

Social Isolation as a Predictor of Future Risk: A Longitudinal Study

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Dedication

To my family, for showing me the value of education.

To my parents, David and Elaine

For your ongoing love and support.

To my partner and friend, Jeff Lande

For your commitment and friendship.

To my daughters, Haleah and Eliana,

For your love and inspiration

May I live a life that honors each of you

Thank you.

Abstract

The current study investigates the relationships among self-reported feelings of chronic social isolation, risk, and protective factors. The study sample included 2,516 adolescents and young adults. Participants responded to survey questions regarding relationships, risk behaviors, psychological health, and protective factors. The findings revealed that reported social isolation at Time 1 was associated with an increased risk for social isolation at Time 2. Demographic characteristics were associated with an increased risk of chronic social isolation. Individuals with chronic isolation demonstrated psychological issues such as higher levels of depressive symptoms and lower levels of self-esteem. Dropout and increased screen time were a risk factor for chronically isolated females. Protective factors did not significantly influence the associations between social isolation and risk.

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CHAPTER ONE

Introduction

A recent study released in the popular press reveals that social isolation and the subsequent feelings of loneliness are as harmful to one's physical health as smoking and obesity. The results of this comprehensive new evaluation on social connections in the United States reveals that an increasing number of people report that they have no one in their lives with whom they can confide. Further, this study highlights a sad, yet increasingly common phenomenon in contemporary U.S. society in which close social connections -- once considered an essential part of our lives -- are diminishing or nonexistent.

Feelings of social isolation have come to be recognized as a pervasive phenomenon in American culture (Bradburn, 1969; Rubenstein, Shaver, & Peplau, 1979; Weiss, 1973). In fact, today Americans report more feelings of loneliness and isolation than ever before (McPherson, Smith-Lovin & Brashears, 2008). These increased feelings of isolation may be attributed to a confluence of factors including geographical distance from larger family networks, lack of neighborhood communities, and the increasing influence of technology placing a focus on more solitary activities such as internet and television. As people become more isolated, an important question remains about the influence of the lack of meaningful social connections on the youth of American society.

Popular belief or conventional wisdom tells us that old age is a time of increased loneliness and feelings of isolation. Yet, there is also evidence that adolescence is also a time of significant vulnerability to elevated feelings of social isolation (Weiss, 1973). Further, a primary developmental task of adolescence involves a movement away from

parents, toward the peer group. For adolescents who do not achieve the developmental transition to close friendships with peers, adolescence can be a time of serious and debilitating feelings of loneliness and isolation. A central question exists, if the primary developmental task in adolescence is the formation of close relationships with peers, what becomes of adolescents who do not participate in this task? The concern is that feelings of isolation during adolescence may set the stage for a life of isolation complete with increased vulnerability to risk and poor long term life outcomes.

Psychology, adolescent health, and child development research will guide this research study. The established theory on loneliness and isolation (Weiss, 1973) will provide a theoretical framework. The body of child development theory confirms that the primary developmental task of adolescence is the formation of close peer relationships (Bandura, 1982; Erikson, 1968; Hartup, 1996; Piaget, 1932, Sullivan, 1953). Further, research suggests that one of the strongest indicators of psychological health in adolescents is a sense of meaningful connection with peers (Asher & Paquette, 2003; Boivin, Hymel, & Bukowski, 1995; Parker & Asher, 1993; Rubin & Mills, 1988; Rubin & Stewart, 1996; Qualter & Munn, 2002). Finally, adolescent health research tells us that adolescence is a time of elevated vulnerability to risk, but that protective factors can influence risk (Resnick, 2000). Thus, adolescence may be a time of particular psychological vulnerability to the risks associated with feelings of social isolation from peers.

Data for this study was drawn from the Project EAT-II (Eating Among Teens-II) data set. This project is a longitudinal follow up study of Project EAT-I (Eating Among Teens-I), an observational study that used survey self-report measures of the emotional,

behavioral, socioenvironmental determinants of risk behaviors, emotional status, and eating behaviors in a large, ethnically diverse adolescent (middle and high school students) population. Five years later, Project EAT-II attempted to resurvey original Project EAT-I participants to examine changes in their perceptions and behaviors as they progressed from early adolescence to middle adolescence and from middle adolescence to late adolescence/young adulthood.

