feelings of belonging at school. Eccles and colleagues (1997) included school connectedness under “school context,” which encompassed school regulation, school facilitation of autonomy, and connection. In the Eccles et al. (1997) measure, school connectedness includes items about liking school and looking forward to going to school. Hall-Lande (2007) assessed school connectedness with the question, “How do you feel about going to school?” with responses on a five-point scale ranging from “I don’t like school at all” to “I like school all of the time” (Hall-Lande, 2007).

School connectedness is commonly measured with the items from the National Longitudinal Study of Adolescent Health (Add Health) surveys (Anderman, 2002; Bonny et al., 2000; Jackson & Rowe, 1999; McNeely et al., 2002; Resnick et al., 1997).

The National Longitudinal Study of Adolescent Health (Add Health) as well as other surveys measure school connectedness by asking students to respond to statements such as, “I feel close to people at this school,” “I am happy to be at this school,” and “I feel safe in my school” (Bonny et al., 2000). A key strength to these items is that they measure youth’s overall perceptions of liking school and feeling happy at school. Although school connectedness may be related to peer relations and teacher support, measures of overall school connectedness more specifically address student feelings and
attitudes about going to school (Jessor, Van Den Bos, Vanderynn, Costa, & Turbin, 1995). Like prior studies, the current study conceptualized school connectedness by youth’s overall perceptions of liking school and feeling happy at school.

School connectedness and youth outcomes.

Opinion estimates among youth in the United States indicate that about half of youth in grades 7-12 identify their school as a supportive environment, whereas the other half report less favorable feelings (Department of Health and Human Services, 2005). According to Klem and Connell (2004), 40 to 60 percent of students in urban, rural, and suburban areas are disengaged from school. These are concerning statistics given the positive outcomes related to school connectedness, especially for adolescents (Blum, 2005). This construct is argued to be particularly important for adolescents as they rely less on the family as part of the individuation process and come to rely more on extra-familial relationships such as those found in schools (e.g., friends, teachers) (Goodenow, 1993).

School connection improves outcomes for youth across multiple life domains (Catalano, et al., 2004). In particular, school connectedness has an impact on academic outcomes (Finn & Rock, 1997). Several studies show that school connectedness is reliably linked to higher academic performance (e.g., test scores, grades) and improved school behavior regardless of socioeconomic status (Klem & Connell, 2004). Further, students who report higher connectedness are less likely to drop out, be absent, or exhibit behavior problems. High school drop outs report not having a strong interest or sense of belonging in school (Elliott & Voss, 1974; Finn & Rock, 1997). Not liking school and poor student-teacher relationships are commonly cited reason for leaving school (Finn & Rock, 1997). In addition, adolescents’ motivation to learn depends in part on their
perceptions of the relationships they have at school. Roeser, Eccles, and Sameroff (2000) pointed that adolescents’ decisions to engage in learning depends in part on whether they feel safe and cared for by others in the school setting.

School connectedness also has an impact on student’s susceptibility to engage in high risk behaviors and develop mental health problems (Resnick et al., 1997). According to the research findings from the National Longitudinal Study on Adolescent Health, poor school connectedness is linked to the initiation of many adolescent risk behaviors and emotional problems, namely emotional distress, suicidal ideation and behavior, substance use, weapon related violence, and early sexual activity (Dornbusch et al., 2001; McNeely & Falci, 2004; McNeely, Nonnemaker, & Blum, 2002; Resnick et al., 1997). Further, attachment to school, measured with school connectedness items from the Add Health study, predicts lower levels of initiation in deviant behaviors (Dornbusch et al., 2001). Students who feel more connected to their schools demonstrate reductions in violent behavior over time (Brookmeyer, Fanti, & Henrick, 2006) and are less likely to be victims and perpetrators when compared to individuals who experience low school connectedness (Wilson, 2007). In addition to protecting against high risk behaviors, school connectedness is examined in relation to overall psychological adjustment and outcomes such as well being, self esteem, and self worth. For example, middle school students’ sense of emotional well being (i.e., optimistic outlook, an interest in life, self-worth) is positively related to school connectedness (Frydenberg, Care, Freeman, & Chan, 2009). On the other hand, adolescents who perceive their school environments as less supportive are more likely to exhibit psychological distress (Battistich, Solomon, Kim, Watson, & Schaps, 1995).
Among school aged youth and youth at risk, school connectedness is a protective factor against negative psychological experiences. For instance, in a sample of adolescents (N=4,746) from 31 middle schools, Hall-Lande et al (2007) found school connectedness mediated the negative influence of social isolation on self esteem. Additionally, Kuperminc and colleagues (1997) found middle-school students at-risk for adjustment difficulties because of self-criticism and/or lack of efficacy who also had positive perceptions of their school had lower internalizing problems than their peers with negative perceptions of their school (Kuperminc, Leadbeater, Emmons, & Blatt, 1997).

School connectedness and depression.

To date, there is little research on the relationship between school connectedness and depression in adolescents leading some researchers to suggest school connectedness is an underexplored parameter in the arena of adolescent mental health (Shochet et al., 2006). However, the available research suggests a strong link between school connectedness and adolescent depression (Shochet et al., 2006). School connectedness is correlated with depressive symptoms in preadolescents (Ross, Shochet, & Bellaire, 2010) and adolescents (Shochet et al., 2006). In a study examining adolescents from Grades 7 to 12, Resnick et al. (1997) found that perceived school connectedness was negatively correlated with emotional distress. The authors measured emotional distress using a 17-item scale that included symptoms of depression (i.e., feeling depressed, sadness, poor appetite). In the Resnick et al. (1997) study, school connectedness accounted for 13% to 18% of the variance in emotional distress in different age groups. Further, in a cross-sectional study, Anderman (2002) found students’ higher individual levels of school connectedness were related to increased optimism and lower levels of depression and problem behavior as well as improved academic performance.
Using a prospective study design, Kuperminc, Leadbetter, and Blatt (2001) examined the relation between school connectedness and internalizing and externalizing symptoms in 460 sixth- and seventh grade students in one large school. The researchers used the internalizing and externalizing problems scales of the Youth Self-Report, which includes withdrawn, somatic complaints, and anxious-depressed subscales, so it is not specific to either depression or anxiety (Achenbach, 1991; Kuperminc et al., 2001). Perceptions of school social climate, a construct similar to school connectedness, accounted for an additional 2% and 5%, respectively, of the variance in internalizing and externalizing problems at 1 year follow up after controlling for prior levels of emotional problems and other background variables (e.g., vulnerability to criticism and interpersonal efficacy) (Kuperminc et al., 2001). Of note, follow-up analyses suggested emotional circumstances did not predict future perceptions of school climate. Thus, the Kuperminc et al. (2001) study is the only one to indicate that school connectedness predicts future mental health problems and not the other way around. Further, school connectedness may predict outcomes in young adulthood. For example, young people are more likely to have mental health problems and to use substances in the later years of schooling if they report low school connectedness and interpersonal conflict in early secondary school (Bond, Butler, Thomas, Carlin, Glover, Bowes, & Patton, 2007).

Jacobson and Rowe (1999) related school connectedness to a full measure of depressive symptoms using the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977). The authors found correlations of .35 for boys and .37 for girls between school connectedness and adolescent depressed mood and found school connectedness and depression shared about 13% of variance.
School connectedness and racial minority youth.

Perceived school connectedness may differ based on race. Research suggests African American males perceive lower school connectedness (Anderman, 2002; Bonny et al., 2000; Booker, 2004) and a more negative racial climate (Watkins & Aber, 2009) when compared to other ethnic groups. Positive school environments are especially important for the success of children from ethnically diverse families (Booker, 2006; Haynes, Emmons, & Ben-Avie, 1997; Johns, 2001) and at-risk youth (Haynes et al., 1998). A positive school climate is believed to provide a “safe haven” for high-risk students by supporting healthy development and discouraging maladaptive behaviors (Haynes et al., 1998; Kuperminc, Leadbeater, et al., 1997). For instance, Kuperminc and colleagues (1997) found African American boys gained particular benefit from perceptions of a positive social climate at school. Prelow and colleagues (2007) found African American youth who felt connected to their schools reported higher levels of competence. Further, when African American and immigrant families feel that they and their children are welcome and the school staff care about all children, positive school-family relationships can lead to better outcomes for students (e.g., academic achievement, student behavior, attendance) (Johns, 2001; Thompson, 2003). However, perceived school connectedness may not always lead to improved outcomes for minority youth (Booker, 2004). To help explain this, Booker (2006) pointed out, minority students educated in majority contexts may regard school as valuable, but negative interactions and experiences with members of the majority group (e.g., low teacher expectations, being the only minority in the class) can prevent feelings of true connection or belonging in the school (p. 3).

Given the current research, it’s reasonable to speculate that the relationship between school connectedness and depression differs for racial minority youth.
School connectedness and sexual minority youth.

The school setting is an unwelcoming and harsh environment for sexual minority youth (Kosciw et al., 2010). For example, in a 2009 survey, 88% of youth reported hearing the word “gay” used in a negative manner and 86.5% of youth reported feeling some extent of distress due to this language (Kosciw et al., 2010). Sexual minority students are disproportionately victimized by incidents of verbal and physical bullying due to their sexual orientation or gender expression (Birkett et al., 2009; Kosciw et al., 2010). A majority of students do not report incidents of harassment (Kosciw et al., 2010). When events are reported research suggests that schools often fail to protect youth from verbal harassment and violence (Birkett et al., 2009; Kosciw et al., 2010; Thurlow, 2001). Bullying, teasing, and harassment are associated with lower perceptions of safety (McGuire et al., 2010). As a result, sexual minority students feel unsafe and disconnected from schools (Kosciw et al., 2010). The detrimental experiences of bullying, teasing, and harassment are linked to higher rates of absenteeism, lower educational aspirations, higher rates of dropping out, substance abuse, depression, and suicide among sexual minority students (Espelage et al., 2008; Johnson & Johnson, 2000; Kosciw et al., 2010).

Transgender and questioning youth are at particular risk (Birkett et al., 2009; Espelage et al., 2008; McGuire et al., 2010). For instance, Birkett et al (2009) examined how school contextual factors such as homophobic victimization and school climate influence negative outcomes in lesbian, gay, bisexual and questioning (LGBQ) middle school students. Participants were 7th and 8th grade students (N=7,376) from a large Midwestern county. Sexual minority youth were more likely to report high levels of bullying, homophobic victimization, and various negative outcomes than heterosexual
youth (Birkett et al., 2009). Birkett and colleague’s (2009) found youth who are questioning their sexual orientation report the most bullying, the most homophobic victimization, the most drug use, the most feelings of depression and suicidality, and more truancy than either heterosexual or sexual minority (gay, lesbian, bisexual) students (Birkett et al., 2009). Transgender and questioning youth may not benefit directly from interventions designed to support gay, lesbian, and bisexual youth (McGuire et al., 2010).

Perceptions of a positive school climate may be protective against depression and drug use for sexual minority youth (gay, lesbian, bisexual) (Espelage et al., 2008). Schools can play an instrumental role in improving the experiences of their diverse student populations. For example, schools can address prejudice by creating a more welcoming and inclusive climate for diverse students (Dessel, 2010). Further, schools can take action to reduce harassment, particularly homophobic teasing. Such efforts increase student connections to school personnel, which are associated with greater feelings of safety (McGuire et al., 2010). Ultimately, a positive school climate and a lack of homophobic victimization have the potential to buffer the impact of sexual orientation status on mental health outcomes, especially depression (Birkett et al., 2009; Espelage et al., 2008).

**Microsystem Level: Perceived teacher support.**

**Definition.**

Teacher support is defined as the “extent to which teachers are supportive, responsive, and committed to students’ well-being” (Wang, 2009, p. 242). Teacher support reflects how willing teachers, counselors, and other adults are to help students with problems. To grasp the importance of this relationship, researchers (Hamilton & Howes, 1992; Howes & Matheson, 1992; Pianta, 1992; Pianta & Steinberg, 1992) have
merged an understanding of how the relationships that young children develop with teachers fit within broader theoretical frameworks of adult-child relationships (Ainsworth, Belhar, Waters, & Wall, 1978). Specifically, researchers suggest ongoing warmth and trust (i.e., an emotional dimension), united with open communication, instructional support, and positive involvement (i.e., behavioral dimensions of involvement), assist youth in developing internal representations of relationships with teachers (Murray & Pianta, 2007). These relationships are intended to be similar to secure caregiver-child attachments (Murray & Pianta, 2007). They further imply that the quality of these representations may affect students’ emotional, behavioral, and academic health (Murray & Pianta, 2007). Table 6 highlights the key factors that contribute to teacher-student relationships.

Table 6. Factors that Influence Student-Teacher Relationships

<table>
<thead>
<tr>
<th>Organizational Structures and Resources</th>
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<tbody>
<tr>
<td>• Overall ethos or climates that place a high value on relationships</td>
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<td>• Small schools or school-within-a-school structures</td>
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<td>• Block scheduling</td>
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<tr>
<td>Classroom Structures and Practices</td>
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<tr>
<td>• Clearly stated and explicitly taught routines</td>
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<td>• Clear rules and consequences</td>
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<td>• Peer tutoring (e.g. Peer-Assisted Learning)</td>
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<td>• Cooperative Learning</td>
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<tr>
<td>Teacher Beliefs, Behaviors, and Actions</td>
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<tr>
<td>• High expectations for student achievement and behavior</td>
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<tr>
<td>• Individual meetings with students</td>
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<td>• Positive feedback and praise for students</td>
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<tr>
<td>Individual Skills for Developing Prosocial Relationships</td>
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<td>• Explicit instruction in self-awareness and self-management skills</td>
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<td>• Training to utilize social awareness when interacting with others</td>
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<td>• Promoting and teaching of responsible decision making in multiple contexts</td>
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</table>
Measuring perceived teacher support.

In a review of the constructs studied in relation to school climate and connectedness, Libbey (2004) identified teacher support as the most common theme that emerged from the variables reviewed. For that reason, teacher support is a critical variable to include in a school climate study. Perceived teacher support is assessed with a variety of items. For example, to measure teacher support, Cox and Williams (2008) used a modified version of the Psychological Sense of School Membership Scale (PSSMS; Goodenow, 1993) that was developed for middle school students. Although the PSSMS is a uni-dimensional scale to assess perceived belonging, other items, pertaining specifically to one’s teacher, reflect perceived support such as, “The teachers here respect me” and “Most teachers at [name of school] are interested in me.”

Others (e.g., Perry et al., 2010; Ludwig & Warren, 2009) measured teacher support using the Teacher Support Scale (TSS; Metheny et al., 2008), assessing the extent to which students perceive that their teachers are invested in them (e.g., “are interested in my future”), show positive regard or emotional support (e.g., “would tell other people good things about me”), hold high expectations (e.g., “expect me to work hard in school”), and are accessible (e.g., “are easy to talk to about school things”).

Bowen et al (1998) assessed teacher support using nine statements that describe various feelings that students may have about teachers at school including, "My teachers really care about me" and "I get along well with my teachers" (Bowen et al., 1998). To measure adolescents’ perception of the quality of their relationship with teachers, Overbeek and colleagues (2006) used a scale consisting of seven items (e.g., “Do you usually ‘talk back’ to your teachers?”, and “If you have a problem in school, can you talk with your teachers about it?”). To assess teacher support, Crosnoe et al (2004) used
students’ responses to three items about teachers: the extent to which they had trouble getting along with teachers, felt that teachers cared about them, and believed that teachers treated students fairly in their school. The first two items referred to the quality of students’ relationships with teachers, and the third referred to whether students’ assessments of teachers were positive or negative. Thus, like a similar measure created for the National Educational Longitudinal Study, this composite tapped students’ general feelings about teachers in their school (Sanders & Jordan, 2000).

In summation, across the literature, measurement of teacher support includes items such as feeling the teacher will help if the student has a problem, positive reciprocal relationships, feeling liked by the teacher, feeling close to and valued by teachers, caring what teachers think, praise from teachers, student report of good teaching, staff listening to students and then acting, and feeling comfortable talking to teachers (Libbey, 2004). Like Crosnoe (2004) and Bowen et al (1998), the current study defined teacher support as students’ perceptions of getting along with teachers and feeling cared about by teachers.

Teacher support and youth outcomes.

For some students, the relationships with educators are among the most meaningful in their lives (Anderson, Christenson, Sinclair, & Lehr, 2004; Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999). Unfortunately, research suggests the quality of teacher-student relationships often deteriorates following the transition from elementary to middle school (Midgley, Feldlaufer, & Eccles, 1989; National Research Council, 2004). This decline is of concern for adolescents as it can directly impact their social and emotional health (Murray & Pianta, 2007). Specifically, teacher support is critical to enhancing academic success, preventing engagement in risky behaviors, and improving physical and mental health outcomes.
A common finding in resilience research is the power of teachers to buffer student academic risk (Benard, 1991). Teachers do this by conveying positive and high expectations (Meier, 1995), fostering caring relationships (Delpit, 1996), and providing opportunities to participate and contribute (Kohn, 1993; Rutter et al., 1979; Rutter, 1984; Kohn, 1993). Relationships between students and teachers are positively associated with students’ motivation, achievement, feelings of belonging, and affect in school (Roeser & Eccles, 1998; Roeser, Eccles, & Sameroff, 2000). Students who perceive teachers as creating a caring, well-structured learning environment in which expectations are high, clear, and fair are more likely to report engagement in school (Klem & Connell, 2002). In turn, high levels of engagement are associated with higher attendance and test scores (Gambone, Klem, & Connell, 2002; Klem & Connell, 2004). Attendance and test scores are strongly indicative of whether youth will successfully complete school, pursue post secondary education and achieve economic self-sufficiency (Gambone, Klem, & Connell, 2002; Klem & Connell, 2004). Links between teacher support, student engagement, and academic performance hold for both elementary and middle school students (Klem & Connell, 2004).

Furthermore, feeling connected to teachers is identified as an important factor in inhibiting the initiation of health risk behaviors such as substance use and violent behavior (CSMHA, 2005; Las Russo, Romer, & Selman, 2008; Libbey, 2004; McNeeley & Falci, 2004). Specifically, adolescents who perceive their teachers are fair and care about them are less likely to initiate cigarette smoking, drinking to the point of getting drunk, marijuana use, suicidal ideation or attempt, first sexual intercourse, and weapon-related violence (McNeeley & Falci, 2004). Further, Murray and Greenberg (2001) found
students who had more positive relationships with teachers had lower levels of delinquency. Students who feel supported emotionally by teachers are also more likely to comply with teachers’ expectations, which reduce the probability of their engaging in problem behaviors (Patrick, Ryan, & Kaplan, 2007).

Teacher support has also been measured as a contextual variable with individual levels of teacher support averaged to represent the school-level. Karvonen and colleagues (2005) identified several school-level factors (e.g., amount of school work, being bullied, class spirit and relationship with teachers) that accounted for approximately 2.5% of the total variation in health-related variables (e.g., longstanding illness, smoking, alcohol use, and number of intoxications). In particular, insufficient support from teachers was a contextual factor that stood out as especially detrimental to student health (Karvonen et al., 2005).

*Teacher support and depression.*

The past two decades of research yield an improved understanding of the quality of student-teacher relationships and the impact of these relationships on students’ mental health (Murray & Pianta, 2007; Pianta & Steinberg, 1992), including depression (Overbeek et al., 2006). The research indicates teacher support has important implications for students’ emotional and behavioral well-being (Hughes, Cavell, & Jackson, 1999; Pianta & Steinberg, 1992; Suldo et al., 2009). For example, teacher support serves a vital link to positive adolescent adjustment, which leads to fewer internalizing problems (Way, Reddy, & Rhodes, 2007). Students who experience positive teacher-student relationships have an increased ability to cope with emotional problems, which protects them from negative feelings (Solomon, Battistich, Watson, Schaps, & Lewis, 2000). Perceived teacher-related belongingness has a positive effect on engagement in learning which in
turn has a positive effect on psychological adjustment (i.e., hope) (Van Ryzin, Gravely, & Roseth, 2009).

Teacher support is particularly critical for the emotional well being of high risk youth. For instance, Ludwig and Warren (2009) examined the relationship of perceived teacher support to psychosocial outcomes in a sample of urban youth exposed to community violence. Results indicated that exposure to violence was positively associated with internalizing and externalizing symptoms. Additionally, teacher support was related to higher hope and lower psychosocial distress. Adolescents who reported higher teacher support reported higher hope, regardless of the level of violence exposure. Results emphasize the importance of feeling supported in school as a way to promote hope and minimize psychosocial distress for youth exposed to community violence (Ludwig & Warren, 2009).

Self esteem, an important construct linked to depressive symptoms, has also been studied in relation to teacher support. Research examining the effects of teachers on self-esteem is extensive, and the results show that teacher support of students is associated with higher student self-esteem (Hoge, Smit, & Hanson, 1990). In contrast, negative comments and other teacher put-downs lower students’ self concept and likely add to students’ feelings of inadequacy and anxiety (Haynes, Emmons, & Ben-Avie, 1997).

This review of the literature yielded few studies that specifically investigated the relationship between teacher support and adolescent depression. It is more common to see constructs related to depression (e.g., self esteem; hope) and general measures of subjective well being related to teacher support. However, Reddy, Rhodes, and Mulhall (2003) followed early adolescents from grades sixth through eighth and found that
students who reported the greatest declines in teacher-student relationship quality also had the greatest increases in depression. In contrast, students who reported increasing levels of teacher support during this same period had corresponding decreases in depression and increasing self-esteem (Reddy et al., 2003). Further, teachers are in a position to foster a climate of respect, which is identified in the literature as an important factor in relation to youth depression (LaRusso et al., 2008). LaRusso, Romer, and Selman (2008) emphasized respect as a critical component of school climate for high school students arguing that if the need for respectful relationships remains unmet, adolescents may become mistrustful and cynical. The authors further asserted that respectful climates may serve as a protective factor for mental health outcomes including depression and suicidal ideation (La Russo et al., 2008). Respectful climates are also likely to be less stressful and more supportive. Less stress and more support are associated with fewer mental health problems (Lewinsohn et al., 1994).