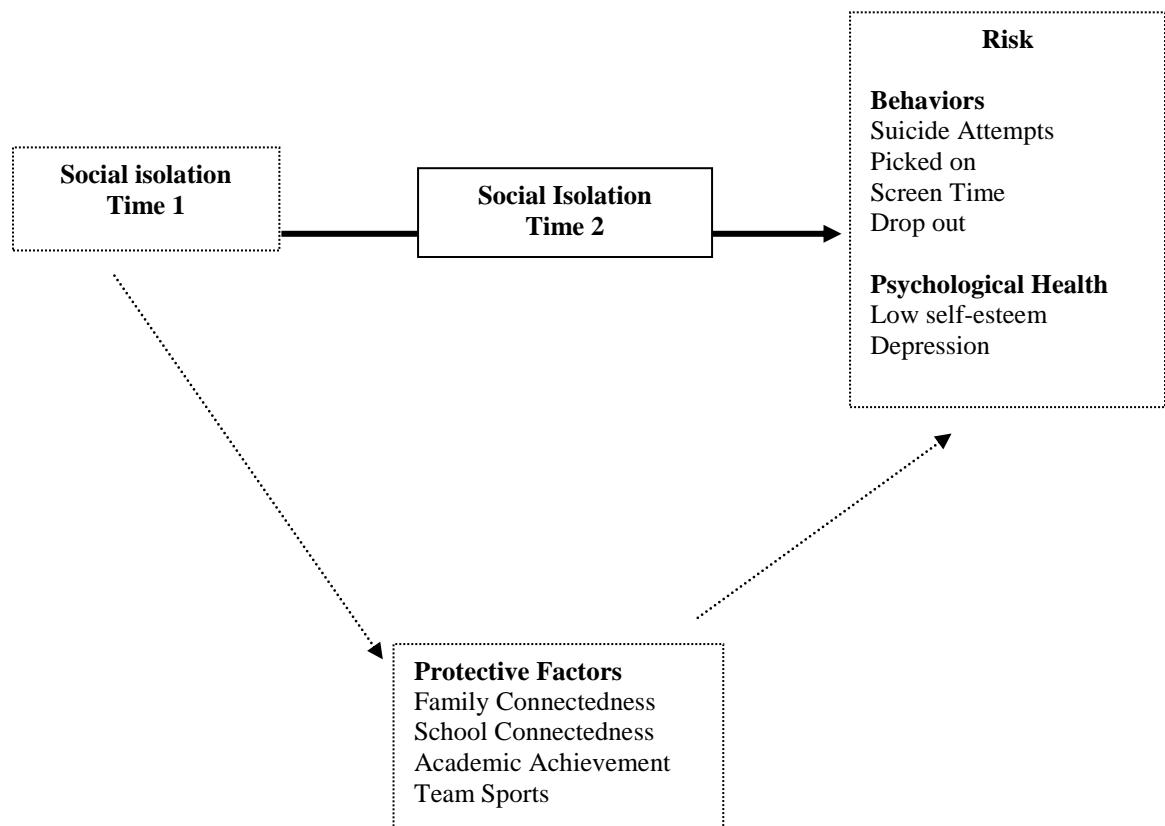
The independent variable for this study will be self-reported chronic feelings of social isolation (isolation both at Time 1 and Time 2). Risk (self-esteem, depressive symptoms, suicide attempts, school dropout, picked on by peers, screen time) variables will be the dependent variables used in this study. Protective factors (family connectedness, school connectedness, academic achievement, participation in team sports) will be the mediating variables.