Teacher support and racial minority youth.

Research demonstrates social relationships at school are important to the school success of all students; furthermore, teacher support is particularly critical for positive youth development among racial minority youth (Olsson, 2009; Rosenbloom & Way, 2004; Woolley, 2006; Woolley & Grogan-Kaylor, 2006). Functional substitution helps to explain this and asserts any particular resource is more important to those who have fewer resources overall (Mirowsky & Ross, 2003). African American and Hispanic American youths typically have fewer instrumental resources (e.g., information channels) compared to white youths. Due to the historically greater distance between minority families and the education system that is rooted in discrimination and distrust, this relative dearth of instrumental resources goes beyond finances and socioeconomic status.
(Lareau & Horvat, 1999; Stanton-Salazar & Spino, 2001). Thus, the more abundant instrumental social capital that flows through affective bonds with teachers may make more of a difference in the lives of African- and Hispanic American students than of whites, for whom such capital is more often redundant (Mirowsky & Ross, 2003).

Some studies show supportive teachers are a key relationship with respect to school outcomes for ethnic- and racial-minority students (Antrop-González, 2006; Johns, 2001). For example, in a study of 226 Latino youth from an urban middle school, Garcia-Reid et al. (2005) reported that teacher support had the highest impact on school engagement in a model including measures of support from parents, friends, and neighborhood adults. Davalos, Chavez, and Guardiola (1999) found among a predominantly Latino sample of 7th- through 12th-grade students, perceptions of school, which included indicators of the teacher student relationship, were predictive of staying in school. In a diverse sample of middle and high school students that included Latinos, Woolley and Grogan-Kaylor (2006) analyzed key factors across school, family, and neighborhood and found that teacher support was the most influential factor predicting better behavior at school, more positive attitudes toward school, and better academic performance. Crosnoe et al (2004) found that stronger intergenerational bonding in school was associated with higher academic achievement, especially for Hispanic American girls. Such positive school outcomes are important as they are predictive of future occupational achievement and related to overall positive mental health (Woolley & Grogran-Kaylor, 2006; Crosnoe et al., 2004).

Unfortunately, despite the benefits, racial minority youth may have weaker relations with teachers and be at greater risk for negative student–teacher relationships.
Differences in the quality of student–teacher relationships are documented in the literature based on several student characteristics including racial and ethnic minorities (Kesner, 2000; Saft & Pianta, 2001). For instance, teachers disproportionately refer African American students to school administrators for disciplinary actions (Skiba et al., 1997). Such treatment may damage the student-teacher relationship and potentially lead to poorer academic and emotional outcomes. Further, when students feel mistreated by teachers due to race, they are less motivated to learn, feel more unhappy, and act out more (Roeser et al., 2000).

**Teacher support and sexual minority youth.**

Teacher support is also critical for sexual minority youth. Sexual minority youth may experience rejection from parents at home subsequently increasing the importance of other supportive adults such as teachers. In addition, it is well-established that sexual minority youth are at increased risk for bullying and harassment in school (Kosciw et al., 2010). Bullying increases among children who lack teacher support (Barboza et al., 2009). However, among students who are bullied, Flaspohler and colleagues (2009) found teacher support mitigates the impact of bullying on the quality of life of victims; therefore teacher support is particularly critical for sexual minority youth. The presence of supportive educators can have a significant positive impact on sexual minority youth’s psychological well-being (Kosciw et al., 2010). In a 2009 survey conducted by the Gay, Lesbian, Straight, Education Network, sexual minority students identified school personnel who are supportive of lesbian, gay, and transgender students as a resource to help promote a safer environment and more positive school experiences (Kosciw et al., 2010). Further, using data from the Add Health Study, Russell, Seif, and Truong (2001) found after controlling for family, peer, and social support, feelings about teachers played
the largest role in predicting academic troubles (e.g., paying attention, getting along with other students, getting homework completed) of both boys and girls with bisexual attractions in school. Youth with positive feelings about their teachers were significantly less likely than their peers to experience the broad range of school troubles (Russell, Seif, & Truong, 2001).

Exosystem Level: Harshness of discipline policies.

Definition.

Discipline policies refer to how student misconduct is handled in a school. Cameron (2006) defined school discipline as:

school policies and actions taken by school personnel with students to prevent and intervene with unwanted behaviors, primarily focusing on school conduct codes and security methods, suspension from school, corporal punishment, and teachers’ methods of managing students’ actions in class. (p. 219)

Discipline practices range from schools that demand behavioral conformity and compliance to those that emphasize student autonomy and independent decision making (Stronbach & Piper, 2008). Reforms in discipline policies range from the systematic reinforcement of positive behavior (Bohannon et al., 2006) to automatic expulsion for a list of offenses (American Psychological Association Zero Tolerance Task Force, 2006).

Using the parenting styles identified by Baumrind (1966) as a guide, researchers recommend an authoritative style, balanced with structure and support, to school discipline (Gregory & Cornell, 2009; Gregory, Cornell, Fan, Sheras, Shih, & Huang, 2010). School structure is conceptualized as adequate supervision of students and consistent and fair enforcement of school rules while support is conceptualized as supportive relationships with teachers and school staff and programs and services geared toward student needs (Gregory & Cornell, 2009). Similar to Gregory and Cornell’s
conceptualization of structure and support, Nickerson and Spears (2007) highlighted two philosophical approaches to addressing school misconduct.

The first philosophy, the authoritarian approach, uses punitive discipline and policing practices (i.e., security personnel) (Arum, 2003; Nickerson & Spears, 2007). The term authoritarian refers to punitive measures that often limit an individual’s autonomy and freedom (Baumrind, 1966). In parenting practices, this refers to using forceful measures to control a child’s behavior or attitude. In the school context, strategies of this philosophy include zero tolerance policies, or providing severe punishment for all offenses (Arum, 2003). Such intolerant policies aim to deter future offenders (Arum, 2003).

Zero tolerance policies emerged from a sense of fear related to episodes of gun related school violence (Brady, Blamer, Pheniz, 2007; Lyons & Drew, 2006). Zero tolerance is implemented nationwide through the Gun Free Schools Act of 1994 and mandates a 1-year expulsion of students who have brought a firearm or any instrument that can be used as a weapon to school (Bracy, 2011). Some schools have widened the applicability of zero tolerance policies to include bullying, fighting, using drugs or alcohol, and swearing (Bracy, 2011). Proponents of zero tolerance policies assert that they are effective in deterring students from engaging in violence and ensure that punishment is uniformly implemented (Nickerson & Spears, 2007). However, zero tolerance policies have created a “punitive mindset” that heavily influences school discipline policies (Lashley & Tate, 2009, p. 31). Despite claims lauding the effectiveness of zero tolerance policies, research demonstrates such policies, including suspension, disrupt student achievement (Mayer & Leone, 1999), increase the likelihood of
disciplinary actions in the future (Tobin & Sugai, 1999), and impact a disproportionate number of students from lower socioeconomic status and minority background (Skiba, Peterson, & Williams, 1997). This is concerning given research suggests that administrators spend excessive time handling discipline issues using punitive strategies, with an emphasis on suspension and expulsion (Fenning et al., 2008).

On the other hand, rooted in social learning theory and attribution theory, the educational/therapeutic approach involves the entire school community (i.e., students, staff, parents) and centers on behavior management, conflict resolution, and school climate (Nickerson & Spears, 2007; Pagliocca & Nickerson, 2001). Changing school climate to improve communication and exert a positive influence on students are more effective at decreasing school violence as opposed to employing coercive disciplinary practices in inner-city schools (McEvoy & Welker, 2000; Reinke & Herman, 2002). Despite the positive benefits of educational programs, there are several concerns including lack of resources and staff resistance (Hunter, Elias, & Norris, 2001) and lack of effective outcomes of certain programs (i.e., drug prevention, suicide prevention programs) (Gorman, 1998; Gould, Greenberg, Velting, & Schaffer, 2003). Recent research indicates discipline policies should not place “get tough” strategies versus “give support” strategies but rather both structure and support are necessary to enhance school safety (Gregory, Cornell, Fan, Sheras, Shih, & Huang, 2010, p. 483).

Discipline policies have also been investigated in relation to school characteristics (Nickerson & Spears, 2007). Nickerson and Spears (2007) examined the use of two disciplinary approaches (i.e., authoritarian v. educational/therapeutic) to address school violence prevention and the factors that impact the use of such strategies. The researchers
found large, urban schools used both authoritarian and therapeutic approaches including security, violence prevention, and parent training while rural schools used more authoritarian practices (Nickerson & Spears, 2007). Schools with a large proportion of lower socioeconomic status students may be more likely to use security, random metal detector checks, and corporal punishment (Nickerson & Spears, 2007). Additionally, a higher number of mental health professionals involved with the school are associated with the use of violence prevention programs, student involvement in resolving problems, and parent training to address student misbehavior (Nickerson & Spears, 2007).

Discipline policies and youth outcomes.

School discipline strategies exert a critical impact on school climate as it relates to the clear communication of school rules and whether students feel physically safe (Morrison, Redding, Fisher, & Peterson, 2006). Tolerant school disciplinary policies are positively associated with higher school connectedness (McNeely, Nonnemaker, and Blum, 2002). Decades of research demonstrates that conventional school disciplinary strategies do not foster a supportive school climate and may have a destructive impact on children’s academic and psychosocial functioning (Cameron & Sheppard, 2006). Despite this, research in support of stricter discipline policies suggests such policies are associated with lower rates of delinquency (Barton, Coley, & Welingsky, 1998) and truancy rates (Babcock, 2009). However, there are several negative consequences of strict discipline policies such as suspension, expulsion, and corporal punishment. For example, negative outcomes of suspension and expulsion include poorer academic performance, increased amount of time that youth spend unsupervised, and heightened correlations with poor academic achievement, grade retention, drop out, delinquency, and substance use (Balfanz & Boccanfuso, 2007; Raffaele Mendez, 2003; Wallace et al., 2008).
Suspension is linked to the exacerbation of problematic behaviors not related to suspension (Schwartz, 1989), high rates of absenteeism following the suspension (Fine, 1991), and distancing in relationships with school personnel (Schwartz, 1989). Suspension and expulsion also further reinforce negative behavior by denying students the opportunities for positive socialization, nurture distrust of adults, and inhibit school bonds (American Psychological Association, 2008; Cauffman & Steinberg, 2000; Gardner & Steinberg, 2005; Grisso et al., 2003; Hooper, Luciana, Conklin, & Yarger, 2004; McNeely et al., 2002). Further, zero tolerance may deter students and adults from reporting incidences of bullying at school (Stop Bullying Now, 2010).

Discipline policies and depression.

Correlational studies link school discipline with posttraumatic stress disorder (PTSD), depression, anxiety and aggressive behavior inside and outside school (Cameron, 2006; Hyman & Peron, 1998). Using more rigorous methods and statistical analyses, Mayer and Leone (1999), Wu, Pink, Crain, and Moles (1982), and Shaw and Braden (1990) found school discipline directly contributes to the incidence of psychosocial problems in children. Hyman and Peron (1998) reviewed the literature on school discipline techniques such as strip searches. Strip searches of students were associated with depression, anger, increased tardiness and truancy, decreased interest in academics, and drop out (Hyman, 1990; Hyman & Perone, 1998). More recently, Bracy (2011) conducted an ethnographic study of student perceptions of high security school environments, including perceptions of discipline policies. Students reported feelings of powerlessness as a result of the manner in which schools enforce rules and hand down punishments (Bracy, 2011). Such feelings of powerless may lead to feelings of depression.
However, there is a dearth of literature on the association between discipline policies on youth depression. Despite this gap, there is reason to hypothesize a connection between school discipline policies and youth mental health. Discipline policies such as suspension are related to poorer academic achievement and substance abuse which are related to adolescent depression. Further, it is well documented that parenting styles (e.g., authoritarian; authoritative) impact the psychological development of children and adolescents (Baumrind, 1966). Previous research has applied the notion of authoritative parenting to teaching styles in classrooms, and a similar model of authoritative discipline can guide school wide discipline policies and practices (Gregory et al., 2010; Gregory & Weinstein, 2004; Wentzel, 2002). In a review of literature on school discipline strategies and psychosocial outcomes in youth, Cameron (2006) in part aimed to spark discussion and awareness on the association between school discipline and youth outcomes. Given this call and the dearth of research in this area, the impact of the disciplinary climate in a school on depressive symptoms warrants investigation.

Discipline policies and racial minority youth.

Racial minority groups are particularly vulnerable to punitive school discipline practices (Hyman, 1990, 1995; Wallace, 2008). Zero tolerance policies impact a disproportionate number of racial minority youth (Skiba, Peterson, & Williams, 1997). Further, racial minority youth are more likely to be in schools that rely heavily on harsh disciplinary practices (APA Zero Tolerance Task Force, 2008; Skiba & Rausch, 2006). In some cases, school disciplinary practices are discriminatory in their use (Cameron, 2006). Cameron (2006, p. 223) stated, “Sadly, school disciplinary practices appear to be vehicles for the expression of racial and class-based biases held by teachers and school administrators.” Racial minority youth, especially African American and to a lesser
extent Latino males, and those receiving special education services at school for disabilities are disproportionally and more severely subjected to school discipline (Hyman, 1990, 1995; Morrison & D’Incau, 1997; Nicholson-Crotty, Birchmeir, & Valentine, 2009; Osher, Bear, Sprague, & Doyle, 2010, Skiba & Rausch, 2006; Whitlock, 2006). For example, Wallace et al (2008) found Black, Hispanic, and American Indian youth were more likely than White and Asian American youth to be sent to the principal’s office and two to five times more likely to be suspended or expelled. Suspension is frequently used as a punishment for minority students (Dunbar & Villarrule, 2002; Mosca & Hollister, 2004; National Association of School Psychologists, 2001). However, greater suspension rates are not clearly linked to more frequent or more serious misbehavior (Losen, 2011). Suspension and expulsion are associated with less instructional time, increased disengagement, and poor academic outcomes (Losen, 2011) that could lead to depression. Studies suggest racial disparities in discipline are larger in the offense categories that are subjective or vague such as disrespect, excessive noise, threatening behavior, and loitering (Losen, 2011; Skiba, Michael, Nardo, & Peterson, 2002). Also of concern, there is a growing body of work on the “school-to-prison pipeline” among racial minority youth (Nicholson-Crotty et al., 2009, p. 1004). Therefore, the disproportionate subjection to harsh discipline policies among racial minority youth is troubling. It is reasonable to expect that the relationship between school discipline policies and depression would vary for racial minority youth.

Discipline policies and sexual minority youth.

There is scant literature on the relationship between school discipline policies and depression among sexual minority youth. The existent research suggests that elements of school discipline may impact youth mental health. For instance, recent research by
Sandfort and colleagues (2010) found clarity of school rules mitigates the risk for mental health problems among students with same-sex attractions and underscores the importance of structural school measures for the health of sexual minority youth. Furthermore, harsh school discipline policies may put sexual minority youth at risk for a number of reasons. Recent research suggests that non-heterosexual youth are more likely to suffer disproportionate punishments. For example, using a national sample, Himmelstein and Bruckner (2011) found non-heterosexual youth, particularly non-heterosexual females, suffer disproportionate educational punishments that are not explained by greater engagement in acting out behaviors. In addition, zero tolerance may deter youth and adults from reporting bullying (Stop Bullying Now, 2010). This is particularly concerning for sexual minority youth who frequently endure bullying at school. It is reasonable then to suggest that harsh discipline policies place sexual minority youth at an increased risk for depression. Given sexual minority youth are susceptible to more punitive disciplinary measures; harsh discipline policies may have a more detrimental impact on depressive symptoms in these subpopulations.

*Exosystem Level: Presence of mental health and social services.*

*Definition.*

A healthy school environment depends in part on the presence of programs and services that foster a supportive climate. Mental health and social service programs contribute to this supportive climate. The presence of mental health and social services in school might be indicative of a climate that promotes the overall well being of the students by addressing certain non-academic needs. School mental health programs and services address the comprehensive needs of their students, including their social and emotional development. Such programs include activities that focus on cognitive,
emotional, behavioral and social needs of individuals, groups, and families, prevent and address problems, facilitate possible learning and healthy behavior, and enhance healthy development (McKenzie & Richmond, 1998, p. 4). Counseling, psychological, and social service interventions not only provide programs and services to address barriers to student learning, they also focus on enhancing healthy psychosocial development for all students (Adelman, 1998). Examples of such interventions include the development of responsibility and integrity, self esteem, social relationships, self evaluation and self direction, temperament, personal safety and safe behavior, health maintenance, effective physical functioning, careers and life roles, and creativity (Adelman, 1998). Counseling, psychological, and social services are comprised of three broad categories, direct services and instructions, developing systems, programs, services, and resources, and connecting school and community resources (Adelman, 1998). Direct services and instructions include primary prevention such as the enhancement of wellness through guidance counseling, training and coordination of peer mediators and counselors; development and implementation of health and violence reduction curricula; advocacy; liaison between school and home; and gang, delinquency, and safe-school programs (Adelman, 1998). Further, mental health and social service programs in school are one component of school support as conceptualized by Gregory and Cornell (2009). School support may include the availability of positive adult-student relationships, help for struggling students, and programs to address students’ nonacademic needs (Gregory & Cornell, 2009).

The literature suggests that programs to address students’ nonacademic needs such as health policies and programs offered in or by a school may vary based on school characteristics (Brener et al., 2003). For instance, Brener and colleagues (2003) analyzed
data from the School Health Policies and Programs Study (SHPPS) 2000 and found most policies and programs differed according to school type (public, private, or Catholic), urbanicity, school enrollment size, per-pupil expenditures, percentage of White students, and among high schools, percentage of college-bound students. Specifically, larger, public schools were more likely to have mental health and social services available at school. The mental health and social services score was lower among Catholic and private schools than public schools (Brener et al., 2003). Further, it was lower among rural schools than urban schools and was associated positively with school size (Brener et al., 2003).

Presence of mental health and social services and youth outcomes.

The presence and availability of mental health services in schools is critical (APA, 2004). Benefits of mental health and social service programs include greater access to services (APA, 2004), improved school climate (Woolley, 2006), support for teachers (Adelman & Taylor, 2000), and earlier identification of student problems (APA, 2004). Further, support for student’s non-academic needs conveys respect and concern for the adolescent, reinforcing his or her sense of self-worth (Gregory & Cornell, 2009). However, while the benefits of school mental health are broad and comprehensive, the achievement of these outcomes has not been well documented (Rones & Hoagwood, 2000).

Presence of mental health and social services and depression.

In particular, there is a dearth of evidence on the association between the presence of school mental health and social services on the most prevalent disorders, including depression (Rones & Hoagwood, 2000). Despite this, there is reason to suspect that the presence of mental health and social services will improve mental health outcomes by
connecting students with needed services and by demonstrating to students that the
school is committed to their overall well being. Anderson, Thomas, Moore, and Kool
(2008) described a school improvement initiative in New Zealand that provided
additional funding for school nurse and social worker services in nine secondary schools.
The authors found that teacher (e.g., support from colleagues, students are helpful and
friendly) and student perceptions (e.g., satisfaction with school, support for achievement)
of school climate improved overtime in the schools with additional services compared
with non-participating schools (Anderson, Thomas, Moore, & Kool, 2008).

*Presence of mental health and social services and racial minority youth.*

A review of the current literature did not yield any studies that examined the
association between the presence of school-based services and depression among racial
minority youth. However, a number of studies demonstrate differences in perceptions of
mental health service needs (Snowden & Yamada, 2005) and access to or utilization of
mental health services between white and racial minority youth (Alexandre et al., 2009;
Angold et al., 2002). Minority groups are less likely to receive needed services and as a
result may be at risk for negative outcomes such as poor school performance, violence,
delinquency, and an increased risk of contact with juvenile justice systems (Lindsey et
al., 2006; Pumariega et al., 1999). Disparities in mental health service utilization are
especially significant for racial minority youth who are disproportionately affected by
poverty, unemployment, poor education, racism, and the consequences of living in
troubled communities (Clark et al., 1999; Gonzalez, 2005). As a result, many of their
non-academic needs may not be met outside school. School-based mental health services
are thought to counter some of the barriers (e.g., stigma; cost) associated with mental
health care (Cooper-Patrick et al., 1999; Flaherty et al., 2003; Hines-Martin et al., 2003;
Lewit et al., 1997). Therefore, the presence of mental health and social services in school may be particularly important for racial minority youth (Armburster & Lichtman, 1999). Some studies suggest that there are no significant race differences in school-based mental health use (Angold et al., 2002). Barksdale et al (2009) sought to examine this issue further by investigating the relation between race and youth’s community mental health service use across different types of services (e.g., outpatient, school-based, day treatment, and residential/inpatient services). Barksdale and colleagues (2009) found African American youth were significantly less likely than Caucasian youth to have utilized school-based services. Barksdale and colleagues’ (2009, p. 371) findings point to racial disparities in service use and indicate the presence of racial disparities for certain types of services sectors (e.g., school-based services) but not for others (e.g., day treatment services). To eliminate such disparities it is necessary to investigate how and where youth are referred for mental health services (Barksdale et al., 2009). For instance, racial minority youth may be more often referred to the juvenile court system rather than community-based mental health settings. Overall, the research yields minimal information on the relationship between school-based mental health services and depression and mixed results on racial disparities in school-based mental health service use.

*Presence of mental health and social services and sexual minority youth.*

The presence of mental health and social services at school may be particularly critical for sexual minority youth who do not have support at home. From the research it is clear that sexual minority youth are at significant risk for health and mental health problems. Access to such services is then critical for this population. Unfortunately, sexual minority youth may avoid accessing traditional health and mental health services
due to concerns about discrimination by health care providers, receiving lower quality care, and patient-provider confidentiality (Ginsburg et al., 2002; Mercier & Berg, 1989; Paroski, 1987; Travers & Schneider, 1996). Further, sexual minority youth are at risk to feel judged by school peers and staff (Rutter & Leech, 2006). School-based support systems are important for sexual minority youth as they may represent access points to find mentors and support systems (Rutter & Leech, 2006). A study using the Add Health data found that sexual minority youth were significantly more likely to use mental health services (i.e., psychological and emotional counseling) within the last year compared to their non-sexual minority peers (McGuire & Russell, 2007). Despite significantly higher mental health service use, another study using the Add Health data found that over half of sexual minority youth still had an unmet mental health need compared to just over a third of nonsexual minority youth (Williams, 2009). Therefore, the presence of mental health services in schools may be particularly critical for sexual minority youth.

In addition, research suggests that the presence of supportive services and organizations at school may lead to improved outcomes for sexual minority youth. For example, Walls and colleagues (2010) examined how Gay-Straight Alliances (GSAs) affect sexual minority youth by comparing the school experiences (e.g., dropping out, harassment, feeling safe, etc) of three discrete groups of sexual minority students: those who attend schools without GSAs, those who attend schools with GSAs but are not members, and those who attend schools with GSAs of which they are members. The findings indicate that the presence of the GSA positively affects more school experiences than whether or not the sexual minority youth is an actual member of the group (Walls et al., 2010). Similarly, Goodenow and colleagues (2006) found sexual minority youth in
schools with LGB support groups reported lower rates of victimization and suicide attempts than those in other schools.

*Macrosystem Level: School-level socioeconomic status.*

School poverty is conceptualized in different ways in the literature. School poverty may be defined by the percentages of students who are eligible for free or reduced-price school lunch program, parent education level, or median household income for the student population. On the individual level, socioeconomic status impacts depressive symptoms among youth with research suggesting that children with histories of poverty have a higher occurrence of depression (McLeod & Shanahan, 1996). School-level socioeconomic status has also been identified as an important factor related to youth depressive symptoms. Using multilevel modeling, Goodman et al. (2003) investigated whether the socioeconomic context of the school environment was associated with adolescent depressive symptoms independent of individual household income. Linear regression analyses revealed that lower household income and average school income were significantly associated with depressive symptoms (Goodman et al., 2003). Further examination using multilevel modeling indicated that both household income and average school income were significantly related to depressive symptoms even after adjusting for covariates (Goodman et al., 2003).

*Gaps in the Current Literature*

To help better understand adolescent depression and depressive symptoms, it is important to examine the school setting; specifically what school climate dimensions are associated with adolescent depression and among what subgroups. There are gaps in the current literature base on this topic. The gaps are further identified and discussed.
The literature reveals gaps in the school climate dimensions studied in relation to depression. For instance, harshness of discipline policies and the presence of mental health and social services are largely unexplored in relation to their impact on adolescent depression. Cameron (2006, p. 220) performed a literature review on school discipline policies and their relationship to psychosocial outcomes with “the hope of engendering greater discussion on and awareness of this issue.” The current study in part addressed this call by investigating the association between discipline policies and depression.

While school connectedness is associated with adolescent depressive symptoms (Bond et al., 2007; Fydenberg et al., 2009; Jacobson & Rowe, 1999; Kuperminc et al., 2001) and protective against emotional distress (Resnick et al., 1997), most of the studies on the relationship between school connectedness and depression do not control for prior depressive symptoms. Anderman (2002) found that school connectedness predicted depression in adolescents using the Add Health data. However, Anderman’s study utilized one wave of Add Health data and did not control for prior depressive symptoms. Research indicates school connectedness does predict depressive symptoms in youth. For instance, Shochet and colleagues (2006) found school connectedness predicted depressive symptoms 1 year later for both boys and girls even after controlling for prior symptoms. However, their sample was limited to 12 to 14 year old Australian youth. The current study used longitudinal data in order to control for the impact of prior depressive symptoms, an important predictor of depressive symptoms, using a sample of youth in the United States in grades 7th-12th.

In regards to the impact of school climate on the self-reported emotional health of youth there are a small number of studies based on multilevel analysis (Modin &
Ostberg, 2009). Even fewer multilevel studies specifically examine the impact of school climate on depressive symptoms (Ellonen & Kaarianinen, 2008; Goodman et al., 2003). The current study employed multilevel modeling techniques to contribute to addressing this gap. The multilevel studies in the literature show that the school exerts a contextual effect on adolescent health above individual level influences (Ellonen & Kaarianinen, 2008; Goodman et al., 2003; Karvonen et al., 2005).

Further research is necessary to understand group differences in the association between school climate dimensions and adolescent depressive symptoms (Kuperminc et al., 2001). Given the review of literature, it is likely that school climate may have differing meanings for students based on race and sexual orientation.

Finally, from the review of school connectedness studies and depression, three studies used a full measure of depression, Jacobson and Rowe (1999) (CES-D), Shochet et al. (2006) (CDI), and Loukas et al. (2009) (CDI). Jacobson and Rowe (1999) was the only other study to use the CES-D. From the review of teacher support and depression studies, two studies used a measure of depression, Way et al. (2007) and Reddy et al. (2003). In both of these studies, the Child Depression Inventory and a shortened version of the CDI were used. Among the studies using multilevel modeling, only two of the studies reviewed used specific measures of depression as opposed to adolescent well-being or physical health (Ellonen & Kaarianinen, 2008; Goodman et al., 2003). The current study addressed this gap by employing a full measure of depressive symptoms.

The following research questions were examined to address the discussed gaps in the literature.
This Study

Research Questions

1. To what extent is school climate (as conceptualized by perceived school connectedness, perceived teacher support, harshness of school discipline policies, presence of mental health and social service programs, and school socioeconomic status) associated with depressive symptoms in adolescents in the United States?
   a. To what extent are perceived school connectedness and perceived teacher support associated with depressive symptoms in adolescents in the United States?
   b. To what extent are the harshness of school discipline policies, presence of mental health and social service programs, and school socioeconomic status associated with depressive symptoms in adolescents in the United States?

2. To what extent does the association between school climate dimensions (i.e., perceived school connectedness, perceived teacher support, harshness of discipline policies, presence of mental health and social service programs, and school-level socioeconomic status) and depressive symptoms vary for racial and sexual minority youth compared to majority youth?
CHAPTER 3

Exploration of Secondary Datasets

The advantages of secondary data analysis are many. Secondary datasets often provide large, nationally representative samples. In addition, such large scale studies make use of rigorous sampling approaches, obtain a high response rate, and assess a large number of variables (Rubin & Babbie, 2008). Further, a very large sample size makes it possible to employ multivariate statistical techniques such as mixed effects models (Rubin & Babbie, 2008; Vartanian, 2011). Also, secondary datasets often include longitudinal data collected at multiple points over time. Despite the benefits of secondary analysis, there are some limitations such as limited variables, outdated data, and issues related to reliability and validity (Rubin & Babbie, 2008).

Given the key strengths, particularly large sample size and longitudinal data, secondary data analysis was employed to answer the research questions in this study. Subsequently, potential secondary datasets were explored. Datasets were identified based on the following criteria: were publicly available and included measures of school climate. Given this criterion, the secondary datasets that were explored included the following: the California School Climate, Health, and Learning Survey, Maryland Adolescent Development in Context Study, National Education Longitudinal Study of 2002, National Annenberg Survey of Youth, and The National Longitudinal Study of Adolescent Health. Datasets were identified in published, peer reviewed studies on school climate. Table 19 (Appendix A) provides a summary of each dataset identified and reviewed.
The National Longitudinal Study on Adolescent Health (Add Health)

The National Longitudinal Study on Adolescent Health (Add Health; 1994-2002) was selected for a number of reasons. The Add Health questionnaires include items on race and same-sex attraction and sexual behavior. Including items on sexual orientation is critical when studying school climate as sexual minority students may have different perceptions of the school climate. In addition, sexual minority students are at increased risk for depressive symptoms. Also, the dataset is nationally representative and includes grades 7th through 12th. The Add Health questionnaire includes a modified version of the 20-item Center for Epidemiologic Studies-Depression Scale. Other datasets explored had far fewer depression items and some items only measured one or two symptoms of depression. Further, with both individual and school-level data, the Add Health data are appropriate to studying the impact of school context on youth outcomes.

Methods

Add Health Study Waves

The National Longitudinal Study on Adolescent Health (Add Health) is a comprehensive, nationally representative, school-based study of United States adolescents in grades 7 through 12. Add Health was a longitudinal study with four waves of data collection from 1994 to 2008. The current study used Wave I (collected from September, 1994 through December, 1995) and Wave II (collected from April, 1996 through August, 1996) data.
Sampling Procedures

Wave I-School Sample.

The Add Health study used a school-based sampling design (Harris, 2005). The primary sampling frame was derived from the Quality Education Database (QED) (Harris, 2005). A stratified sample of eighty high schools (defined as schools with an 11th grade and more than 30 students) were randomly selected from a sampling frame of 26,666 high schools in the United States (Harris, 2005). Schools were stratified by region, urbanicity, school type, ethnic mix, and size (Harris, 2005). Officials from more than 70 percent (N=52 schools) of the originally selected schools agreed to participate in the study (Harris, 2005). Replacement schools (N=28) were selected within each stratum until an eligible school or school-pair was found (Harris, 2005). School administrators from participating high schools were asked to identify junior high or middle schools (i.e., feeder schools) that were expected to provide at least 5 students to the entering class of the high school (Harris, 2005). From this list a single feeder school (typically a middle school) was selected for each high school (Harris, 2005). This resulted in one school pair (a high school and feeder school in each of the 80 communities) (Harris, 2005). Overall, officials from 79 percent of the schools that were contacted agreed to participate in the study (Harris, 2005). One hundred and thirty-two (132) schools were in the sample (Harris, 2005). School size varied from fewer than 100 students to more than 3,000 students (Harris, 2005).

From September 1994 until April 1995, in-school self-administered questionnaires were given to students in the sample schools (Harris, 2005). Over 90,000 students completed a 45-minute in-school questionnaire during this time (Harris, 2005). All students who were present on the days the questionnaires were administered and
whose parents consented to their child’s participation completed the in-school questionnaire (Harris, 2005). There was no “make-up” day for absent students. The response rate for the in-school survey was not calculated due to the way in which permission to participate was obtained (See “Consent Procedures” section) (Harris, 2005). Parents were informed in advance of the date of the questionnaire and could direct that their children not participate (Harris, 2005). A school administrator from each of the 132 schools completed a questionnaire at Wave I (Harris, 2005).

Wave I -In-Home Interview Adolescent Sample.

Each school provided a roster of all students enrolled. From the rosters and the pool of participants in the in-school survey, a core sample (n=12,105) of adolescents in grades 7 to 12 were selected to participate in the in-home interview (Harris, 2005). Special populations were oversampled, including black adolescents with college-educated parents (n=1,547), Cuban (n=538), Puerto Rican (n=633), and Chinese adolescents (n=406), physically disabled adolescents (n=957), and genetic samples (full sibling [n=1,251], half sibling [n=442], unrelated pairs in the same household [n=662], adopted [n=560], and twin [n=784]) (Harris, 2005). Eligibility for oversamples was determined by an adolescent’s responses on the in-school questionnaire (Harris, 2005). In addition, there was a saturation sample where all students from 16 schools (2 large schools and 14 small schools) were selected (Harris, 2005). Adolescents could qualify for more than one sample (Harris, 2005). Seventy-nine percent of all sampled students in all of the groups participated in Wave I of the in-home phase of the survey (N=20,745) (Harris, 2005). A parent, usually the resident mother also completed a 30-minute interviewer-assisted instrument (Harris, 2005). Over 85 percent of the parents of participating adolescent completed the parental interview in the first wave (Harris, 2005).
Wave II-In-Home Interview Adolescent Sample.

All adolescents in grades 7 through 11 in Wave I were followed up one year later for the Wave II in-home interview (N=14,738) (Harris, 2005). The Wave II adolescent sample was drawn primarily from the pool of participants in Wave I (Harris, 2005). The Wave II in-home interview sample is the same as the Wave I in-home interview sample, with a few exceptions (Harris, 2005). The majority of 12th grade respondents were removed from the Wave II sample, as they exceeded the grade eligibility requirement (Harris, 2005). The Wave I disabled sample was not re-interviewed at Wave II (Harris, 2005).

Participants

The current study examined data from students, parents, and school administrators who participated in Waves I and II.

Students & parents.

Waves I & II

In Wave I, 20,745 students participated in the in-home questionnaire and 17,670 parents completed the in-home parent questionnaire (Harris, 2005). In Wave II, 14,738 students participated in the in-home questionnaire (Harris, 2005). Of those, 13,568 were assigned sampling weights (Harris, 2005). Only Wave II respondents who had a Wave I sample weight have a weight for Wave II. Respondents who did not have a sample weight at Wave I include cases added to increase the genetic sample and cases without a sample flag (J. Tabor, Winter 2012, personal communication). Sampling weights will be further described at the end of this chapter.

For the current study, only observations with weights were used to perform the main analysis in order to account for the unequal probability of sample selection and to
obtain unbiased estimates of population parameters and standard errors (Chantala, 2006).

Further, observations were not included in the analysis if they had incomplete responses on key study variables which resulted in a workable sample size of 9,524.

Tables 9 and 10 present the individual sample demographics and descriptive statistics for each stage of the sample process. The study sample was only slightly different from other samples, suggesting that the deletion of cases introduced minimal bias. The most notable difference appeared in the age of participants. The full and weighted samples had a higher percentage of youth who were 18 and older (23.7 and 23.6, respectively) compared to the percentage 18 and older in the final sample for the current study (16.9%). There was a statistically significant difference between the weights only sample and the final sample for the current study on the mean depression score at Wave II, t (n=23,090) =4.78, p=.01. The weights only sample (M=11.5, SD=7.9) scored higher than the final sample (M=11.0, SD=7.8). Practically, the difference in the depression scores 11.5 and 11.0 was not significant given a cutoff score of 16 is indicative of mild depression. Neither a score of 11.5 nor 11.0 are close to this cutoff and indicate roughly the same number of depressive symptoms reportedly experienced in a 7 day period. Individual sample characteristics are provided in the results section. The pattern and extent of missing data will be described and discussed later in the results section.

_Schools._

_**Wave I.**_  
Schools with students who completed both Wave I and II in-home interviews were selected resulting in N=132 schools. Twelve schools could not be included in the final analyses due to incomplete responses on the mental health and social services items...
and 15 schools were not included due to incomplete responses on the discipline policy items. Therefore, 105 schools made up the level-2 sample for the current study.

Tables 11 and 12 illustrate the school sample demographics and descriptive statistics for N=132 schools and N=105 schools with completed data on all key study variables. Overall, the two samples were demographically similar. The primary exceptions were the final school sample had a lower percentage of medium sized schools, a higher percentage of urban and rural schools, and a lower percentage of suburban schools. School sample characteristics are provided in the results section.

Consent Procedures

Parental consent was required to list student names in a directory and to allow students to participate in the study (Harris, 2005; Harris & Udry, 2008). Unless otherwise directed by the school, passive consent forms were used. Under passive consent it is assumed that the parent grants permission unless the form is returned with a signature that indicates otherwise. However, some schools required active consent forms, requiring that the form be returned with a signature indicating that permission was granted (Harris & Udry, 2008). Written informed consent was obtained from the parent or legal guardian and the adolescent for the in-home questionnaires (Harris & Udry, 2008).

Measures

For the current study, data were obtained from three questionnaires, the adolescent in-home questionnaire, parent in-home questionnaire, and school administrator questionnaire.

In-home adolescent questionnaire.

The in-home adolescent questionnaire gathered information on topics such as general health, academics/education and depression (Harris & Udry, 2008). For the
current study, data on individual demographics, parent-adolescent relationships, perceived school connectedness, perceived teacher support, and depressive symptoms were obtained from the adolescent in-home questionnaire.

*In-home parent questionnaire.*

The in-home parent questionnaire provided further information about the family composition and the adolescent’s health history. The questionnaire asked demographic and health-related information about the parent or guardian and general questions about the adolescent respondent. For the current study, data on the adolescent’s family’s socioeconomic status was obtained from the parent in-home questionnaire.

*School administrator questionnaire.*

The school administrator questionnaire gathered information about the educational setting and environment of the school (Harris & Udry, 2008). Content areas included general characteristics of the school and student body, curriculum, school services, and programs (Harris & Udry, 2008). For the current study, data on school demographics, discipline policies, and the presence of mental health and social services was obtained from the school administrator questionnaire.

Table 7 illustrates the study variables, Add Health questionnaire, and study wave where the information was obtained.
Table 7. Study Variables, Add Health Questionnaires, and Data Collection Waves

<table>
<thead>
<tr>
<th>Variable</th>
<th>Questionnaire</th>
<th>Study Wave</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Adolescent (In-Home)</td>
<td>Wave II</td>
</tr>
<tr>
<td>Age</td>
<td>Adolescent (In-Home)</td>
<td>Wave II</td>
</tr>
<tr>
<td>Grade</td>
<td>Adolescent (In-Home)</td>
<td>Wave II</td>
</tr>
<tr>
<td>Race</td>
<td>Adolescent (In-Home)</td>
<td>Wave II</td>
</tr>
<tr>
<td>Sexual orientation (i.e., attraction and behavior)</td>
<td>Adolescent (In-Home)</td>
<td>Wave II</td>
</tr>
<tr>
<td>Prior depressive symptoms</td>
<td>Adolescent (In-Home)</td>
<td>Wave I</td>
</tr>
<tr>
<td>Parent-adolescent relationship</td>
<td>Adolescent (In-Home)</td>
<td>Wave II</td>
</tr>
<tr>
<td>Perceived school connectedness</td>
<td>Adolescent (In-Home)</td>
<td>Wave II</td>
</tr>
<tr>
<td>Perceived teacher support</td>
<td>Adolescent (In-Home)</td>
<td>Wave II</td>
</tr>
<tr>
<td>Harshness of discipline policies</td>
<td>School Administrator</td>
<td>Wave I</td>
</tr>
<tr>
<td>Presence of mental health &amp; social services</td>
<td>School Administrator</td>
<td>Wave I</td>
</tr>
<tr>
<td>School-level socioeconomic status</td>
<td>Parent (In-Home)</td>
<td>Wave I</td>
</tr>
<tr>
<td>School size</td>
<td>School Administrator</td>
<td>Wave I</td>
</tr>
<tr>
<td>School type</td>
<td>School Administrator</td>
<td>Wave I</td>
</tr>
<tr>
<td>School location</td>
<td>School Administrator</td>
<td>Wave I</td>
</tr>
<tr>
<td>Depressive symptoms</td>
<td>Adolescent (In-Home)</td>
<td>Wave II</td>
</tr>
</tbody>
</table>

Data Collection

To protect the identities of participants a rigorous security system prevents anyone from being able to link a respondent’s answers to a name or other identity (Harris & Udry, 2008). Identification numbers were used to collect data and are not used for data distribution (Harris & Udry, 008). At the same time, the security system allows researchers to link questionnaires across all components of the study. The school administrator questionnaire was administered with paper and pencil instrument (Harris & Udry, 2008). The in-home adolescent questionnaires were administered using a Computer-Assisted Personal Interview (CAPI)/Audio Computer-Assisted Self Interview
(ACASI) (Harris & Udry, 2008). Sections with more sensitive questions were asked in
the self-administered portion of the interview (Harris & Udry, 2008). The parent
questionnaire was administered at the same time as the in-home adolescent questionnaire
at Wave I and was collected via a 30-minute interviewer-assisted instrument (Harris,
2005).

**Control Variables: Individual-level.**

**Age.**

Age was computed by subtracting students’ self-reported birth date from the date
of the interview. Ages ranged from 11-23 years old.

**Grade.**

Student grade was self-reported as 6th, 7th, 8th, 9th, 10th, 11th or 12th grade.

**Gender.**

Gender was self-reported as male, female, or refused.

**Prior depressive symptoms.**

Prior depressive symptoms were assessed with 19 items from the widely used and
validated Center for Epidemiologic Studies-Depression Scale (CES-D; Radloff, 1977).
The CES-D is a 20-item self-report scale which measures the current level of depressive
symptomatology in the general population, with an emphasis on depressed mood during
the past week (Radloff, 1977). The CES-D incorporates the main symptoms of depression
and was derived from five validated depression scales including the Beck Depression
Inventory (BDI). It was validated in adolescent populations and has good test-retest
reliability (Ensel, 1986; Radloff, 1991). Example items include, “I was bothered by
things that usually don’t bother me,” “I felt that I could not shake off the blues even with
help from my family or friends,” and “I felt depressed.” Participants’ responses were
based on how frequently in a seven day period they experienced a particular symptom. Response categories were: 0 (rarely or none of the time; less than 1 day, 1 (some or a little of the time; 1-2 days), 2 (occasionally or a moderate amount of time; 3-4 days), and 3 (most or all of the time; 5-7 days). Four positively worded items (e.g., “You felt you were just as good as other people”) were reverse scored so a higher number represented greater depressive symptoms. Response categories, “refused” and “don’t know” were re-coded as missing.

The Add Health study used an investigator-adapted CES-D, with 19 items, rather than the standard 20 (Crocket et al., 2005). The Add Health version does not ask about trouble sleeping or crying spells but added a question asking whether the respondent thinks life is not worth living (Chan et al., 2004). To make the score more comparable to results from other studies using 20 CES-D items, the CES-D score was calculated by summing the individual item responses, dividing by 19, and then multiplying by 20 (McDowell & Newell, 1996; Williams, 2009). Scores ranged from 0 to 57, with higher scores indicating greater depression. CES-D scores of 16 to 26 are considered indicative of mild depression and scores of 27 or more are indicative of major depression (Zich et al., 1990). For the study sample, the items had an excellent internal consistency reliability score of $\alpha = .87$.