Several primary hypotheses will guide this study. First, feelings of social isolation at one time point predispose an individual to feelings of social isolation at a later time point in the future. Second, certain status variables such as demographics and gender may dispose adolescents to chronic feelings of social isolation. Third, chronic feelings of social isolation during adolescence predispose individuals to risk including risk behaviors and psychological health risks. Finally, protective factors such as family connectedness, academic achievement, school connectedness, and participation in team sports will influence the relationship between chronic social isolation and risk.

Figure 1 illustrates the potential, hypothesized relationships between chronic social isolation, risk, and protective factors in adolescence. The potential direct relationship between feelings of social isolation at Time 1 and feelings of social isolation

at Time 2 is indicated by the bold arrow. Further, the connection between chronic feelings of isolation and risk behaviors is illustrated with the continuation of the bold arrow. However, the relationship between social isolation and risk may be mediated by protective factors in the adolescent's environment including family connectedness, school connectedness, academic achievement, and participation in team sports. This potential protective influence is indicated by the dotted line.

Figure 1. Relationship between Social Isolation (Time 1), Social Isolation (Time 2), Risk Behaviors, and Protective Factors



This longitudinal study will attempt to answer the following research questions:

1. Are feelings of social isolation at one time (Time 1 data collection) significantly associated with feelings of social isolation at a later time (Time 2 data collection)?
2. What are the associations between chronic feelings of social isolation during adolescence and future risk (risk behaviors and psychological health risks)?
3. Do protective factors (family connectedness, school connectedness, academic achievement, participation in team sports) influence the relationship between chronic social isolation and future risk (risk behaviors and psychological health risks) in adolescents?
4. Are adolescents who are isolated at one time point different in terms of risk profile from those that were never isolated or those that were chronically isolated?

CHAPTER TWO

Literature Review

A fundamental human emotion is a need to belong and feel connected to a group. Our thoughts, behaviors, and emotions are driven by a motivation to form meaningful relationships with others. Consequently, individuals who experience ongoing, persistent challenges in developing and maintaining high quality relationships are susceptible to feelings of chronic social isolation. This vulnerability to feelings of social isolation becomes particularly salient during the adolescent developmental period.

This literature review is predicated on the hypothesis that high quality relationships are a vital component of psychological health during adolescence. Accordingly, this literature is organized around the key concepts underlying feelings of social isolation during adolescence. Current definitions and conceptualizations of the construct of social isolation and chronic social isolation will be presented. For the purposes of this paper, a definition of social isolation will be provided. Further, relevant theory to social isolation in adolescence will be discussed. Established research on the relationship between feelings of social isolation and risk will be presented. Finally, current research on the longitudinal associations between adolescent feelings of social isolation and later adjustment will be reviewed. Consequently, this review will offer a unique contribution to field as it will place feelings of social isolation within the comprehensive contextual framework of social relationships, risks, and protective factors in the lives of adolescents.

Theoretical Importance of Peer Relationships in Adolescence

Feelings of social isolation and loneliness take place within the context of social relationships. The accumulated bodies of theoretical writings converge on the idea that the presence of a friendship during adolescence is a key developmental task (Erikson, 1968; Hartup, 1996; Sullivan, 1953; Weiss, 1973). From a developmental perspective, adolescence is considered a sensitive period in development during which individuals strive towards independence from the family and towards close friendships with peers.

The ground work for healthy social and cognitive development and future relationship skills are laid in the adolescent years. According to developmental lifespan theories, healthy social and emotional functioning in young adulthood may be contingent on skills developed in relationships with friends established in other previous key developmental periods such as adolescence (Erikson, 1968; Hartup, 1996; Sullivan, 1953). Thus, it follows that adolescents who lack close relationships with friends may miss out on important developmental tasks that may have significant implications for future development. Simply stated, close friendships in adolescence may build specific skills and adaptive competencies that no other relationships can.

The focus of the established theory revolves around the importance of peer interactions for healthy social, emotional, and cognitive development. Healthy development in these areas is important as it lays the groundwork for future relationship skills and emotional health. The theoretical work of Piaget (1932) indicates that relationships with peers provide a critical context for social cognitive growth. Further, the personality theory of Sullivan (1953) emphasized the importance of close peer relationships for the emergence of such social and emotional qualities such as respect,

equality, and reciprocity. These skills are solidified and reinforced in the bidirectional exchanges with peers. Sullivan (1953) posits that adolescent friendships have long term implications for an individual's sense of self worth and social competence. The relationship between adolescent friendship and future emotional health difficulties originates from Sullivan's (1953) declaration that the absence of a close friendship in adolescence may lead to future feelings of loneliness, depression, and poor self worth. Thus, the quality of adolescent relationships with peers may have long term implications for mental health and emotional well-being.

Further, Erikson's (1968) seminal psychodevelopmental theory of development highlights social relationships as a primary variable in human development. Erikson's theory suggests that development consists of eight stages, each of which requires the resolution of specific social relationship conflicts or disparities. Effective resolution during each developmental stage builds psychological foundations such as security, trust, self-concept, and the ability to develop meaningful relationships. According to Erikson's stages, the central conflicts during the adolescent and young adult years center around social issues such as identity, intimacy and isolation. Erikson highlights the idea that if an individual negotiates these stages successfully, one can develop intimate, meaningful relationships. If an individual is not successful in this stage, feelings of isolation may occur.

The more recent theoretical work of Bandura (1982) and Hartup (1997) indicates that a feeling of individual self worth emerges from the social reciprocities of friendship, the origins of which occur during adolescence. This sense of belonging in addition to the skills that are developed within a close, reciprocal friendships are critical at all stages of

life to promote successful coping and adaptive skills. The skills and the support of the relationship are particularly important in navigating major life events, such as school transitions and romantic relationships.

As adolescents navigate their social world, close peer relationships offer many protective benefits. Adolescents formulate group alliances to provide psychological support and a sense of belonging. They desire confidants with whom to talk about their peers, personal lives, and challenges. Close peer relationships serve as a major influence in the development and validation of a sense of self-efficacy and self-esteem (Bandura, 1982). The quality and closeness of peer relationships becomes integrated into the adolescent's larger concept of self and personal identity (Rubin & Mills, 1988). Therefore, adolescence may be a time of particular psychological vulnerability to the risks associated with feelings of social isolation (Rubin, LeMare, & Lollis, 1990).

Social Isolation: Theoretical Framework of Social Isolation

The theoretical work of Weiss (1973) captures many of the complexities involved with conceptualizing feelings of social isolation in adolescence. Weiss (1973) highlights a clear difference between the concepts he refers to as "social loneliness" and "emotional loneliness". Social loneliness refers to an actual lack of friends or the absence of a social network. This perspective encompasses the more visible, obvious attributions of feelings of social isolation such as peer exclusion and peer rejection. It refers to the more external attributions of social isolation which reflects an actual lack of friends and an absence of a social network. It touches upon the social needs of individuals to be a part of an interconnected group of peers that share common interests and activities.

In contrast, emotional loneliness originates from a lack of close and meaningful relationships. This absence may represent the actual social experience or the perception of the lack of close relationships. Weiss (1973) describes this type of loneliness as being the perceived lack of an intimate connection, the absence of a close, emotional relationship in which one feels accepted, secure, cared about, and understood. This involves many of the internal cognitive attributions or self talk of feelings of social isolation.

This emotional loneliness perspective illustrates much of the individual variation in perceptions of isolation. Thus, two individuals with objectively identical or very similar social networks may view them entirely differently. For example, an adolescent may have a very large group of friends and be a part of a peer social network, yet still feel isolated because their actual emotional connections with peers do not meet their emotional needs or internal standards of friendship quality (Archibald, Bartholomew, & Marx, 1995).

Weiss (1973) originally advanced the idea that loneliness and feelings of social isolation become most salient during adolescence. The adolescent period coincides with the point in development when individuals strive to achieve attachments separate from their parents and family unit. Adolescence is a time of increased need for social support and emotional connections with the peer group. Adolescents consistently report an intense need to feel a part of a peer group. A focus is placed on the deeper qualities of friendship such as similarities in personality and emotional intimacy (Claes, 1992; Parker & Asher, 1993; Pollack & Shuster, 2000). Although Weiss's work primarily focused on issues of adult loneliness and isolation, his perspectives recognize the dual adolescent

needs for social inclusion in the peer group as well as the need for intimacy within the context of peer relationships.