*Control Variable: Microsystem level.*

*Parent-adolescent relationships.*

Parent-adolescent relationships were operationalized with 8 items assessing the adolescent’s perceptions of his/her closeness with his/her residential mother and father (e.g., the parental figures who reside in the adolescent’s household) (Cornwell, 2003; Harker, 2001; Needham et al., 2008). The items were devised by the Add Health
investigators. Sample items include: “How close do you feel to your mother/father?” and “Most of the time your mother/father is warm and loving toward you.” The items were scored on a 5-point Likert scale with responses from 1 (not at all) to 5 (very much), and from 1 (strongly agree) to 5 (strongly disagree). Response categories “refused”, “legitimate skip”, and “don’t know” were re-coded as missing. Four items were reverse coded so a higher number indicated a stronger parent-adolescent relationship. If an observation was missing responses on maternal items, their composite score represents responses to paternal items (Cornwell, 2003; Needham et al., 2008). If an observation was missing responses on paternal items, the composite score represents responses to maternal items (Cornwell, 2003; Needham et al., 2008). If an observation did not have completed responses for either the maternal or paternal items, the observation was considered missing. For the study sample, the items had an internal consistency reliability score of $\alpha=.83$. The item responses were summed and averaged to create a composite score.

**Moderating Variables: Individual-level**

**Race.**

Race was self reported as Non-Hispanic white, Hispanic, Black or African American, Asian or Pacific Islander, American Indian or Native American, and other.

**Sexual minority status.**

Defining sexual orientation is a challenge. Currently, there is no consensus among researchers on how to adequately define and measure sexual orientation (Russell, 2006). Most researchers agree that sexual orientation is comprised of three dimensions, sexual attraction (i.e., to whom are you attracted), sexual behavior (i.e., with whom do you have
sex), and self-identity (i.e., how do you describe your sexual orientation) (Himmelstein & Bruckner, 2011).

Measuring sexual orientation is also challenging. Recent studies used sexual attraction as the sole measure of sexual minority status (Hatzenbuehler et al., 2008) while other studies employed three dimensions of sexual minority status (e.g., attraction, behavior, and identity) (Himmelstein & Bruckner, 2011), and still others used sexual attraction and sexual behavior as indicators of sexual minority status (Williams, 2009). Despite the diversity in measurement, researchers commonly agree on a broad approach to measure sexual orientation.

Such diversity is critical due to a lack of congruence among responses. Adolescents will often offer a variety of answers to each dimension of sexual minority status (Himmelstein & Bruckner, 2011). For instance, youth who report a same-sex attraction may not identify as gay, lesbian, or bisexual and those who engage in same-sex sexual activity may not identify as gay or admit to a same-sex attraction (Savin-Williams, 2005). Because youth who have a same-sex attraction are at increased risk for psychological distress (Williams, 2009), it is a critical aspect of sexual orientation to consider. Studies that include only measures of sexual behavior or identity will exclude potentially at-risk groups of sexual minority youth (Saewyc, Bauer, et al., 2004; Williams, 2009). Similarly only measuring identity and sexual attraction may exclude youth who engage in same-sex sexual relationships and/or behavior (Saewyc, Bauer, et al., 2004; Williams, 2009).

Although individuals may label or identify themselves as gay or lesbian in adulthood, many gay adults report same sex attraction or behavior as an adolescent
(Frankowski, 2004; Savin-Williams, 1988). Therefore, when studying adolescents it is reasonable to ask about sexual attraction and behavior to operationalize sexual orientation. For the current study, sexual minority status was measured with items on sexual attraction (i.e., desires) and behavior (i.e., sexual activities that involve physical contact), which are both commonly recognized components of sexual orientation (Igartua et al., 2009; Savin-Williams, 2006).

To measure sexual attraction, participants were asked, “Have you ever had a romantic attraction to a male?” and “Have you ever had a romantic attraction to a female?” Respondents who reported an attraction to a person of their own gender were considered to have experienced same-sex attraction. To measure sexual behavior, participants were asked to describe their romantic and sexual relationships, including their partners’ genders. Respondents who listed a same-sex romantic relationship were considered to have had a same-sex relationship. Respondents were also asked to report the gender of up to three individuals with whom they had a non-romantic sexual relationship. Those who indicated a same-sex non-romantic sexual relationship were considered to have had a same-sex relationship.

Responses on the sexual attraction and sexual behavior (romantic and non-romantic relationships) items were used to generate a sexual minority status variable. Youth who reported either a same sex attraction, having a same-sex romantic relationship or a same-sex nonromantic sexual partner were coded “yes” for the variable sexual minority. This manner of measuring sexual minority status is consistent with other recent studies utilizing the Add Health data (Williams, 2009; Williams & Chapman, 2011).
Independent Variables: Microsystem level.

Perceived school connectedness.

Like past studies on school connectedness (Bonny, Britto, Klostermann, Hornung, & Slap, 2000; Faulkner, Adlaf, Irvin, Allison, & Dwyer, 2009; Hall-Lande, 2007; McNeely et al., 2002), the current study conceptualized perceived school connectedness as an individual’s overall feelings of positive attitudes toward his/her school. As originally used in the Add Health data, school connectedness was a composite variable tapping multiple dimensions such as safety and belonging (Libbey, 2004).

For the current study, school connectedness was measured with five items, “I feel close to people at this school.” “I feel like I am part of this school,” “Students at your school are prejudiced,” “I am happy to be at this school,” and “I feel safe in my school.” The five items were scored on a five-point scale ranging from 1 (Strongly Agree) to 5 (Strongly Disagree). Response categories “refused,” “legitimate skip,” and “don’t know” were re-coded as missing. All of the items, except for “Students at your school are prejudiced” were reverse coded so higher scores reflect higher levels of perceived school connectedness. The items were then summed to create a composite score and averaged to create an average composite score. In prior studies, these five items demonstrate acceptable reliability and are predictive of lower levels of a variety of internalizing outcomes (Anderman 2002; McNeely et al., 2002). For the current study sample, the items had a good internal consistency reliability score of \( \alpha = .70 \).

Prior research has operationalized school connectedness with the above items in addition to one item assessing teacher support (Anderman, 2002; McNeely et al., 2002; Libbey, 2004). Given that the current study measured perceived teacher support as a separate construct, the item “The teachers at this school treat students fairly” was
removed from the scale. While teacher support is related to school connectedness, using the Add Health data, McNeely and Falci (2004) performed a principal components analysis and a confirmatory factor analysis to determine whether school connectedness items and the teacher support items comprised two separate factors or a single construct of school connectedness. The teacher support items loaded on a separate factor supporting the decision to separate the teacher items from the school connectedness measure (McNeely & Falci, 2004).

*Perceived teacher support.*

Consistent with prior research using the Add Health dataset, teacher support was defined as student perceptions of their relationships with teachers, including feeling cared about by teachers and getting along with teachers (McNeely & Falci, 2004). Three items were used to measure adolescents’ perceived teacher support.

The first question asked students to report how much they agree or disagree with the statement, "The teachers at your school treat students fairly." Response categories ranged from 1 (Strongly Agree) to 5 (Strongly disagree). This item was reverse coded so a higher score represented stronger perceived teacher support. A second question asked, "Since school started this year, how often have you had trouble getting along with your teachers?" The five response categories were 0 (never), 1 (just a few times), 2 (about once a week), 3 (almost every day), and 4 (every day). Responses to this question were also reverse-coded. The third question about teachers appeared in a different section of the survey that asked about how much different people in the adolescent’s life care about him or her. The question was, "How much do you feel that your teachers care about you?" The five response categories were 1 (not at all), 2 (very little), 3 (somewhat), 4 (quite a bit), and 5 (very much). Response categories “refused”, “legitimate skip”, and
“don’t know” were re-coded as missing. The items were then summed and averaged to create an average composite score. For the study sample, the items had a modest internal consistency reliability score of $\alpha=.61$.

*Control Variables: School-level*

*School size.*

School size is a critical control variable to include as it has implications for overall school climate and student connectedness (Finn & Voelkl, 1993). For instance, a smaller school size is positively associated with a more nurturing environment, greater minority student engagement (Finn & Voelkl, 1993), and higher school connectedness (McNeely et al., 2002). The size of the school was measured with one item asking the school administrator to indicate whether the school was small (1-400 students), medium (401-1000 students), or large (1001-4000 students).

*School type.*

Some aspects of school climate vary depending on the school type. For example, private school teachers tend to report more autonomy in their work, a greater sense of community within their schools, and more support from their principals (Anderson & Resnick, 1997; Bryk, Lee, & Holland, 1993; Choy, 1997). Public high school teachers report that their students have greater absenteeism and poorer attitudes toward learning (Choy, 1997). School type was measured with one item asking whether the school was public or private.

*School location.*

School location referred to whether the school was urban, suburban, or rural. The urban/suburban/rural designation comes from the QED Education database. The literature reveals differences in school climate across school locations. Rates of student
victimization (George & Thomas, 2000), school policy and environment scores (Brener, Jones, Kann, & McManus, 2003), and the quality of the school facilities (Goodman et al., 2003) may vary depending on the location of the school. Further, urban schools may have fewer resources to offer additional services to students (Weist et al., 2000). School location was measured with one item asking whether the school was urban, suburban, or rural.

Independent Variables: Exosystem level.

Harshness of school discipline policies.

Like past studies utilizing the Add Health dataset, the harshness of school discipline policies was conceptualized as the severity of punishment for the first occurrence of an infraction (McNeely et al., 2002). The infractions ranged from relatively common, nonviolent infractions (e.g., cheating; smoking) to severe offenses (e.g., injuring another student; carrying a weapon). A discipline composite score consisting of the mean discipline policy for 12 infractions was used. The discipline composite score for each school was determined by averaging the school administrator’s responses to how the school handles the first offense of each infraction. For each infraction, the response categories included 1 (no policy); 3 (verbal warning); 4 (minor action); 5 (in-school suspension); 6 (out-of-school suspension); and 7 (expulsion). The response category “99” represented school administrators who provided multiple responses. The paper surveys are destroyed so there is no way of knowing what these responses were (J. Tabor, Fall 2012, personal communication); therefore this response was re-coded as missing. Discipline policy composite scores ranged from 1 to 7 with higher scores representing harsher discipline policies. For the study sample, the items had a good internal consistency reliability score of $\alpha = .71$. 
Presence of mental health and social service programs.

The presence of mental health and social services in a school was conceptualized as the number of non-academic programs offered in the school. The presence of mental health and social services was measured with one item, “For each of the following health-related services, please indicate whether it is provided at your school, is provided by your school district but not at your school, referred to other providers, or neither provided nor referred.” The list includes 18 mental health and social service programs such as drug awareness and resistance, emotional counseling, rape counseling, physical violence programs, family planning and nutrition and weight loss, and daycare for children of currently enrolled students. Response categories included 1 (provided at your school), 2 (by your school district), 3 (referred to other providers), or 4 (neither provided nor referred). The response category “provided at your school” remained coded as “1.” Since this variable referred to programs offered at the school, the responses, “by your school district”, “referred to other providers”, and “neither provided nor referred” were re-coded as 0. The response category “99” indicated the school administrator provided multiple responses. As already mentioned, since the paper surveys are destroyed, there is no way of knowing what these responses were, so an item with multiple responses was coded as missing (J. Tabor, Fall 2012, personal communication). The presence of mental health and social services, then, is a count of programs offered at the school, as reported by the school administrator. Scores ranged from 0 to 18.

Independent Variable: Macrosystem level.

School socioeconomic status.

Individual family socioeconomic status was measured with one item on the parent questionnaire, “About how much total income, before taxes, did your family receive in
1994?” Since Add Health selected a random sample of students from each school for the in-home interview, the responses should reflect reasonably well the overall school population (Goodman et al., 2003). School-level socioeconomic status was calculated as the median household income of the students drawn from that particular school.

Dependent Variable: Individual-level.

Depression.

Depressive symptoms at Wave II were measured with the Add Health revised version of the CES-D (Radloff, 1977) described previously.

Scale Statistics

Nunnally (1978) suggests a value of .70 as the lower acceptable bound for alpha; however it is not unusual to see published scales with lower alphas. Devellis (2003) identified .70 and .80 as respectable and between .80 and .90 as very good. All individual scale items and descriptive statistics for both the weights only sample (N=13,568) and the final sample (N=9,524) are provided in Table 20 (Appendix B). The depression and parent-adolescent relationship items had very good reliability with internal consistency reliability scores of .86 and .83 respectively. The school connectedness items had respectable reliability with internal consistency reliability score of .70. The teacher support items had questionable reliability with internal consistency reliability score of .63. Other researchers have referred to this as “modest” reliability (McNeely & Falci, 2004). The lower reliability is likely because two scale items addressed students’ individual relationship with their teachers whereas the third item asked how teachers treat all students in the school (McNeely & Falci, 2004). The small number of items (3) could have also impacted the lower reliability (DeVellis, 2003).
All school scale items and descriptive statistics for both the full school sample and the final sample are provided in Table 21 (Appendix C). The discipline policy items had marginally acceptable reliability with an internal consistency reliability score of .69. In this instance, the lower reliability could be attributed to the lack of variability in disciplinary responses to the more serious violations such as injuring another student or carrying a weapon (McNeely, Nonnemaker, & Blum, 2002). The mental health and social service items had respectable reliability with an internal consistency reliability score of .73.

Research Design

The Add Health study is a longitudinal dataset with four waves of data collection spanning across several years from 1994-2008. The current study used two waves of data collection. Consequently, the current study employed a longitudinal, prospective research design.

Data Analysis

The data created two samples, one sample of individuals who were nested within a second sample of schools. There were N=13,568 youths who completed the Waves I and II in-home interview and were assigned sampling weights (Harris & Udry, 2008) and N=9,524 with complete responses on the study variables. These youths comprised the level 1 sample. The N=105 schools that participated in the Add Health study and had complete responses on the study variables comprised the level 2 sample. Therefore, multilevel linear modeling was used to answer the research questions.

Multilevel linear modeling was an appropriate technique for the current study for several reasons. Multilevel linear modeling is able to deal with the violation of the
assumption of independence of errors that occurs when individuals within groups (i.e., schools) share experiences (e.g., school environment) that may impact individual responses (Tabachnick & Fidell, 2007). Dependence of errors is measured with the intraclass correlation that compares differences between groups to individual differences within groups (Tabachnick & Fidell, 2007).

**Analysis Software**

All data manipulation and statistical analyses were performed using Stata 12. Stata 12 is survey software that is able to account for the complex sampling design in Add Health by incorporating sampling weights and design characteristics into all analyses (Chantala & Tabor, 2010). In the current study, the use of sampling weights accounted for the oversampling of special populations that occurred in the Add Health research design and allowed for nationally representative estimates. In addition, Add Health has survey design characteristics (i.e., clustering in schools), which were corrected for by statistical techniques in Stata 12 (Chantala & Tabor, 2010). The clustered data created observations that were no longer independent and identically distributed, so it was important to use software (i.e., Stata 12) that could account for the design effects. To do this, the replacement design type, the region stratum variable, the cluster variable (i.e., school id), and the Wave II grand sample weight variable were specified prior to moving forward with the analyses (Chantala & Tabor, 2010).

Means were weighted using the *svy mean* procedure, and regression models were tested using the *svy reg* procedure, clustering on school, correcting for sample weights used for Wave II of the in-home sample (because that is the most recent of the samples questioned in the current study), and by taking into account the region strata. It is critical
to account for both sampling and design effects as failing to do so could result in biased parameter and incorrect variance estimates (Chantala & Tabor, 2010).

Sample Weights

Wave II grand sample weights.

A Wave II grand sample weight was developed that can be used to analyze data from the Wave I and II samples at once (Tourangeau & Shin, 1999). This weight is based on the corresponding Wave I weight and incorporates an adjustment for Wave II non-response (Tourangeau & Shin, 1999). The Wave I combined weight was derived by summing the weights for each case across the different samples for which he or she was selected; this sum was then divided by the total number of samples for which the case was eligible (Tourangeau & Shin, 1999). The Wave II non-response adjustment was calculated separately for each sample school (Tourangeau & Shin, 1999). Grand sample weights accounted for the oversampling and allowed for nationally representative estimates.

Wave II individual and school-level weight components.

The Add Health data used a complex two-stage sampling design of first selecting a sample of schools within the United States and then selecting a sample of students within each school. The Add Health data provide individual and school-level weight components that are useful for constructing sampling weights that differ in meaning from the sampling weights (grand sample weights) designed for estimating population-average (single-level) models (Chantala, Blanchette, & Suchindran, 2011).

The level-two (i.e., school) weight component is the sampling weight computed for each school with adolescents participating in a specific round of Add Health data collection (Chantala, Blanchette, & Suchindran, 2011). Since all 132 schools had
participants in each of the three waves of data, only one level-two weight component for schools was needed for analyzing any combination of data from Wave I, Wave II, or Wave III (Chantala, Blanchette, & Suchindran, 2011). This weight estimates the number of schools in the United States represented by the school contributing participating adolescents (Chantala, Blanchette, & Suchindran, 2011).

The level-one (i.e., adolescent) weight component is a sampling weight for each adolescent who participated in the Wave II in-home interview (Chantala, Blanchette, & Suchindran, 2011). To compute the Wave II level-1 weight component, non-response adjustments were made to the Wave I level-weight components for sex by race (black/non-black) for adolescents attending each school (Chantala, Blanchette, & Suchindran, 2011). The level-one weight component for a particular adolescent interviewed at a specified wave represents the number of adolescents enrolled in that particular school for the 1994-1995 academic year who shared the same characteristics with the selected adolescent (Chantala, Blanchette, & Suchindran, 2011).

*Constructing multilevel sample weights.*

For the current study, the school and individual level weight components were used to compute multilevel weights using Stata 12 (Chantala, Blanchette, & Suchindran, 2011). Multilevel weights need to be constructed differently from sampling weights used for single-level models. Multilevel weights account for the unequal probability of sampling at both the individual and school-level (Chantala, Blanchette, & Suchindran, 2011). Therefore, analysts need to make sure the weights are scaled appropriately by using the reciprocals of the selection probabilities at each stage of sampling (Pfefferman, 1998). Although there is no agreed upon method for constructing multilevel weights, the most common methods are described by Pfefferman (1998) and Asparouhov (2004).
Using Stata, Pfefferman (1998) uses weight components from both stages of sampling to construct level-one and level-two sampling weights. Using MPLUS, Asparouhov (2004) combines the weight components from both stages of sampling to create one weight. Since Stata will be used for the current study, Pfefferman’s methods were selected over Asparouhov’s. Pfefferman (1998) describes two methods for computing multilevel weights. For sampling plans where the sampling of level 1 units (i.e., adolescents) is non-informative while the sampling of level 2 units is informative, weights constructed with Pfefferman’s first method is an appropriate choice. If the sampling is informative at both levels of sampling then weights constructed with Pfefferman’s second method is a better choice. A sampling process is informative if the probability of selecting a sampling unit is related to the outcome variable even after conditioning on the model covariates (Pfefferman, 1998). For the current study, there was an unequal probability of selection at both the individual and the school-level. In addition, one of the school-level characteristics, school size, is potentially related to depression, so the school-level sampling was determined to be informative and therefore Method 1 was used to create multilevel weights (Pfefferman, 1998).

The main statistical analyses were performed to answer the below research questions. The results are discussed in the next chapter.

**Research Questions**

1. To what extent is school climate (as conceptualized by perceived school connectedness, perceived teacher support, harshness of school discipline policies, the presence of mental health and social service programs, and school socioeconomic status) associated with depressive symptoms in adolescents in the United States?
a. To what extent are perceived school connectedness and perceived teacher support associated with depressive symptoms in adolescents in the United States?

b. To what extent are the harshness of school discipline policies, presence of mental health and social service programs, and school socioeconomic status, associated with depressive symptoms in adolescents in the United States?

2. To what extent does the association between school climate dimensions (i.e., perceived school connectedness, perceived teacher support, harshness of discipline policies, presence of mental health and social service programs, and school socioeconomic status) and depressive symptoms vary for racial and sexual minority youth compared to majority youth?
CHAPTER 4

Results

This chapter discusses the missing data analysis, identifies the assumptions of multilevel modeling and how the assumptions were tested, and reviews the findings from the main analyses.

Missing Data Analysis

Missing data is a pervasive problem in data analysis, especially with survey data (Tabachnick & Fidell, 2007). Prior to proceeding with the main analyses the missing data were examined. The seriousness of the missing data problem depends on how much data is missing and why it is missing (Tabachnick & Fidell, 2007, p. 62). There are three types of missing data.

Data can be “Missing Completely at Random” (i.e., MCAR). When data are MCAR, missing observations are no different from non-missing observations, in terms of the analysis being performed (Tabachnick & Fidell, 2007; Wayman, 2003). These observations can be thought of as randomly missing from the data. In this instance, the primary downside in failing to account for missing data is loss of sample size and power (Tabachnick & Fidell, 2007; Wayman, 2003). Second, data can be “Missing at Random” (i.e., MAR). In this case, missing data depends on known values and thus are described fully by variables observed in the data set. In this case, accounting for the variables which are believe to “cause” the missing data will produce unbiased results in an analysis (Tabachnick & Fidell, 2007; Wayman, 2003). Third, data can be missing in an unmeasured fashion called “Missing Not at Random” (i.e., MNAR) (Tabachnick & Fidell, 2007; Wayman, 2003). In this case, the missing data depends on variables which
the researcher has not measured. This is the most concerning type of missing data (Tabachnick & Fidell, 2007).