In concert with Weiss's conceptualizations of social and emotional loneliness, Hartup differentiates friendship qualities along the lines of deep and surface structure features, with long terms outcomes contingent upon the relationship quality (Hartup, 1996). Relationships with deep structural features such as intimacy and reciprocity offer many protective benefits. Thus relationships without that deep structure that connotes intimacy and high quality are more prone to feelings of isolation. Finally, Hinde's (1979) model of friendships, in which feelings of social isolation can be viewed as a variable resulting from the absence and quality of exchanges and relationships, also contributes to the current understanding of adolescent feelings of isolation.

Taken the theoretical models together as well as the empirical data, these models serve as a useful heuristic for defining social isolation. This theoretical framework encompasses the multiple definitions and perspectives of feelings of social isolation.

Feelings of Social Isolation: Construct Definitions

A first glance at the construct of social isolation presents an initial challenge in finding a clear and consistent definition. Social isolation is not a clinically defined behavioral, social, or emotional disorder of childhood (Rubin & Coplan, 2001). Thus, it is often examined as an indirect construct or outcome when evaluating other clinical constructs. Feelings of social isolation are often attributed to a variety of underlying causes, individual characteristics, and the multiple, interacting pathways in the lives of adolescents (Rubin & Mills, 1988). These feelings reflect a complex set of emotions that are strongly dependent on relationships, peer influences, and internalized perceptions of

self. Although feelings of social isolation are considered an internal experience, they are embedded within the multiple interpersonal contexts of relationships (Boivin et al., 1995; Parkhurst & Asher, 1992). Therefore, it is sometimes difficult to separate social isolation from other related constructs such as exclusion, rejection, victimization, and aggression (Greco & Morris, 2001; Rubin & Burgess, 2001).

An additional challenge exists in the individual variation in feelings of social isolation in adolescents. There is a consistent association between levels of peer acceptance and reported feelings of isolation (Rubin & Burgess, 2001; Rubin & Coplan, 2001). Adolescents who are poorly accepted or rejected by peers report increased feelings of social isolation and loneliness (Asher & Paquette, 2003). Yet, it is possible for adolescents to have many friends and still feel socially isolated. Research reflects that social contact does not necessarily protect against feelings of isolation and loneliness as feelings of social isolation appears to be connected with the individual's perceived quality of these social interactions and relationships. Further, some adolescents lack a social network and do not report feelings of social isolation (Parker & Asher, 1993). Thus, feelings of social isolation are often a subjective experience resulting in different individual interpretations.

A further challenge exists in distinguishing between the internal, affective state of social isolation, and the objective real state of being alone or without friends. Research supports that feelings of social isolation have both internal and external contributions (Rubin & Mills, 1988). Although feelings of isolation are considered a subjective, internal experience, they are embedded within the interpersonal contexts of relationships (Boivin et al., 1995; Parkhurst & Asher, 1992; Rubin & Stewart, 1996). Relationships

with peers both directly and indirectly influence feelings of social isolation in adolescents. Thus, it is often difficult to separate the constructs of feelings of social isolation and peer relationships during adolescence.

Finally, defining feelings of social isolation in adolescence offers many unique challenges specific to the developmental needs and transitions of this age group. The adolescent developmental period presents a paradox in that adolescents frequently associate with large groups of friends; however, it is the period in which individuals consistently report high levels of loneliness and feelings of isolation (Hawkins, Catalano, Kostermann, 1999; Parkhurst & Asher, 1992; Brennan, 1982). During adolescence, individuals become increasingly preoccupied with their inclusion, acceptance and status among their peers. A central developmental task of adolescence is the participation in a social network and the formation social relationships within the peer group (Bandura, 1982; Erickson, 1968; Hartup, 1996). However, adolescence is also a time of increased need for social support and emotional connections within the peer group. A focus is placed on the deeper qualities of friendship such as similarities in personality and emotional intimacy (Claes, 1992; Parker & Asher, 1993; Pollack & Shuster, 2000). Therefore, both a lack of participation in a social network and the absence of close, meaningful relationships with peers make contributions to feelings of social isolation in adolescence.