Little’s MCAR test looks to see if any observed variables are predictive of the change of other variables being missing (Little, 1988). Little’s MCAR test determines if the missing value is MCAR or MAR (Little, 1988). The null hypothesis is the missing data is MCAR (Little, 1988). A missing values analysis (MVA) was performed using SPSS 19.0 Missing Values Analysis Module to assess the extent and pattern of missing data for individual item responses. Little’s MCAR test was significant ($\chi^2=2184.75$, df=311, $p=.000$) suggesting the data were not missing completely at random (MCAR). Therefore, the data were either missing at random (MAR) or missing not at random (MNAR).

Results of the MVA showed the majority of the individual variables were missing almost no data (i.e., <1% of all cases), while the parent-adolescent relationship composite score was missing slightly more data (3%). These amounts of missing data are acceptable and do not require further parameter estimation or data imputation techniques (Tabachnick & Fidell, 2007). The number of true missing responses to the perceived school connectedness and perceived teacher support items were less than 1% for each item. However, perceived school connectedness and perceived teacher support composite scores could not be calculated for 1,349 adolescents as these adolescents were not in school at the time of the Wave II in-home interview and therefore skip patterns directed the interviewer not to ask questions in relation to the adolescents’ school experiences. The majority of these adolescents were not in school because they either graduated (n=461; 3%) or dropped out (n=407; 2.7%); smaller numbers of adolescents were not in
school because of suspension (n=30), expulsion (n=99), illness/injury (n=29), being on leave (n=29), pregnancy (n=64), or other (n=235). These data are considered MAR as the missing can be accounted for by another variable in the data asking individual respondents whether or not they are in school.

Parent reported family income had the largest number of missing responses (N=3,154; 23%) and therefore had to be addressed. Multiple imputation improves the quality of results and ease of use, produces unbiased parameter estimates, is robust to departures from normality assumptions and provides adequate results in the presence of high rates of missing data, and produces estimates that are more representative of the population than other methods (Wayman, 2003). Given the advantages, multiple imputation was used to address the missing income responses.

In multiple imputation, existing values are used to predict missing values (Wayman, 2003). The predicted values, ‘imputes,’ then take the place of the missing values, creating a full data set called an ‘imputed data set’” (Wayman, 2003, p. 4). This process is performed several (i.e., multiple) times (Wayman, 2003). Predictor variables are often selected because they are correlated with the missing variable and help preserve relationships in the data (Wayman, 2003). Multiple imputation accounts for missing data by restoring not only the natural variability in the missing data, but also by incorporating the uncertainty caused by estimating missing data (Wayman, 2003). Maintaining the original variability of the missing data is done by creating imputed values which are based on variables correlated with the missing data and causes of missingness (Wayman, 2003). Uncertainty is accounted for by creating different versions of the missing data and observing the variability between imputed data sets (Wayman, 2003).
Using the Stata 12 multiple imputation command, mi predictive mean matching (pmm), school-level income (i.e., median school income) was used to predict the missing income values. Prior research indicates 3 to 10 imputed data sets are necessary to obtain reliable estimates (Wayman, 2003). Therefore, this process was performed 5 times producing 5 imputed data sets. Predictive mean matching is a method of imputation that produces imputed values in the order of the observed values for the income variable. The observed values for the income variable ranged from 0 to 999 (in thousands).

A missing values analysis (MVA) was also performed on the school administrator dataset. Results of the MVA showed 12 school administrators (9%) did not complete items on the mental health and social services items and 19 school administrators (14%) did not complete discipline policies items. This means that the school administrator accidentally or intentionally left the items unanswered. The Little’s MCAR test was not significant ($\chi^2=1.26, \text{df}=2, p=.532$) suggesting the data were missing completely at random. Deletion of cases is relatively safe when the missing values do not depend on other values as is the case in this situation so listwise deletion was exercised for the missing cases.

Assumptions

Multilevel modeling is an extension of multiple linear regression; therefore the limitations and assumptions of multiple linear regression apply to all levels of analysis (Tabachnick & Fidell, 2007). Assumptions regarding normality of variables, normality of residuals, and homoscedasticity were checked. In addition to assumptions, when employing multilevel modeling, additional practical considerations include sample size
and multicollinearity (Tabachnick & Fidell, 2007). These issues were also addressed and discussed.

**Normality of variables.**

Each key study variable was checked for normality. See Table 8 for the skewness and kurtosis values. Different statistical packages calculate somewhat different statistics for kurtosis. Using Stata 12 calculations, a normal distribution has a skewness of 0 and a kurtosis of 3. Perceived school connectedness, perceived teacher support, total mental health and social services and harshness of discipline policies were approximately normally distributed. The parent-adolescent relationship composite was negatively skewed so in order to correct this, the parent-adolescent relationship score was reflected (Note: A new variable was created that represented 6 minus the parent-adolescent relationship score) to be positively skewed and then a log transformation of the reflected parent-adolescent relationship score was performed (Tabachnick & Fidell, 2007). This resulted in a skewness of .43 and a kurtosis of 2.6 so the parent-adolescent relationship scores were more normally distributed following the transformation. The median school-level income variable was positively skewed so a log transformation was performed which resulted in a skewness of -.33 and a kurtosis of 3.0 so the median school-level income variable was more normally distributed. The depression scores at Waves I and II were also log transformed and were subsequently more normally distributed with a skewness of -.86 and -.86 and kurtosis of 3.5 and 3.4 respectively. The transformed variables were used for the bivariate analyses. However, with grouped data, normality is determined by the sampling distribution of means, not the distribution of scores (Tabacknick & Fidell, 2007). The distribution of means was approximately normally distributed for the parent-adolescent relationship (skewness=.32; kurtosis=2.4),
depression score at Wave I (skewness= -.15; kurtosis=2.7), and the depression score at Wave II (skewness= -.06; kurtosis=2.5). Thus, the untransformed variables were used in the multilevel analysis.

Table 8. Skewness and Kurtosis Values for Key Study Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression Wave I</td>
<td>1.0</td>
<td>4.6</td>
</tr>
<tr>
<td>Depression Wave II</td>
<td>1.0</td>
<td>4.5</td>
</tr>
<tr>
<td>Parent-Adolescent Relationship</td>
<td>-1.3</td>
<td>5.4</td>
</tr>
<tr>
<td>Perceived School Connectedness</td>
<td>-0.5</td>
<td>3.2</td>
</tr>
<tr>
<td>Perceived Teacher Support</td>
<td>-0.6</td>
<td>3.3</td>
</tr>
<tr>
<td>Presence of Mental Health and Social Services</td>
<td>0.6</td>
<td>3.1</td>
</tr>
<tr>
<td>Harshness of Discipline Policies</td>
<td>-0.9</td>
<td>3.9</td>
</tr>
<tr>
<td>Median School Income</td>
<td>1.0</td>
<td>5.4</td>
</tr>
</tbody>
</table>

Normality of residuals.

One of the major assumptions of the tests of significance used in the multilevel programs is normality of the error distributions (Maas & Hox, 2004). In multilevel models the estimated level-2 and level-1 residuals have normal sampling distributions if the model is true. Histograms can be checked for normality (Rabe-Hesketh & Skrondal, 2008). Histograms for the individual predictors only, the full model, and the full model with interactions variables of the estimated residuals were constructed to assess the assumption that the residuals are normally distributed. In a histogram, the distribution should be bell-shaped if the normality assumption is met. Figures 4 and 5 (Appendix D) illustrate the distributions of the level-1 and level-2 standardized residuals for the model with only individual predictors. Both histograms were approximately normally distributed. Figures 6 and 7 (Appendix E) illustrate the distributions of the level-1 and
level-2 standardized residuals for the full model. Both histograms were approximately normally distributed. Figures 8 and 9 (Appendix F) illustrate the distributions of the level-1 and level-2 standardized residuals for the full model with the interaction variables. Both histograms were approximately normally distributed.

*Homogeneity of variance.*

In grouped data, homogeneity of variance refers to the assumption that variability in the outcome variable, in the current study depression, is expected to be about the same at all levels of the grouping variable, schools (Tabachnick & Fidell, 2007). Levene’s test of homogeneity of variance tests the null hypothesis that multiple population variances are equal (Levene, 1960). The test is a one-way ANOVA on absolute deviations for each group (Levene, 1960). The Levene’s test yielded a t statistic of 1.6527406, df (104, 9419), p = 0.00003649; and thus the null hypothesis of equal variances was rejected and it was concluded that there is a difference between the variances in the schools. Multilevel models, however, are robust to violations of homogeneity of variance (Quene & van den Bergh, 2004; Tabachnick & Fidell, 2007).

*Multicollinearity.*

Multicollinearity occurs when predictors are highly correlated. Perceived school connectedness and perceived teacher support were the most highly correlated variables ($r=0.46$). See Table 15 for a correlation matrix of the key study variables. Multicollinearity can potentially lead to failing to detect significance of the main effects or a failure of the model to come together on a solution (Tabachnick & Fidell, 2007). The Variance Inflation Factor (VIF) is a numerical indicator of multicollinearity and is a measure of how much the variance of an estimated regression coefficient increases if the explanatory variables are correlated (Cohen, Cohen, West, & Aiken, 2003). When there is no
multicollinearity, VIF=1. Researchers suggest different cutoff values to indicate whether or not multicollinearity is a problem. Kutner, Nachtsheim, and Neter (2004) suggest that a VIF of 5 or greater suggests problematic multicollinearity, while a common rule of thumb is that any VIF of 10 or more provides evidence of serious multicollinearity (Cohen et al., 2003). Using the conservative cutoff values for the current study, examination of VIF values showed that multicollinearity was not a threat as all VIF values were < 2.

Sample size.

The current study is comprised of 105 level-2 groups. Accurate group level variance estimates can be obtained from at least 100 groups (Hox, 2002). Simulation studies find downwardly biased standard errors if the number of groups is less than fifty (Hox, 2002). The number of students per school ranges from a minimum of 19 students to a maximum of 1,151 students with an average of 102 students per school. For accuracy and high power, simulation studies suggest a large number of groups appear to be more important than a larger number of individuals per group (Hox, 2002; Tabachnick & Fidell, 2007). Given the level-two sample is comprised on 105 schools and the level-one sample size is quite large (N=9,524), power was believed to be sufficient for the analysis. A post hoc power analysis was not conducted as this is typically not recommended and believed to be flawed (Hoenig & Heisey, 2001; Levine & Ensom, 2001).

Descriptive Statistics

The current study analyzed the in-home Wave II sample that had valid sampling weights, participated in the Wave I in-home interview, and had completed responses on the key study variables. Table 9 provides the individual sample demographic characteristics for the full Wave II sample (N=14,738), the weights only Wave II sample
(N=13,568), and the final sample (N=9,524). The final sample was fairly evenly divided in terms of gender (48.1% male and 51.8% female). The sample was diverse in terms of race with 1.8% of the sample being Native American, 6.5% Asian American, 22.7% African American, and 16.5% Hispanic. Some ethnic minorities were oversampled. The majority of the sample was between the ages of 15 and 17. In terms of grade level, .6% of the sample was in the seventh grade, 16.6% was in the eighth grade, 16.8% was in the ninth grade, 20.1% was in the tenth grade, 23.7% was in the eleventh grade, and 21.7% was in the twelfth grade. In regards to sexual orientation, 5.3% of the sample reported a same-sex attraction, same-sex romantic relationship, or a same-sex non-romantic relationship while 94.6% reported opposite sex attractions and relationships.
Table 9. Individual Sample Demographic Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Full Wave II Sample N=14,738</th>
<th>Weights Only Sample N=13,568</th>
<th>Final Sample N=9,524</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7,182</td>
<td>48.7</td>
<td>6,605</td>
</tr>
<tr>
<td>Female</td>
<td>7,556</td>
<td>51.2</td>
<td>6,963</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-14</td>
<td>2,609</td>
<td>17.7</td>
<td>2,357</td>
</tr>
<tr>
<td>15-17</td>
<td>8,632</td>
<td>58.6</td>
<td>8,003</td>
</tr>
<tr>
<td>18 and older</td>
<td>3,497</td>
<td>23.7</td>
<td>3,208</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>152</td>
<td>1.0</td>
<td>76</td>
</tr>
<tr>
<td>8th</td>
<td>2,134</td>
<td>14.5</td>
<td>1,974</td>
</tr>
<tr>
<td>9th</td>
<td>2,240</td>
<td>15.2</td>
<td>2,044</td>
</tr>
<tr>
<td>10th</td>
<td>2,653</td>
<td>18.0</td>
<td>2,455</td>
</tr>
<tr>
<td>11th</td>
<td>3,003</td>
<td>20.4</td>
<td>2,807</td>
</tr>
<tr>
<td>12th</td>
<td>2,760</td>
<td>18.7</td>
<td>2,628</td>
</tr>
<tr>
<td>Beyond High School</td>
<td>374</td>
<td>2.5</td>
<td>332</td>
</tr>
<tr>
<td>School Doesn't Have Grades of This Kind</td>
<td>73</td>
<td>0.5</td>
<td>65</td>
</tr>
<tr>
<td>Not in School</td>
<td>1,349</td>
<td>9.2</td>
<td>1,187</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White/Non-Hispanic</td>
<td>7,573</td>
<td>51.4</td>
<td>7,051</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2,487</td>
<td>16.8</td>
<td>2,298</td>
</tr>
<tr>
<td>Black</td>
<td>3,244</td>
<td>22.0</td>
<td>2,893</td>
</tr>
<tr>
<td>Asian</td>
<td>1,004</td>
<td>6.8</td>
<td>946</td>
</tr>
<tr>
<td>Native American</td>
<td>274</td>
<td>1.9</td>
<td>247</td>
</tr>
<tr>
<td>Other</td>
<td>143</td>
<td>0.97</td>
<td>124</td>
</tr>
<tr>
<td><strong>Sexual Orientation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual Minority</td>
<td>790</td>
<td>5.3</td>
<td>722</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>13,894</td>
<td>94.6</td>
<td>12,796</td>
</tr>
</tbody>
</table>

*Note:* Percentages may not total to one-hundred due to rounding.

Table 10 provides the descriptive statistics for the key study variables for the full Wave II, the weights only Wave II sample, and the final sample. The weighted Wave II and final sample means were grand sample weighted. Weights were not available for the
full Wave II sample (N=14,738); therefore the scores are not weighted. The different samples had nearly identical means for the parent-adolescent relationship score, perceived school connectedness, and perceived teacher support. The final sample had a mean Wave I and Wave II depression scores of 11.0. Based on early studies of the CES-D, a score of 16 to 26 is indicative of mild depression while scores of 27 or more point to major depression (Zich et al., 1990). Given these cut-off scores, on average, the study sample reported experiencing minimal depressive symptoms in the 7 days prior to completing the Add health survey. The final sample reported mean scores of 3.5 for perceived school connectedness and 3.7 for perceived teacher support. The middle scores for perceived school connectedness and perceived teacher support were 3, so these scores equate to slightly above average perceptions of school connectedness and teacher support.
Table 10. Descriptive Statistics for Key Individual-Level Study Variables

<table>
<thead>
<tr>
<th>Key Individual-Level Study Variables</th>
<th>Full Wave II Sample N=14,738</th>
<th>Weights Only Sample N=13,568</th>
<th>Final Sample N=9,524</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Depression Score (Wave I)</td>
<td>11.9 ± 7.9</td>
<td>11.5 ± 7.9</td>
<td>11.0 ± 7.8</td>
</tr>
<tr>
<td>Mean Depression Score (Wave II)</td>
<td>11.8 ± 7.9</td>
<td>11.4 ± 7.9</td>
<td>11.0 ± 7.8</td>
</tr>
<tr>
<td>Mean Parent-Adolescent Relationship Composite Score</td>
<td>4.3 ± .59</td>
<td>4.3 ± .59</td>
<td>4.3 ± .59</td>
</tr>
<tr>
<td>Mean Perceived School Connectedness Composite Score</td>
<td>3.5 ± .70</td>
<td>3.5 ± .71</td>
<td>3.5 ± .73</td>
</tr>
<tr>
<td>Mean Perceived Teacher Support Composite Score</td>
<td>3.7 ± .74</td>
<td>3.7 ± .75</td>
<td>3.7 ± .77</td>
</tr>
</tbody>
</table>

*Note:* Ranges of possible scores for each study variable are as follows: depression (0-57), parent-adolescent relationship (1-5), school connectedness (1-5), and teacher support (1-5). For depression, higher scores indicate an increase in depressive symptoms. For all other variables, high scores indicate a stronger relationship.
The current study analyzed data from school administrators who completed the Wave I school administrator questionnaire. Table 11 illustrates the descriptive statistics for the school sample demographic characteristics for the full sample of schools (N=132) and the final school sample (N=105). The final school sample was very similar to the full school sample. The percentage of urban and rural schools in the sample was larger while the percentage of suburban schools was smaller. The biggest difference was the percentage of urban and rural schools in the sample increased while the percentage of suburban schools decreased. The schools included in the current study represented an array of characteristics. The schools included urban (32.3%), suburban (49.5%), and rural (18%) locations. An overwhelming majority of the schools were public (90.4%). In terms of school size, 23.8% of the schools were small (1-400 students), 45.7% were medium sized (401-1000 students), and 30.4% were large sized (1001-4000 students). School size was characterized by the Add Health investigators.

Table 11. School Sample Demographic Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Full School Sample (N=132)</th>
<th></th>
<th>Final School Sample (N=105)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td><strong>School Size</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small (1-400)</td>
<td>31</td>
<td>23.3</td>
<td>25</td>
<td>23.8</td>
</tr>
<tr>
<td>Medium (401-1000)</td>
<td>61</td>
<td>46.2</td>
<td>48</td>
<td>45.7</td>
</tr>
<tr>
<td>Large (1001-4000)</td>
<td>40</td>
<td>30.3</td>
<td>32</td>
<td>30.4</td>
</tr>
<tr>
<td><strong>School Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>120</td>
<td>90.9</td>
<td>95</td>
<td>90.4</td>
</tr>
<tr>
<td>Private</td>
<td>12</td>
<td>9</td>
<td>10</td>
<td>9.5</td>
</tr>
<tr>
<td><strong>School Location</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>40</td>
<td>30.3</td>
<td>34</td>
<td>32.3</td>
</tr>
<tr>
<td>Suburban</td>
<td>73</td>
<td>55.3</td>
<td>52</td>
<td>49.5</td>
</tr>
<tr>
<td>Rural</td>
<td>19</td>
<td>14.4</td>
<td>19</td>
<td>18</td>
</tr>
</tbody>
</table>

*Note: Percentages may not total to one-hundred due to rounding.*
Table 12 provides the descriptive statistics for the key school-level study variables. The mean discipline policy composite score was 5.8. According to McNeely and colleagues (2002) this score is considered to represent moderate discipline policies. On average the schools reported having 4-5 mental health and social service programs present at the school. The average median school-level income was 38.2 (in thousands).

Table 12. Descriptive Statistics for Key School-Level Study Variables

<table>
<thead>
<tr>
<th>Key School-Level Study Variables</th>
<th>Full School Sample (N=132)</th>
<th>Final School Sample (N=105)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Discipline Policy Composite Score</td>
<td>5.8 0.33</td>
<td>5.8 0.33</td>
</tr>
<tr>
<td>Mean Number of Mental Health and Social Services Present at School</td>
<td>4.6 2.8</td>
<td>4.6 2.8</td>
</tr>
<tr>
<td>Median School-Level Income</td>
<td>39.1 16.4</td>
<td>38.2 14.9</td>
</tr>
</tbody>
</table>

*Note: Ranges of possible scores are as follows: presence of mental health and social services (0-18) and harshness of discipline policies (1-7) with higher scores indicating the presence of a greater number of mental health and social services on site at school and harsher discipline policies and median school income ($12,500-122,500)*

*Bivariate Statistics*

Table 13 shows the correlations among the key study variables. Depressive symptoms were negatively correlated with perceived school connectedness ($r = -.33$), perceived teacher support ($r = -.27$), and median school income ($r = -.08$). The higher perceived school connectedness score, perceived teacher support score, or median school income, the lower the depressive symptoms. Depressive symptoms were positively
correlated with both harshness of discipline policies ($r = .03$) and the presence of mental health and social services ($r = .03$).
Table 13. Correlations among Key Study Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Depression Score Wave II</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Perceived School Connectedness</td>
<td>-0.3306</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Perceived Teacher Support</td>
<td>-0.2695</td>
<td>0.4695</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Harshness of Discipline Policies</td>
<td>0.0334</td>
<td>-0.0300</td>
<td>-0.0414</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. School Median Income</td>
<td>-0.0847</td>
<td>0.0109</td>
<td>-0.0100</td>
<td>-0.1152</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>6. Presence of Mental Health and Social Services</td>
<td>0.0373</td>
<td>-0.0511</td>
<td>-0.0091</td>
<td>0.0921</td>
<td>0.0041</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Note: N=9,524
One key component of the current study was to investigate whether the relationship between school climate dimensions and depressive symptoms differed for racial and sexual minority youth compared to majority youth. A series of t-tests were computed to investigate whether racial and sexual minority youth differed from majority youth in depression scores and other key independent variables. The results are presented in Table 14.

There was a statistically significant difference between racial majority and minority youth, t (9524) = 59.70, p=0.00 as well as between sexual majority and minority youth t (9524) = 17.51, p=0.00 on depressive symptoms at Wave II. Racial (M=12.3) and sexual minority youth (M=13.5) had more depressive symptoms than majority youth. Racial minority youth did not significantly differ from majority youth on either perceived school connectedness, t (9524) = .03, p=.86 or perceived teacher support, t (9524) = 5.57 p=0.45 composite scores. However, sexual minority youth did significantly differ from majority youth on perceived school connectedness, t (9524) = 5.41, p=0.02 and parent-adolescent relationship, t (9524) = 5.50, p=0.02. There was not a statistically significant difference between racial and sexual minority youth and majority youth on either total mental health and social services or harshness of discipline policies. There was a statistically significant difference between racial minority and majority youth on median school income, t (-5.19) =, p=0.00. Racial majority youth were in schools with a higher median income (M=42.0) compared to racial minority youth (M=31.5). This difference was not evident for sexual minority youth.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Sexual Majority Youth (N=9,041)</th>
<th>Sexual Minority Youth (N=483)</th>
<th>t</th>
<th>P</th>
<th>Racial Majority Youth (N=4,893)</th>
<th>Racial Minority Youth (N=4,631)</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Depression Score (Wave I)</td>
<td>10.9</td>
<td>13.2</td>
<td>17.52</td>
<td>0.00</td>
<td>10.3</td>
<td>12.2</td>
<td>43.19</td>
<td>0.00</td>
</tr>
<tr>
<td>Mean Depression Score (Wave II)</td>
<td>10.9</td>
<td>13.5</td>
<td>17.51</td>
<td>0.00</td>
<td>10.3</td>
<td>12.3</td>
<td>59.70</td>
<td>0.00</td>
</tr>
<tr>
<td>Mean Parent-Adolescent Relationship Composite Score</td>
<td>4.3</td>
<td>4.2</td>
<td>5.50</td>
<td>0.02</td>
<td>4.3</td>
<td>4.3</td>
<td>0.79</td>
<td>0.37</td>
</tr>
<tr>
<td>Mean Perceived School Connectedness Composite Score</td>
<td>3.5</td>
<td>3.4</td>
<td>5.41</td>
<td>0.02</td>
<td>3.5</td>
<td>3.5</td>
<td>0.03</td>
<td>0.86</td>
</tr>
<tr>
<td>Mean Perceived Teacher Support Composite Score</td>
<td>3.7</td>
<td>3.6</td>
<td>1.25</td>
<td>0.26</td>
<td>3.7</td>
<td>3.7</td>
<td>0.57</td>
<td>0.45</td>
</tr>
<tr>
<td>Presence of Mental Health and Social Services</td>
<td>4.7</td>
<td>4.7</td>
<td>0.07</td>
<td>0.78</td>
<td>4.7</td>
<td>4.5</td>
<td>0.47</td>
<td>0.49</td>
</tr>
<tr>
<td>Harshness of Discipline Policies</td>
<td>5.8</td>
<td>5.8</td>
<td>0.01</td>
<td>0.91</td>
<td>5.7</td>
<td>5.8</td>
<td>1.00</td>
<td>0.32</td>
</tr>
<tr>
<td>Median School-Level Income</td>
<td>38.2</td>
<td>38.5</td>
<td>0.49</td>
<td>0.62</td>
<td>42.0</td>
<td>31.5</td>
<td>-5.19</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note: Ranges of possible scores for each study variable are as follows: depression (0-57), parent-adolescent relation (1-5), school connectedness (1-5), and teacher support (1-5). For depression higher scores indicate a greater number of depressive symptoms. For all other variables, high scores indicate stronger relationship.
A bivariate regression analysis was performed for each independent and control variable. This step was performed as it is important to first screen predictors for significance. If a variable is not significant in a bivariate regression, it is not necessary to include it in the multivariate analysis (Tabachnick & Fidell, 2007). The results are reported in Table 15. Table 15 illustrates the coefficients, standard errors, p-values, exponentiated regression coefficients, and \( x^y \). Since the outcome variable and three predictor variables were skewed, they were log transformed. In order to interpret the regression coefficients for a log transformed outcome variable, the regression coefficients were exponentiated. When both the outcome variable and the predictor variables were log transformed, as was the case for prior depressive symptoms, parent-adolescent relationship, and median school income, the effect of the log transformed predictor variable was computed by taking 1.10 raised to the power of the value of the regression coefficient (i.e., \( x^y \))

All individual level variables were significant predictors of depressive symptoms at Wave II. Depressive symptoms were 20% higher for females than for males. For a one unit (i.e., grade) increase in grade, there was a 3% increase in depressive symptoms. For a one unit (i.e., year) increase in age, there was a 5% increase in depressive symptoms. Depression was 27% higher for racial minority youth than for racial majority youth and 20% higher in sexual minority youth than sexual majority youth. For a one unit increase in perceived school connectedness, there was a 68% decrease in depressive symptoms. For a one unit increase in perceived teacher support, there was a 71% decrease in depressive symptoms. Of the school-level variables only median school income was significantly associated with depressive symptoms at Wave II. As median school income
decreased by 10%, there was expected to be a 98% increase in depressive symptoms 
\((1.10^B=1.10^{-0.1781}=0.9831)\).
Table 15. Bivariate Regression Results Predicting Depressive Symptoms at Wave II from each Independent Variable

<table>
<thead>
<tr>
<th></th>
<th>$B$</th>
<th>$SE$</th>
<th>$P$</th>
<th>$\exp(\beta)$</th>
<th>$x^y$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level-2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Size</td>
<td>0.0505</td>
<td>0.0285</td>
<td>0.079</td>
<td>1.0518</td>
<td></td>
</tr>
<tr>
<td>School Type</td>
<td>-0.0629</td>
<td>0.0611</td>
<td>0.305</td>
<td>0.9389</td>
<td></td>
</tr>
<tr>
<td>School Location</td>
<td>-0.0285</td>
<td>0.0264</td>
<td>0.283</td>
<td>0.9718</td>
<td></td>
</tr>
<tr>
<td>Presence of Mental Health and Social Services</td>
<td>0.008</td>
<td>0.0058</td>
<td>0.173</td>
<td>1.0081</td>
<td></td>
</tr>
<tr>
<td>Harshness of Discipline Policies</td>
<td>0.0768</td>
<td>0.055</td>
<td>0.165</td>
<td>1.0798</td>
<td></td>
</tr>
<tr>
<td>Median School Income</td>
<td>-0.1781</td>
<td>0.0375</td>
<td>0.000</td>
<td>0.9831</td>
<td></td>
</tr>
<tr>
<td><strong>Level-1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.1822</td>
<td>0.0256</td>
<td>0.000</td>
<td>1.1999</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.0513</td>
<td>0.0101</td>
<td>0.000</td>
<td>1.0527</td>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td>0.0313</td>
<td>0.0116</td>
<td>0.008</td>
<td>1.0318</td>
<td></td>
</tr>
<tr>
<td>Racial Minority</td>
<td>0.2378</td>
<td>0.0324</td>
<td>0.000</td>
<td>1.2685</td>
<td></td>
</tr>
<tr>
<td>Sexual Minority</td>
<td>0.2075</td>
<td>0.0655</td>
<td>0.002</td>
<td>1.2307</td>
<td></td>
</tr>
<tr>
<td>Prior Depression</td>
<td>0.5778</td>
<td>0.0176</td>
<td>0.000</td>
<td>1.0566</td>
<td></td>
</tr>
<tr>
<td>Parent-Adolescent Relationship</td>
<td>0.8171</td>
<td>0.0387</td>
<td>0.000</td>
<td>1.0809</td>
<td></td>
</tr>
<tr>
<td>Perceived School Connectedness</td>
<td>-0.3864</td>
<td>0.019</td>
<td>0.000</td>
<td>0.6794</td>
<td></td>
</tr>
<tr>
<td>Perceived Teacher Support</td>
<td>-0.3428</td>
<td>0.0173</td>
<td>0.000</td>
<td>0.7097</td>
<td></td>
</tr>
</tbody>
</table>
Multilevel Regressions

To answer research question one on the extent to which school climate dimensions impact depressive symptoms, multilevel mixed-effects linear regression (Stata 12; xtmixed command) was used because of the nested structure of the data. The analysis proceeded in three steps. First, the intraclass correlation (ICC), or between school variance in depressive symptoms was examined. Second, student-level predictors (i.e., perceived school connectedness, perceived teacher support) of depressive symptoms were examined. Third, school-level variables (i.e., median school income) were added to the model to examine school-level predictors of depressive symptoms. The appropriate multilevel weights were used in all multilevel analyses; therefore the results are generalizable to the population of adolescents in the United States. To answer the second research question on the extent to which the relationship between school climate dimensions and depressive symptoms varies for sexual and racial minority youth compared to majority youth, interaction terms were constructed and entered into the full model.

Intraclass correlation (ICC).

As a first step, the variance between schools in depressive symptoms was examined. For this step, depression was included in an intercepts only (i.e., null) model as the dependent variable with no predictors in the model (Tabachnick & Fidell, 2007). The estimated between school variance in depressive symptoms was 1.61199. The estimated within school variance was 58.03022. The intraclass correlation is calculated by dividing the between school variance by the sum of the between and within school variance (1.61199/1.61199 + 58.03022). Results indicated that approximately 3% of the variance in depressive symptoms was attributed to differences between schools.
To test the significance of the school effects, a likelihood ratio test comparing the null multilevel model with a null single-level model was performed (Leckie, 2010). To fit the null single-level model, the random school effect was removed. The likelihood ratio test statistic was calculated as two times the difference in the log likelihood values for the two models: $LR=2(-32912.92 - 33025.752) = 225.66$ on 1 degree of freedom because there was only one parameter difference between the models. Given that the 5% point of a chi-squared distribution on 1 degree of freedom is 3.84, there was evidence of school effects on depressive symptoms (Leckie, 2010). Therefore, a multilevel analysis was warranted.

*Individual-level model.*

To answer research question 1a, “On the individual level, to what extent are perceived school connectedness and perceived teacher support associated with depressive symptoms in adolescents in the United States?,” all individual level predictor variables were entered in the model. The results are presented in Table 16. Sexual minority youth have higher expected depressive symptoms compared to sexual majority youth ($\beta=.84; SE=.27; p<0.01$). Racial minority youth have higher expected depressive symptoms compared to racial majority youth ($\beta=.83; SE=.14; p<0.001$). With the exception of the grade variables, all individual level predictors were significantly associated with depressive symptoms at Wave II. Controlling for demographic characteristics, prior depressive symptoms, and parent-adolescent relationship score, both perceived school connectedness and perceived teacher support were significantly related to depressive symptoms at Wave II. A higher perceived school connectedness score corresponded to fewer expected depressive symptoms by 1.28 ($SE=0.1; p<0.001$). A higher perceived teacher support corresponded to fewer expected depressive symptoms by 0.84 ($SE=.09$; 190
For the individual predictors only model, the between school variance was 0.2861367 and the within school variance was 35.0560867. As a result, the intraclass correlation reduced from 3% to 0.008% (0.2861367/0.2861367 + 35.0560867) indicating a decrease in variance in depressive symptoms due to school-level factors so the individual predictors model is an improvement on the null model in explaining depressive symptoms.
Table 16. Individual Level Predictors of Depressive Symptoms Using the Wave II In-Home Survey and Wave I School Administrator Survey with Multilevel Weights

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\beta$</th>
<th>SE</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>13.7</td>
<td>2.1</td>
<td>0.000</td>
</tr>
<tr>
<td>Gender</td>
<td>0.64</td>
<td>0.12</td>
<td>0.000</td>
</tr>
<tr>
<td>Age</td>
<td>0.46</td>
<td>0.08</td>
<td>0.000</td>
</tr>
<tr>
<td>Grade 7</td>
<td>2.27</td>
<td>1.63</td>
<td>0.163</td>
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<td>1.44</td>
<td>1.46</td>
<td>0.324</td>
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<tr>
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<td>0.601</td>
<td>1.44</td>
<td>0.360</td>
</tr>
<tr>
<td>Grade 10</td>
<td>0.601</td>
<td>1.44</td>
<td>0.677</td>
</tr>
<tr>
<td>Grade 11</td>
<td>0.26</td>
<td>1.43</td>
<td>0.854</td>
</tr>
<tr>
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<td>1.44</td>
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<tr>
<td>Race Minority</td>
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<tr>
<td>Sexual Minority</td>
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<td>0.27</td>
<td>0.002</td>
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<tr>
<td>Prior Depression</td>
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<td>0.01</td>
<td>0.000</td>
</tr>
<tr>
<td>Parent-Adolescent Relation</td>
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<td>Perceived School Connectedness</td>
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</tr>
<tr>
<td>Perceived Teacher Support</td>
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<td>0.09</td>
<td>0.000</td>
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</tbody>
</table>

Model Fit Statistics

Deviance: -30440.0
AIC: 60910.1
BIC: 61017.53

LR test vs. linear regression: chibar2(01) = 29.24 Prob >= chibar2 = 0.0000

Full model.

To answer research question 1b, “On the school-level, to what extent are the harshness of school discipline policies, presence of mental health and social service programs, and school-level socioeconomic status associated with depressive symptoms in adolescents in the United States,” school characteristics from the Add Health school administrator’ surveys were added to the model as predictors of depressive symptoms. This allowed for an examination of both individual- and school-level characteristics and depressive symptoms. The results are presented in Table 17. Adjusting for individual and
school demographic characteristics, prior depressive symptoms, and parent-adolescent relationship score, both perceived school connectedness and perceived teacher support were significantly related to depressive symptoms at Wave II. A higher perceived school connectedness was associated with fewer expected depressive symptoms by 1.29 ($SE=\cdot1; p<0.001$). A higher perceived teacher support was associated with fewer expected depressive symptoms by .84 ($SE=\cdot09; p<0.001$). Neither harshness of discipline policies nor the presence of mental health and social services were significantly associated with depressive symptoms at Wave II. However, median school-level income was significantly related to depressive symptoms. A one unit increase in median school-level income lowered the expected depressive symptoms by -.01 ($SE=\cdot006; p<0.001$). For the full model, the between school variance was .2200685 and the within school variance was 34.76209. As a result, the intraclass correlation reduced to .006% ($0.2200685/.2200685 + 34.76209$) indicating a decrease in variance in depressive symptoms due to school-level factors so the full model is a slight improvement on the individual predictors only model in explaining depressive symptoms.
Table 17. Full Multilevel Model Predicting Depressive Symptoms using Wave II In-Home Survey and Wave I School Administrator Survey with Multilevel Weights

<table>
<thead>
<tr>
<th>Variable</th>
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<th>$P$</th>
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<td><strong>Individual-Level Predictors</strong></td>
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<td></td>
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<tr>
<td>Gender (Female)</td>
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<td>0.000</td>
</tr>
<tr>
<td>Age</td>
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<td>0.08</td>
<td>0.000</td>
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<td>0.184</td>
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<td>1.34</td>
<td>1.46</td>
<td>0.357</td>
</tr>
<tr>
<td>Grade 9</td>
<td>1.25</td>
<td>1.45</td>
<td>0.388</td>
</tr>
<tr>
<td>Grade 10</td>
<td>0.67</td>
<td>1.44</td>
<td>0.641</td>
</tr>
<tr>
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<td>1.43</td>
<td>0.805</td>
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<td>0.870</td>
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<tr>
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<tr>
<td>Sexual Minority</td>
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<td>0.002</td>
</tr>
<tr>
<td>Prior Depression</td>
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<td>0.01</td>
<td>0.000</td>
</tr>
<tr>
<td>Parent-Adolescent Relationship</td>
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<tr>
<td>Perceived Teacher Support</td>
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<td>0.09</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>School-level Predictors</strong></td>
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<tr>
<td>School Size (Small)</td>
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Model Fit Statistics

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<td>BIC</td>
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LR test vs. linear regression: $\text{chibar2}(01) = 21.85$ Prob $\geq \text{chibar2} = 0.0000$

**Full model with interaction terms.**

To answer research question 2, to what extent does the association between school climate dimensions (i.e., perceived school connectedness, perceived teacher support, harshness of discipline policies, the presence of mental health and social service
programs, and median school-level income) and depressive symptoms vary based on adolescent’s race and sexual orientation, interactions terms were constructed for racial and sexual minority status and each predictor variable, perceived school connectedness, perceived teacher support, total mental health and social services, harshness of discipline policies, and median school-level income. The results are presented in Table 18. The interaction variables were not significant suggesting that the relationships between the school climate dimensions and depressive symptoms did not differ for racial and sexual minority youth compared to majority youth.
<table>
<thead>
<tr>
<th>Variable</th>
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<th>$SE$</th>
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<td><strong>Individual-Level Predictors</strong></td>
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<td></td>
</tr>
<tr>
<td>Gender (Female)</td>
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<td>0.12</td>
<td>0.000</td>
</tr>
<tr>
<td>Age</td>
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<td>0.08</td>
<td>0.000</td>
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<td>1.46</td>
<td>0.354</td>
</tr>
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<tr>
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<td>0.000</td>
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<tr>
<td>Parent-Adolescent Relationship</td>
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<td>Perceived School Connectedness</td>
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<tr>
<td>Perceived Teacher Support</td>
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<td>0.000</td>
</tr>
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<td>Sex Minority*Perceived School Connectedness</td>
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<td>0.39</td>
<td>0.261</td>
</tr>
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<td>Race Minority*Perceived School Connectedness</td>
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<td>0.669</td>
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<tr>
<td>Sex Minority*Perceived Teacher Support</td>
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<td>0.617</td>
</tr>
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<td>0.18</td>
<td>0.112</td>
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<td><strong>School-Level Predictors</strong></td>
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<td>0.623</td>
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<td>Median School Level Income</td>
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<td>0.026</td>
</tr>
<tr>
<td>Sex Minority*Presence of Mental Health and Social Services</td>
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<td>0.1</td>
<td>0.865</td>
</tr>
<tr>
<td>Race Minority*Presence of Mental Health and Social Services</td>
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<td>0.05</td>
<td>0.630</td>
</tr>
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<td>1.38</td>
<td>0.84</td>
<td>0.102</td>
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</table>

Table 18. Full Model with Interaction Terms Predicting Depressive Symptoms Using Wave II In-Home Survey and Wave I School Administrator Survey with Multilevel Weights
Table 18. continued

| Interaction                                | Coef | SE  | z    | Pr(>|z|) |
|--------------------------------------------|------|-----|------|----------|
| Race Minority*Harshness of Discipline Policies | -0.005 | 0.45 | 0.990 |
| Sex Minority*Median School Level Income    | -0.01 | 0.01 | 0.354 |
| Race Minority*Median School Level Income   | 0.002 | 0.009 | 0.787 |

Model Fit Statistics

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<td>BIC</td>
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LR test vs. linear regression: chibar2(01)=19.33 Prob > = chibar2=0.0000
CHAPTER 5

Discussion

Depression among youth is increasingly prevalent, has a persistent course into adulthood, and leads to significant impairment in multiple life domains such as social relationships and educational outcomes (Chan & Poulin, 2007; Kessler et al., 2001; Kessler et al., 2003; Merry et al., 2004; Shahar et al., 2006). Identifying factors associated with depression is critical to developing targeted prevention and intervention programs at the appropriate level (i.e., individual, family, school). The literature points to multiple individual and family level factors associated with adolescent depression (Betts et al., 2009; Cote et al., 2009; Dallaire et al., 2008; Rushton, 2002). In addition, prior research points to school-level factors associated with depression such as school connectedness, teacher support, and busing practices (Anderman, 2002; Catalano et al., 2004; Hall-Lande, 2007). Such factors are critical dimensions of school climate (Cohen et al., 2009).

The school climate literature reveals gaps including underexplored dimensions of school climate (e.g., discipline policies), few studies that use a full measure of depressive symptoms, and few studies that employ multilevel modeling. The current study contributes to the available literature on the relationship between school climate dimensions and adolescent depressive symptoms by addressing these gaps using multilevel modeling and a validated measure of depressive symptoms. Using Bronfenbrenner’s ecological framework, this study focused on school climate dimensions within different ecological systems (i.e., micro, exo, and macro). Specifically, the current
study explored the association between microsystem school climate dimensions (i.e., perceived school connectedness, perceived teacher support), exosystem school climate dimensions (i.e., harshness of discipline policies, presence of mental health and social services), and a macrosystem school climate dimension (i.e., median school-level income) and adolescent depressive symptoms. Additionally, the current study investigated the extent to which these relationships vary for racial and sexual minority youth compared to majority youth.

This chapter discusses the results of the current study and how these results correspond within the current knowledge of school climate dimensions and adolescent depressive symptoms. Additionally, the chapter explores implications of the study findings in regards to practice, policy, and research. To conclude, limitations of the current study and suggestions for future research are discussed.

Between-School Variance in Depressive Symptoms

Prior to the main analyses, the intraclass correlation was calculated to determine whether or not the use of multilevel modeling was warranted. The intraclass correlation of the null model indicated that 3% of the variance in depressive symptoms was due to school-level factors. This finding is consistent with prior multilevel studies on school context and youth physical and emotional well being that have found variation ranging from 1.5 to 2.5% (Goodman et al., 2003; Karvonen et al., 2005; Konu et al., 2002). The intraclass correlation of the full model demonstrated a significant decrease in the variance of depressive symptoms due to school-level factors suggesting that the individual and school-level variables in the current study accounted for most of the variation in depressive symptoms at the school-level.
School Climate Dimensions and Depressive Symptoms

The first research question sought to examine the extent to which school climate dimensions are associated with depressive symptoms. This research question was divided into two sub-questions: 1a. To what extent are perceived school connectedness and perceived teacher support associated with depressive symptoms in adolescents in the United States? and 2a. To what extent are the harshness of school discipline policies, presence of mental health and social service programs, and school-level socioeconomic status associated with depressive symptoms in adolescents in the United States?

Depressive symptoms were related to a number of individual-level variables. Controlling for individual demographic characteristics (e.g., age, race), the microsystem level factors, perceived school connectedness and perceived teacher support, were significantly associated with fewer depressive symptoms.

Perceived school connectedness.

Higher perceived school connectedness was associated with fewer depressive symptoms. The current study adds to the evidence supporting a link between school connectedness and depressive symptoms and advances the evidence of school connectedness as a correlate and potential predictor of adolescent depressive symptoms (Anderman, 2002; Frydenberg et al., 2009; Resnick et al., 1997; Shochet et al, 2006).

Also, this finding adds to the current literature by relating school connectedness to a full, validated measure of depressive symptoms which differs from past studies that have used a general measure of well being (Frydenberg et al., 2009) and negative affect (McGraw et al., 2008). Further, the current study used two waves of data which allowed for prior depressive symptoms to be accounted for in the model unlike other studies (Anderman et al., 1997; Resnick et al., 1997; Shochet et al., 2006).
Perceived teacher support.

Additionally, higher perceived teacher support was associated with fewer depressive symptoms. This is an important contribution to the current literature. Prior research suggests that insufficient teacher support is detrimental to health risk behaviors such as smoking, alcohol use, and number of intoxications and also physical health symptoms such as headache, sleep disturbances, and poor appetite (Karvonen et al., 2005; McNeely & Falci, 2004; Modin & Ostberg, 2009). Contributing to this literature base, the current study shows the importance of perceived teacher support on adolescent depressive symptoms. The findings from the current study are similar to those of Reddy and colleagues (2003) who found changes in perceptions of teacher support predicted changes in depression. The students who perceived increasing teacher support (e.g., “Teachers take a personal interest in students”) showed a corresponding decrease in depressive symptoms. Through caring about their students, treating them fairly, and engaging them in learning, teachers can decrease depression in adolescents. Prior studies suggest perceptions of teacher support decline over the course of middle school (Reddy et al., 2003) and students in secondary schools often have more stressful teacher relationships indicating the importance of supportive student-teacher relationships during adolescence (Murray-Harvey, 2010).

Harshness of discipline policies and the presence of mental health and social services.

In the current study, exosystem level factors referred to policies and programs that are a part of the school system. Past research by Anderman (2002) found higher depressive symptoms among students in schools with busing practices; however there is scant research on the relationship between school level policies and practices and
adolescent mental health. To address this gap, the current study sought to explore the relationship between exosystem level factors, harshness of discipline policies and the presence of mental health and social services at school and depressive symptoms.

Consistent with prior research, there was a positive correlation between harshness of discipline policies and depressive symptoms; however this correlation was small (Cameron, 2006; Hyman & Peron, 1998). Also, there was a positive but small correlation between the presence of mental health and social services and depressive symptoms. This positive correlation may be due to an increased number of school programs present to respond to greater social and emotional needs among students. However, it is important to emphasize that this correlation was very weak and few conclusions and implications can be drawn from this.

In the multilevel analysis, neither the harshness of discipline policies nor the presence of mental health and social services were significantly associated with depressive symptoms. Although these two school-level variables were not significantly associated with depressive symptoms in the current study, based on prior research, they may be related to school climate dimensions that are associated with depressive symptoms (Anderson et al., 2008; McNeely et al., 2002). For example, McNeely and colleagues (2002) found that tolerant discipline policies are associated with higher perceptions of school connectedness. So, the harshness of discipline policies may play a mediating or moderating role between school connectedness and depressive symptoms. Further, Anderson and colleagues (2008) found that increased funding for school nursing and social work staff was associated with changes overtime in both teacher and student
views about school climate including measures such as satisfaction with school. So, the investment in school support personnel increased student satisfaction with school.

Also of importance, the absence of a statistically significant relationship between both the harshness of discipline policies and the presence of mental health and social services and depressive symptoms may be due to the measurement of both variables.

Both measurements used the school administrator’s report on the disciplinary responses to infractions and the presence of programs. In relation to the disciplinary climate, it may be of interest to explore adolescents’ perceptions of the disciplinary climate in the school in addition to their experiences with the disciplinary system. For example, Bracey (2011) found students perceptions of discipline policies may be particularly critical as perceptions of harsher disciplinary techniques may lead to feelings of powerlessness which is related to depression. It may also be important to assess students’ perceptions of fairness and consistency in relation to the enforcement of disciplinary policies, especially among minority youth who are disproportionately impacted by harsh discipline policies.

It’s also important to note that students who were suspended or expelled, the ones who are arguably most directly impacted by a harsher disciplinary climate, were not eligible for the current study. This could have potentially impacted the findings.

In regards to the presence of mental health and social services, it may be helpful to go beyond simply the presence of such services and explore adolescents’ use of services, the perceptions of the availability, and the quality of services and programs at school. Also of note, a higher number of mental health and social services provided at a school does not necessarily indicate quality. For example, a school could implement three
quality, evidence-based programs, while another school offers six programs implemented with little fidelity.

*Median school-level income.*

Macrosystem level characteristics refer to broad social values, customs, or norms affecting an adolescent’s well being in the most distant and least directive manner. Income may serve as an indicator of one’s macrosystem. Therefore, median school-level income was examined as a macrosystem level school influence. Prior to discussing the findings it is important to note that while median school-level income may represent the economic structure of the school, it is not often measured as an aspect of school climate. Low median school income does not necessarily indicate a negative school climate and a high median school income does not necessarily indicate a positive school climate. School income might be a more accurate indicator of the culture of the school, rather than the climate. Despite some uncertainty between the relationship between school climate and median school-level income, the median school-level income was included in this study as it is related to depressive symptoms in adolescents (Goodman et al., 2003) and is representative of the school context.

Median school-level income was significantly associated with depressive symptoms. Specifically, a higher median school-level income was associated with fewer depressive symptoms. There are a number of ways the economic status of the youth that make up a school could impact depressive symptoms. Youth in higher income schools may have contact with highly educated parents and role models and more structural resources while youth in lower income schools may be exposed to fewer structural resources and role models (Mayer & Jencks, 1989). The availability and accessibility of such resources may result in strong coping skills, optimistic attitudes, and a hopeful
outlook on the future which can buffer against depressive symptoms (Mayer & Jencks, 1989).

This finding is consistent with prior research by Goodman and colleagues (2003) who found that even after adjusting for individual-level factors such as household income, average school-level income was significantly related to adolescent depressive symptoms. Similar to the current study Goodman and colleagues (2003) used the Add Health data. However, Goodman et al (2003) did not use cases with missing income responses and used the mean school-level income based on the available income data. The current study used multiple imputation to replace missing income values and used the median school-level income as it is less susceptible to extreme values compared to the mean. The findings from the current study provide additional evidence for the critical impact of the economic setting on adolescent mental health.

In summation, perceived school connectedness, perceived teacher support, and median school-level income represent school climate dimensions that are associated with depressive symptoms in adolescents. This association existed even after controlling for key factors that are also commonly associated with depressive symptoms such as prior depressive symptoms, gender, and parent and adolescent relationship quality. Based on these findings, it seems higher perceived school connectedness, higher perceived teacher support, and higher median school-level income represent protective factors against depressive symptoms. Although the current study cannot imply causation, past studies indicate lower perceived school connectedness and teacher support may be marker or predictive risk factors for depressive symptoms (Kuperminc et al., 2001; Murberg & Bru, 2005). Unlike factors such as gender and race, perceived school connectedness and
perceived teacher support are amenable to alteration through prevention or intervention programs (Doll & Lyon, 1998). Therefore, the findings from the current study have practical implications that will be discussed later in this chapter.

School Climate Dimensions and Depressive Symptoms in Racial and Sexual Minority Youth

The second research question investigated the extent to which the relationship between school climate dimensions and depressive symptoms varied for racial and sexual minority youth. An important finding from the current study and consistent with prior research, the initial analyses showed that both sexual minority and racial minority youth had significantly higher depressive symptoms compared to majority youth (D’Augelli, 2002; Paxton et al., 2007). Further, being a member of a sexual minority and a racial minority was significantly associated with experiencing depressive symptoms.

Also of note, sexual minority youth had slightly lower perceived school connectedness scores compared to majority youth. Although the difference between a score of 3.5 and 3.4 is small, this finding is important given sexual minority youth are at greater risk for depressive symptoms and lower school connectedness (Birkett et al., 2009; Kosciw et al., 2010; Meyer et al., 2003). Further, this finding should be interpreted with consideration to the potential limitations of the applicability and appropriateness of the school connectedness measurement for sexual minority youth. For example, adequately explicating the school connectedness construct to include additional items on dimensions of safety may be warranted.

In the multilevel analysis, the association between the school climate dimensions and depressive symptoms did not vary for racial and sexual minority youth compared to majority youth. This finding indicates that perceived teacher support, perceived school
connectedness, harshness of discipline policies, presence of mental health and social services, and median school-level income impact depressive symptoms for racial and majority youth in similar ways as for majority youth.

In relation to sexual minority youth, one explanation could be that the number of sexual minority youth in the sample was significantly lower than the number of majority youth. An additional explanation for this finding could be that the current study had one item on safety that was included in the perceived school connectedness index score. However, specific experiences with bullying and harassment were not measured as separate variables. Sexual minority youth are at an increased risk for bullying which may lead to a decrease in sense of safety and increase in depressive symptoms (Birkett et al., 2009; McGuire et al., 2010). Depressive symptoms in sexual minority youth largely result from lack of support and victimization (Williams et al., 2005). Measuring safety as separate from school connectedness including physical security and social-emotional security (i.e., verbal abuse, teasing, and exclusion) (Cohen et al., 2009) in addition to feeling comfortable and able to report victimizations (Kosciw et al., 2010) may have yielded different results.

For racial minority youth, in addition to broad measures of school connectedness and teacher support, measuring variables such as perceived discrimination, equality, perceived exclusions, respect for diversity, and respect for individual difference may have resulted in different findings. This is a possibility as Booker (2006) indicated racial minority youth may report feeling positively about school because they believe that is important; however, they may not truly experience connectedness due to feeling different from their peers and/or teachers and other school staff.
Despite the findings in this study, recent research suggests differences in the impact of the school disciplinary climate on mental health outcomes in sexual minority youth. For example, Sandfort et al (2010) found adolescents with same sex attractions in schools where rules and expectations were experienced as less consistent and clear reported significantly more mental health problems than their peers with no same sex attractions in the same schools. This difference was absent in schools where rules and expectations were experienced as more consistent and clear (Sandfort et al., 2010). Ultimately, it is still important to consider and explore how school structural factors contribute to health disparities in relation to sexual minority and racial minority status, particularly as sexual and racial minority youth are disproportionately punished in educational settings (Himmelstein & Bruckner, 2011; Osher et al., 2010).

**Implications for Practice, Policy, & Research**

From the current study, important implications can be drawn for practice, policy, and research in the areas of school climate and depression.

**Implications for Practice**

A key feature of the ecological perspective is the emphasis on linking youth and contexts to promote successful outcomes (Smith et al., 2004). The current study adds to the growing research that identifies the links between the ecological context, the school, and depressive symptoms in adolescents. Further, along with prior research, the findings suggest the importance of understanding how the school context can provide opportunities for healthy youth development.

School social workers and other school support personnel have the potential to impact adolescent mental health by consulting with school staff on strategies to improve
school climate thus improving overall mental health of youth (Berzin et al., 2011; Haynes et al., 1989; Schwab-Stone, Henrich, & Armbruster, 2002). In particular, the findings from the current study suggest the importance of fostering adolescent connectedness to schools and positive student teacher relationships. School social workers are well positioned to develop, implement, and support intervention and prevention programming geared toward youth depressive symptoms. Although school social workers spend a majority of their time working one-on-one with students, they are increasingly called to work at other levels of practice intervening with small groups, teachers, parents, and the overall school environment (Frey & Dupper, 2005; Kelly et al., 2010). With the different levels of practice in mind, school social work interventions in relationship to the current study findings are discussed.

The current study suggests one way that schools may reduce depressive symptoms is by fostering strong teacher-student relationships. This finding is supported by other research asserting the importance of teacher-student relationships, particularly for youth experiencing adversity (McLaughlin & Clarke, 2010; Resnick et al., 1997). Factors that contribute to the teacher-student relationship include classroom structure (e.g., clear rules and consequences) and teacher beliefs, behaviors, and actions (e.g., positive feedback; praise) (Murray & Pianta, 2007). Also, student skills for developing prosocial relationships impact on the quality of teacher-student relationships (Murray & Pianta, 2007). This is critical as youth with depression or depressive symptoms may have impaired social skills which in turn could impact teacher-student relationships. Strategies to foster teacher-student relationships should consider all of the contributing factors. For example, school social workers may provide professional development for teachers on
giving students positive feedback and praise. At the same time, they may also work with adolescents in a social skills group to enhance their skills for developing prosocial relationships. Of importance, competing; contradictory pressures, crowded curriculum, and emphasis on high stakes testing are potential barriers to fostering strong teacher-student relationships (Murray & Pianta, 2007). Therefore, strategies to integrate new initiatives to current programs and practices should be explored.

School social workers may engage large groups to promote change in the school environment. Example strategies include establishing school mental health programs and policies that may include a social emotional curriculum. For example, the inclusion of a school curriculum that teaches students interpersonal communication and emotional management may help address depressive symptoms (Patton et al., 2006). Depressive symptoms may inhibit developing prosocial relationship, so some suggest explicit instruction in social-emotional skills to improve students’ ability to develop and maintain meaningful relationships (McLaughlin & Clarke, 2010). The Collaboration for Academic, Social, and Emotional Learning (www.casel.org) provides a review of social-emotional learning curriculum for adolescents.

It is important to mention that teachers are actively involved in the delivery of school mental health programs (Berzin et al., 2011). This is not surprising as teachers have the most access to students, are involved with them across school programs, and for prolonged periods of time (Diekstra, 2008). A recent systematic review assessing teacher involvement in the delivery of school-based mental health services found that teachers are actively involved in the delivery of school-based mental health services including collaborating with support personnel such as social workers and in some cases
implementing services alone (Franklin et al., 2012). School social workers may collaborate with teachers to do behavior intervention plans, conduct joint sessions with teachers and students, and provide professional development (Berzin et al., 2011).

School social workers may engage students or small groups of students to change individual or psychological factors including clinical tasks, psychotherapy, and crisis intervention (Frey & Dupper, 2005). Youth with depression or depressive symptoms may be engaged in a school-based depression intervention or receive mental health counseling in the community. This intervention is critical for individuals with depression or depressive symptoms as depression is increasingly prevalent (Kessler et al., 2003) and often leads to poor academic achievement (Frojd et al., 2008) and school drop-out (Fortin et al., 2006).

School social workers may employ evidence-based practices or elements of evidence-based practices to treat depressive symptoms such as cognitive-behavioral therapy and interpersonal therapy. Such interventions and treatment primarily target the individual by increasing positive cognitions, improving problem solving skills, teaching coping and social skills as conduits to decrease depressive symptoms (Clarke et al., 1995; Jaycox et al., 1994; Levitt et al., 2007). As suggested by Shochet and colleagues (2006), interpersonal therapy and cognitive-behavioral therapy, two common evidence-based treatments for adolescent depression, may impact to some extent an adolescent’s capacity for school connectedness (Shochet et al., 2006). These treatment efforts could include more attention to school consultations or a more explicit focus on the content of school connectedness in the individual treatment approaches (Shochet et al., 2006). Using interpersonal theory and psychosocial research, interpersonal therapy makes a practical
link between the patient’s mood and stressful life events that trigger the onset of the mood disorder (Markowitz & Weissman, 2004, p. 136). Often individuals with depression will internalize their negative feelings and blame themselves forgetting about their environment (Markowitz & Weissman, 2004). Interpersonal therapy targets depressive symptoms by building social skills and helping the client work through interpersonal difficulties (Markowitz & Weissman, 2004). In relation to school climate, interpersonal therapy could be used as one strategy to help adolescents with depression or at risk for depression to build positive social skills to improve peer and teacher relationships and enhance school connectedness.

Additionally, Ma (2003) found self esteem to be the strongest predictor of school belonging. This is important to note as adolescents with depressive symptoms may have lower self esteem. Therefore, initiatives that promote both school connectedness and self esteem may be worthwhile for youth with depression or depressive symptoms.

School social workers may also engage larger groups to change individual perceptions or attitudes (Frey & Dupper, 2005). Strategies may include a school-wide expectation to “Be Positive,” to target negative emotions, behaviors, cognitions (Joiner, 2002) and social skills training embedded in positive behavior intervention supports (Herman et al., 2004). Further, school climate initiatives are often one component of broader school-based health and mental health initiatives. For instance, a healthy and safe school environment is one component of the Center for Disease Control’s Coordinated School Health Model (McKenzie & Richmond, 1998). Coordinated School Health Programs offer a potential means for improving both academic performance and well being of youth by increasing health knowledge, attitudes, and skills, increasing positive
health behaviors and outcomes, improving education outcomes, and improving social outcomes (Kolbe, 2002). This study provides support for the importance and potential of such initiatives to decrease depressive symptoms in youth if they promote school connectedness and enhance student-teacher relationships.

Additionally, developing and sustaining initiatives to promote school connectedness is also critical. There is a large body of literature discussing and evaluating factors that promote school connectedness (Klem & Connell, 2004; Roeser et al., 2000; Thompson et al., 2006; Wentzel, 1998). Common ways to enhance school connectedness include involving students in classroom decisions, encouraging student input in school policies, avoiding any form of discrimination, and rewarding effort rather than achievement (Whilock, 2006). School social workers could work with teachers and other school staff to integrate these strategies into the classroom setting and wider school environment. As youth get older, there appears to be a decrease in school connectedness so strategies should appeal to older adolescents as well as younger youth (Whitlock, 2006).

Although not a direct implication from the current study, a fair, safe, and accepting school climate is particularly important for sexual and racial minority youth who may be marginalized. In spite of the lack of relationship found in this study, strong evidence exists that minority youth are less connected to schools (Booker, 2004), experience weaker relationships with teachers (Olsson, 2009), disproportionately suffer from harsh disciplinary procedures (Himmelstein & Bruckner, 2011; Osher et al., 2010), and are less likely to utilize school-based services and more likely to have unmet mental health needs (Barksdale et al., 2009; Williams, 2009). School social workers can support
minority youth by creating a welcoming, inclusive climate, reducing harassment, especially homophobic victimization, preventing discrimination, and forming lesbian, gay, and bisexual support groups and Gay-Straight Alliances (Dessel, 2010; Goodenow et al., 2006; Wall et al., 2010; Weiler, 2003).

Also, given racial minority youth are at greater risk for negative teacher-student relationships, professional development on engaging, building relationships, and supporting minority youth may be particularly critical (Olsson, 2009). School social workers could be instrumental in providing cultural competence training and building cultural awareness. Also, teachers may serve as a supportive resource for sexual minority youth by promoting a safer environment and more positive school experiences (Kosciw et al., 2010). School social workers could assist teachers on promoting a safer environment, particularly with strategies to address bullying and harassment in the classroom.

Creating a positive school climate includes not only engaging students and school staff but also community members and parents/caregivers. School social workers may work with school staff to implement a number of strategies to engage parents/caregivers including communicating with parents on student programs, linking parents/caregivers to programs and resources within the community that provide supportive services, respecting family/caregiver role in student’s education, welcoming parents/caregivers in school, and seeking their support and assistance in meaningful ways (Ohio Department of Education, 2004).

School social workers may also form school-community collaborations such as partnerships with health and social service programs and youth development organizations to align school-based programs with community-based efforts in relation to
preventing depressive symptoms in youth (Ohio Department of Education, 2004). Additionally, school-community collaborations may include community service projects, school-business partnerships to prepare students for the workforce, offering the school as a meeting space for community meetings (e.g., adult education), and updating the community on school progress (Ohio Department of Education, 2004).

In summary, teacher support and school connectedness are two critical dimensions of school climate and the current study provides implications for enhancing both teacher support and school connectedness to decrease depressive symptoms. However, ultimately, broader, multilevel school climate initiatives are needed to improve adolescent mental health. School climate initiatives should not only focus on teacher support and school connectedness but also on the quality of instruction, the appreciation of varied intelligences, school and community collaboration, and valuing diversity (Cohen et al., 2009).

*Implications for Policy*

This study reinforces the importance of continued efforts to assess and improve school climate dimensions, particularly school connectedness and teacher support, as a way to decrease depressive symptoms in youth. State and federal policies are critical to supporting and sustaining school climate initiatives. States incorporate school climate initiatives into their health, special education, and safety programs such as Positive Behavior Intervention Supports and violence prevention programming (Cohen et al., 2009). Although an increasing number of state departments of education are emphasizing the importance of safe and caring schools, as pointed out by Cohen and colleagues (2009) there is a gap in research study findings such as those in the current study and state
departments of education, school climate policy, practice guidelines, and teacher education practice. According to Cohen and colleagues (2009), this gap exists in part due to the fact that No Child Left Behind accountability requirements do not include school climate to be measured so states are more likely to focus on math, reading, and science.

Potentially to address this gap, the significance of school climate is increasingly recognized in policies at the state and federal levels. For example, in President Obama’s *A Blueprint for Reform: The Reauthorization of the ESEA*, the proposal provides for grants to support states and schools in developing school climate needs assessments (U.S. Department of Education, 2010). Further, states (e.g., Ohio, Georgia, Florida) that received *Race to the Top* funds can use the federal dollars to expand school climate improvement efforts to enhance school climate.

Although school climate is currently isolated from general measures of school accountability, it is vital climate is included in state accountability and longitudinal data collection systems (Cohen et al., 2009). The current study demonstrates the connection between school climate dimensions, school connectedness and teacher support, and depressive symptoms. Prior research confirms the connection between poor mental health and poor academic achievement. Enhancing mental health is a part of the picture of improving academic achievement (Cohen et al., 2009). Further, school climate directly improves academic achievement. Therefore, it seems logical to consider climate as an integral part of achievement (Cohen et al., 2009). School climate should be measured by all schools especially those that are underperforming and the data produced should inform school improvement strategies (Cohen et al., 2009).
Schools may need support in developing, implementing, and measuring school climate initiatives. Education department officials and technical assistance centers can act as brokers of information about effective policies across states and support experimentations with climate initiatives (Cohen et al., 2009). Education entities may be overwhelmed by the complexity of school climate (Cohen et al., 2009). To address this, partnerships and collaborations across sectors, including with nongovernmental organizations such as the National School Climate Center may help guide through research-based policy decision-making (Cohen et al., 2009). An example of such collaboration can be found in Rhode Island where there is a university-non-profit-government collaborative. Motivation, capacity, and open minds are necessary to ensure success partnerships (Cohen et al., 2009).

Also, greater policy support for teacher professional development and education in relation to addressing student mental health may be needed (Losen, 2011). This is particularly important as teachers may not feel prepared to address student mental health needs and are involved in delivering school mental health interventions (Berzin et al., 2011; Frey et al., 2011; Franklin et al., 2012).

Finally, in the short term, the current study findings suggest that programs such as school voucher and school choice that are frequently discussed and debated at the local and national levels may positively influence adolescent depressive symptoms (Goodman et al., 2003). As recommended by Goodman and colleagues, in regards to longer term planning, it will be important to consider “the critical structural resources behind school-level income and invest in equalizing the school environments across communities such as improving the physical structure of the more disadvantaged schools and increasing
access to resources” (Goodman et al., 2003, p. 455). In particular, schools that rely most heavily on state programs and policies deserve to have greater access to climate initiatives as they most likely have a greater economic disadvantage (Goodman et al., 2003).

In the end, the focus on school climate may require a shift from solely concentrating on academics to considering nonacademic needs of mental health and overall well being (McLaughlin & Clarke, 2010). However, this is not entirely a shift away from academics. When schools address student nonacademic needs, they are promoting opportunities for academic success (Hoffman, 2009), which many can agree is the goal of education. In sum, policies that support nonacademic needs such as mental health support the mission of promoting academic achievement and success and have an important place in school policy.

*Implications for Research*

Several implications for the area of research can also be drawn from the findings in the current study. Given that there was variability in depressive symptoms scores at the school-level, the current study reinforces the importance of employing multilevel analyses when examining students clustered in schools. This study and prior studies demonstrate that there is variability in depressive symptoms at the school-level. From a methodological perspective, the current study points to the importance of properly conceptualizing and measuring key variables. The non-significant relationship between the harshness of discipline policies and depressive symptoms and the presence of mental health and social services and depressive symptoms could be the result of unreliable measures. Measurement error weakens the relationship between two variables (Rubin &
Babbie, 2008). Further, the relationship between teacher support and depressive symptoms may have been stronger with a more reliable measure of teacher support.

Following this dissertation, several avenues are available for future research to pursue in relation to school climate and depression. The areas of perceived teacher support, school climate for sexual and racial minority youth, discipline policies, and the presence of mental health and social services in schools are important for expanding the findings of the current study.

The literature yields little research on the impact of teacher support on depression and depressive symptoms. This must be conducted as the current study suggests it is associated with depressive symptoms among adolescents. A challenge for future research and intervention work is to better understand the aspects of the student-teacher relation that impact depression (McNeely & Falci, 2004). Also, more attention is needed on the skills and strategies necessary to connect with students. Additionally, to strengthen the findings from the current study, future research should examine the relationship between perceived teacher support and depressive symptoms using a more reliable measure of teacher support.

There are many areas for future research on school climate and depressive symptoms in minority youth. For example, future research could explore how the relationship between school climate dimensions and depressive symptoms varies for minority youth across urban, suburban, and rural locations. The location of the school could have implications for how accepted and therefore connectedness to school minority youth are. Also, school climate measures should be evaluated for their appropriateness for sexual and racial minority youth to ensure they adequately capture the school
experiences of minority youth. School climate measures should be constructed, tested, and validated among both sexual and racial minority adolescents. Further, many schools do not include sexual orientation in their anti-bullying policy statements and name calling (e.g., “you’re so gay.”) is prevalent in schools and often tolerated by adults (Weiler, 2003); therefore the inclusion of sexual orientation in school anti-bullying policies may be a critical aspect of climate that could be considered in future research.

Future research could consider different ways to measure school discipline policies other than administrative report such as student perceptions of discipline policies, school discipline records, and objective measures such as the presence of metal detectors and school police officers. Also, the current study did not explore teacher classroom management practices that are often related to discipline policies. These ideas offer other possible ways investigate the relationship between discipline policies and depressive symptoms.

While the current study investigated the total number of mental health and social services provided at school, quantity may not be as important as the type and quality of programming offered at school. Therefore, future research may investigate the relationship between mental health specific programming, such as emotional counseling and depressive symptoms. The type of programming may be particularly important for sexual minority youth. For example, future research could consider school climates that foster tolerance and acceptance by, for example, sponsoring LGBT related organizations, and the relationship between such environments and depressive symptoms for sexual minority youth.
Additionally, future research could investigate the association between school climate dimensions such as school connectedness and teacher support and the CES-D cutoff scores for depressive symptoms (i.e., 15 or below; 16-27; 28-60) using logistic regression. This could be done to investigate whether the association between school climate dimensions and depressive symptoms is significant for different levels of severity in depressive symptoms.

Finally, future research is necessary to fully evaluate the short-and long-term implications of proposed school program and policy changes, such as school choice programs, to ensure that those implemented create a healthy emotional environment for youth (Goodman et al., 2003). Future research may also investigate the relationship between school income and school climate dimensions such as school connectedness, discipline policies, and teacher support.

**Strengths and Limitations**

The strengths of this investigation included a nationally representative and large number of middle and high schools within a longitudinal design controlling for students’ prior depressive symptoms. The nationally representative sample enhances generalizability and external validity. Additionally, the current study is unique in offering an ecological and multilevel approach to investigate the relationship between school climate dimensions and depressive symptoms. The multilevel analysis accounted for the hierarchical structure of the data (i.e., students within schools), so the effects of school and individual level factors can be estimated. However, these strengths are accompanied by a number of limitations.
With secondary data, the researcher is limited to the variables available in the dataset and the manner in which they were measured. As a result, measurement error may be of concern. For instance, although the CES-D is a valid, widely used measure of depressive symptoms, it is not diagnostic of major depressive disorder and may better represent distress than depression. Also, although a significant relationship was detected, the perceived teacher support scale was weak. In addition, the measurement of harshness of discipline policies was based on school administrator’s report of what is supposed to occur. This may not be what actually happens. Further, this measurement does not capture student’s perceptions of or experiences with the disciplinary climate. Presence of mental health and social services was examined; however all of the different services (e.g., emotional counseling, nutrition services) were summed. The type of service offered may be of importance, particularly for youth with mental health issues. For example, the presence of emotional counseling services may be particularly relevant to depressive symptoms. However, with the current measurement this variability was not captured.

The reliability and validity of student self-report data are somewhat problematic. However, this was probably improved by the use of computer assisted interview in the in-home interview. Also, self-report measures in relation to internalizing problems such as depression are very reliable indicators (Reynolds, 1994). Although the analysis is longitudinal it is by no means causal.

Further, Add Health is school-based. Youth who drop out of school or who are suspended or expelled may be more likely to be depressed. However, they were not eligible for inclusion in the current study. This may have decreased the number of sexual and racial minority youth in the sample size. For example, sexual minority youth are at
risk for dropping out of school (Kosciw et al., 2010), so this number may have included sexual minority youth who dropped out. Additionally, racial minority youth are disproportionately suspended and expelled, so they were also possibly among those who were excluded from the study sample. Of note, the current study did not include a category for transgender youth, so inferences cannot be made about school climate and depressive symptoms among this population of youth.

The Add Health data was collected in the early 1990s, so the passage of time and history may impact the validity of the findings. For example, zero tolerance policies in school became particularly prevalent after the Add Health data were collected. In addition, the terrorist attacks on September 11th, 2001 may have resulted in increased nationalism and decreased tolerance for diversity and difference.

Finally, to the extent that school-level income data reflect the neighborhoods in which youth live, neighborhood level effects potentially acted as important confounders (Goodman et al., 2003). Therefore, the adverse impact of lower median income schools could reflect the effect of the disadvantaged neighborhoods where children live or otherwise spend time (Goodman, et al., 2003).

**Conclusions**

Overall, the current study demonstrated a significant association between higher perceived school connectedness, higher perceived teacher support, higher median school-level income and fewer depressive symptoms in youth. The results provide implications for school social workers and other school support personnel on the importance of school-based and school-linked depression prevention and intervention programs. State and federal school climate policies should include provisions for defining and measuring
school climate, school climate related leadership, accountability, and technical assistance and support. Future research could examine the mechanisms by which teacher support impacts depressive symptoms and consider stronger measures for discipline policies and mental health and social services at school. In the end, schools are powerful environments that impact adolescent mental health. Ultimately, school climate dimensions have a positive impact on adolescent depressive symptoms and represent opportunities to develop and implement efforts to promote adolescent mental health within the school context.
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Appendix A: Table 19. Secondary Datasets Explored for the Current Study
<table>
<thead>
<tr>
<th>Dataset Name</th>
<th>Availability</th>
<th>Research Design</th>
<th>Study Variables</th>
<th>Respondents</th>
<th>Student Demographics</th>
<th>Representativeness</th>
</tr>
</thead>
<tbody>
<tr>
<td>California School Climate, Health, and Learning Survey (CSCHL/CDE)</td>
<td>Contact: Ron Astor at the University of Southern California</td>
<td>Cross-sectional</td>
<td>School connectedness, teacher/adult support, bullying, safety</td>
<td>Students, parents, and school staff</td>
<td>5th-12th grades (N=7,524 completed surveys in the original administration of the CSCSS)</td>
<td>California</td>
</tr>
<tr>
<td>Maryland Adolescent Development in Context Study</td>
<td><a href="http://www.murray.harvard.edu">http://www.murray.harvard.edu</a></td>
<td>Longitudinal</td>
<td>School connectedness and teacher support</td>
<td>Students, parents, school records</td>
<td>7th graders (N=1,482 families with adolescents)</td>
<td>One county on the Eastern seaboard of the U.S.</td>
</tr>
<tr>
<td>National Education Longitudinal Study of 2002</td>
<td>To obtain public use data: EDAT to approve user for public use files.</td>
<td>Longitudinal</td>
<td>Student and teacher composition, school climate, safety, programs and services</td>
<td>Students, parents, school staff</td>
<td>10th grade (N=15,000)</td>
<td>Nationally representative</td>
</tr>
</tbody>
</table>

Table 19. Secondary Datasets Explored for the Current Study
Table 19 continued

<table>
<thead>
<tr>
<th>Dataset Name</th>
<th>Availability</th>
<th>Research Design</th>
<th>Study Variables</th>
<th>Respondents</th>
<th>Student Demographics</th>
<th>Representativeness</th>
</tr>
</thead>
<tbody>
<tr>
<td>The National Annenberg Survey of Youth (NASY)</td>
<td>The Annenberg Public Policy Center <a href="http://www.annenbergpublicpolicycenter.org">http://www.annenbergpublicpolicycenter.org</a></td>
<td>Longitudinal</td>
<td>Youth activities, school belonging, teacher support, teacher respect, teacher regard for student perspectives</td>
<td>Students</td>
<td>Ages 14 to 22 (N=476)</td>
<td>Nationally representative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Depression-Youth Risk and Behavior Surveillance Survey (YRBS), 2 items</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>The National Longitudinal Study of Adolescent Health (Add Health)</td>
<td>To obtain public use data: Interuniversity Consortium for Political and Social Research (ICPSR) To obtain restricted use data: Contact Lauren Haas in the College of Social Work</td>
<td>Longitudinal</td>
<td>School connectedness, teacher support, school discipline policies and programs</td>
<td>Students, parents, and school administrators</td>
<td>7th-12th grade (N=20,000 (Wave I); N=14,000 (Wave II)</td>
<td>Nationally representative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Depression-CES-D, 20 items</td>
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</table>
Appendix B: Table 20. Item and Descriptive Statistics for Individual-Level Scales
<table>
<thead>
<tr>
<th>Scale and Item</th>
<th>Weights Only Sample (N=13,568)</th>
<th>Final Sample (N=9,524)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School Connectedness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You feel close to people at your school</td>
<td>3.7 0.008</td>
<td>3.6 0.01</td>
</tr>
<tr>
<td>You feel like you are part of your school</td>
<td>3.8 0.009</td>
<td>3.8 0.01</td>
</tr>
<tr>
<td>Students at your school are prejudice</td>
<td>2.9 0.01</td>
<td>2.8 0.01</td>
</tr>
<tr>
<td>You are happy to be at your school</td>
<td>3.7 0.009</td>
<td>3.7 0.01</td>
</tr>
<tr>
<td>You feel safe in your school</td>
<td>3.8 0.008</td>
<td>3.7 0.01</td>
</tr>
<tr>
<td><strong>Teacher Support</strong></td>
<td>0.61</td>
<td>0.62</td>
</tr>
<tr>
<td>How often have you had trouble getting along with your teachers</td>
<td>4.2 0.008</td>
<td>4.2 0.009</td>
</tr>
<tr>
<td>The teachers are your school treat students fairly</td>
<td>3.5 0.009</td>
<td>3.4 0.01</td>
</tr>
<tr>
<td>How much do you feel your teachers care about you</td>
<td>3.5 0.009</td>
<td>3.5 0.01</td>
</tr>
<tr>
<td><strong>Parent-Adolescent Relationships</strong></td>
<td>0.83</td>
<td>0.83</td>
</tr>
<tr>
<td>How close do you feel to your mom</td>
<td>4.4 0.007</td>
<td>4.3 0.008</td>
</tr>
<tr>
<td>How much do you think she cares about you</td>
<td>4.8 0.005</td>
<td>4.8 0.005</td>
</tr>
<tr>
<td>How close do you feel to your dad</td>
<td>4 0.01</td>
<td>4 0.01</td>
</tr>
<tr>
<td>How much do you think he cares about you</td>
<td>4.7 0.007</td>
<td>4.6 0.008</td>
</tr>
<tr>
<td>Most of the time your mom is warm and loving to you</td>
<td>4.3 0.007</td>
<td>4.3 0.008</td>
</tr>
<tr>
<td>Overall, you are satisfied with your relationship with your mom</td>
<td>4.3 0.007</td>
<td>4.2 0.009</td>
</tr>
<tr>
<td>Most of the time your dad is warm and loving to you</td>
<td>4.1 0.009</td>
<td>4.1 0.01</td>
</tr>
<tr>
<td>Overall, you are satisfied with your relationship with your dad</td>
<td>4 0.01</td>
<td>4 0.01</td>
</tr>
<tr>
<td><strong>Depression</strong></td>
<td>0.87</td>
<td>0.86</td>
</tr>
<tr>
<td>You were bothered by things that usually don't bother you</td>
<td>0.55 0.006</td>
<td>0.53 0.007</td>
</tr>
<tr>
<td>You didn't feel like eating, or your appetite was poor</td>
<td>0.49 0.006</td>
<td>0.47 0.007</td>
</tr>
</tbody>
</table>

Table 20. Item and Descriptive Statistics for Individual-Level Scales
Table 20 continued

<table>
<thead>
<tr>
<th></th>
<th>School Connectedness</th>
<th>Teacher Support</th>
<th>Parent-Adolescent Relationships</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>You felt that you could not shake off the blues, even with help from your family and your friends</td>
<td>0.41 0.006</td>
<td>0.39 0.007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt that you were just as good as other people</td>
<td>1.05 0.008</td>
<td>1.03 0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You had trouble keeping your mind on what you were doing</td>
<td>0.83 0.006</td>
<td>0.82 0.008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt depressed</td>
<td>0.51 0.006</td>
<td>0.49 0.007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt that you were too tired to do things</td>
<td>0.76 0.006</td>
<td>0.74 0.007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt hopeful about the future</td>
<td>1.15 0.008</td>
<td>1.13 0.009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You thought your life had been a failure</td>
<td>0.2 0.004</td>
<td>0.18 0.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt fearful</td>
<td>0.31 0.004</td>
<td>0.3 0.005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You were happy</td>
<td>0.89 0.006</td>
<td>0.87 0.008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You talked less than usual</td>
<td>0.59 0.006</td>
<td>0.58 0.007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt lonely</td>
<td>0.46 0.006</td>
<td>0.43 0.006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People were unfriendly to you</td>
<td>0.39 0.005</td>
<td>0.39 0.006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You enjoyed life</td>
<td>0.78 0.007</td>
<td>0.75 0.008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt sad</td>
<td>0.57 0.005</td>
<td>0.55 0.006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt that people disliked you</td>
<td>0.38 0.005</td>
<td>0.38 0.006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It was hard to get started doing things</td>
<td>0.63 0.005</td>
<td>0.61 0.007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt life was not worth living</td>
<td>0.14 0.003</td>
<td>0.13 0.004</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Ranges of possible scores for each study variable are as follows: school connectedness (1-5), teacher support (1-5), parent-adolescent relationships (1-5), and depression (0-3). For depression higher scores indicate an increase in the depressive symptom. For all other variables, high scores indicate stronger relationship.*
Appendix C: Table 21. Item and Descriptive Statistics for School-Level Scales
<table>
<thead>
<tr>
<th>Scale and Item</th>
<th>Full School Sample (N=132)</th>
<th>Final School Sample (N=105)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M/n</td>
<td>SD/%</td>
</tr>
<tr>
<td>Harshness of Discipline Policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheating</td>
<td>3.8</td>
<td>0.09</td>
</tr>
<tr>
<td>Fighting with another student</td>
<td>5.6</td>
<td>0.06</td>
</tr>
<tr>
<td>Injuring another student</td>
<td>5.6</td>
<td>0.06</td>
</tr>
<tr>
<td>Possessing alcohol</td>
<td>5.9</td>
<td>0.05</td>
</tr>
<tr>
<td>Possessing an illegal drug</td>
<td>6.2</td>
<td>0.05</td>
</tr>
<tr>
<td>Possessing a weapon</td>
<td>6.7</td>
<td>0.04</td>
</tr>
<tr>
<td>Drinking alcohol at school</td>
<td>6.1</td>
<td>0.04</td>
</tr>
<tr>
<td>Using an illegal drug at school</td>
<td>6.3</td>
<td>0.04</td>
</tr>
<tr>
<td>Smoking at school</td>
<td>5.1</td>
<td>0.07</td>
</tr>
<tr>
<td>Verbally abusing a teacher</td>
<td>5.2</td>
<td>0.08</td>
</tr>
<tr>
<td>Physically injuring a teacher</td>
<td>6.6</td>
<td>0.04</td>
</tr>
<tr>
<td>Stealing school property</td>
<td>5.7</td>
<td>0.06</td>
</tr>
<tr>
<td>Presence of Mental Health and Social Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athletic Physical</td>
<td>52</td>
<td>41.4</td>
</tr>
<tr>
<td>Non-Athletic Physical</td>
<td>22</td>
<td>16.9</td>
</tr>
<tr>
<td>Treatment for Minor Illnesses and Injuries</td>
<td>77</td>
<td>59.6</td>
</tr>
<tr>
<td>Diagnostic Screenings (e.g., sickle cell, STDs)</td>
<td>12</td>
<td>9.3</td>
</tr>
<tr>
<td>Treatment for Sexually Transmitted Diseases</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Immunizations</td>
<td>12</td>
<td>9.3</td>
</tr>
<tr>
<td>Family Planning Counseling</td>
<td>12</td>
<td>9.3</td>
</tr>
<tr>
<td>Family Planning Services</td>
<td>3</td>
<td>2.3</td>
</tr>
<tr>
<td>Prenatal/Postpartum Health Care</td>
<td>4</td>
<td>3.1</td>
</tr>
<tr>
<td>Drug Awareness and Resistance Education Program</td>
<td>110</td>
<td>86.6</td>
</tr>
<tr>
<td>Drug Abuse Program</td>
<td>54</td>
<td>42.5</td>
</tr>
<tr>
<td>Alcohol Abuse Program</td>
<td>51</td>
<td>39.8</td>
</tr>
<tr>
<td>Nutrition/Weight Loss</td>
<td>20</td>
<td>15.5</td>
</tr>
<tr>
<td>Emotional Counseling</td>
<td>74</td>
<td>57.8</td>
</tr>
</tbody>
</table>

Table 21. Item and Descriptive Statistics for School-Level Scales
Table 21 continued

<table>
<thead>
<tr>
<th>Service</th>
<th>Count</th>
<th>Percentage</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rape Counseling</td>
<td>16</td>
<td>12.4</td>
<td>12</td>
<td>11.4</td>
</tr>
<tr>
<td>Physical Violence Program (e.g., family violence)</td>
<td>11</td>
<td>8.5</td>
<td>9</td>
<td>8.5</td>
</tr>
<tr>
<td>Daycare for Children of Currently Enrolled Students</td>
<td>8</td>
<td>6.1</td>
<td>6</td>
<td>5.7</td>
</tr>
<tr>
<td>Physical Fitness/Recreation Center</td>
<td>50</td>
<td>38.5</td>
<td>41</td>
<td>39</td>
</tr>
</tbody>
</table>
Appendix D: Histograms of Level-1 and Level-2 Standardized Residuals for the Individual Predictors Model Predicting Depression Score at Wave II
Figure 4. Level-1 Residuals for the Individual Predictors Only Model Predicting Depression Score at Wave II
Figure 5. Level-2 Residuals for Individual Predictors Only Model Predicting Depression Score at Wave II
Appendix E: Histograms of Level-1 and Level-2 Standardized Residuals for the Full Model Predicting Depression Score at Wave II
Figure 6. Level-1 Residuals for Full Model Predicting Depression Score at Wave II
Figure 7. Level-2 Residuals for Full Model Predicting Depression Score at Wave II
Appendix F: Histograms of Level-1 and Level-2 Standardized Residuals for the Full Model with Interaction Variables Model Predicting Depression Score at Wave II
Figure 8. Level-1 Residuals for Full Model with Interaction Terms Predicting Depression Score at Wave II
Figure 9. Level-2 Residuals for Full Model with Interaction Terms Predicting Depression Score at Wave II