As the variety of professional opinions illustrate, the concept of social isolation is a construct that often defies precise meaning and understanding. Thus, it becomes evident why there has not been general agreement among researchers as well as clinicians concerning the relevance, significance, and precise definition of social isolation. It is

clear that social isolation is a complex construct with multiple causes, contributions, and interpretations. Based on the body of research literature, feelings of social isolation may be best conceptualized as a multi-dimensional construct with an internal emotional state that is strongly influenced by features of one's social network and connections (Asher & Paquette, 2003).

Social Isolation: A Definition

In order to develop a better understanding of the potential outcomes of social isolation, it is important to clearly and consistently define this term. For the purposes of the present study, the concept of social isolation will be defined as lacking close relationships with friends (Rubin & Coplan, 2001). This definition addresses the psychological aspects of isolation that are developmentally compatible with adolescent perceptions of friendship. Adolescence is a time of increased need for social support and emotional connections with the peer group. A focus is placed on the deeper qualities of friendship such as similarities in personality and emotional intimacy (Claes, 1992; Parker & Asher, 1993; Pollack & Shuster, 2000). Therefore, social isolation in adolescence is characterized by the perceived absence of close, meaningful relationships with peers.

Chronic Social Isolation: A Definition

Of particular interest in this study, are adolescents who experience long term, chronic feelings of social isolation. Feelings of social isolation during adolescence may be a normative experience during this developmental time period, but it is the ongoing, persistent feelings of social isolation that are a cause of more significant clinical concern (Asher & Paquette, 2003). Many researchers have attempted to operationalize or define chronic feelings of isolation and evaluate whether its underlying causes are different from

those of temporary feelings of isolation. Several research studies have explored the stability of feelings of loneliness and social isolation over time. Thus, a number of researchers have suggested differentiating between state feelings of isolation, which consists of current and temporary feelings of isolation, and trait loneliness or feelings of social isolation, which refers to the ongoing, stable reports of feelings of isolation.

Similarly, the research of Young (1982) has differentiated between transient, situational, and chronic feelings of isolation and loneliness. Transient feelings of social isolation and loneliness refers to short lived, temporary feelings of loneliness and social isolation experienced from time to time by most individuals. Young also defines situational feelings of loneliness experienced by individuals who previously had meaningful relationships that have been disrupted or changed. Finally, Young's work defines chronic feelings of loneliness or social isolation as the ongoing experience of dissatisfaction with relationships that has lasted for two or more years. Young's work laid the foundation for future research which validated that chronic feelings of isolation or loneliness are characterized as dissatisfaction with relationships or lacking friendships/relationships for two or more consecutive years (Heinreich & Gullone, 2006).

Stability of Feelings of Social Isolation in Adolescence

A central question of this present study is if feelings of isolation at one time point are a significant predictor of feelings of isolation at another time point. It may be the case that temporary isolation is a normative, common feeling in adolescence or it may be an indicator or future risk. Thus, this paper examines the question of the relationship of feelings of social isolation at one time (Time 1 data collection) with feelings of social isolation at a later time (Time 2 data collection)? Simply stated, do feelings of loneliness

at one time point in adolescence predispose that individual to feelings of loneliness at a later time point?

Feelings of social isolation may be a normative experience during the adolescent developmental time period. This is a developmental time period in which social roles, individual identities, and relationships with family and peers undergo significant change. Further adolescent expectations around peer relationships change with an increased focus on intimacy and closeness (Heinrich & Gullone, 2006; Parkhurst & Hopmeyer, 1998; Sippola & Bukowski, 1999). Although some feelings of social isolation or loneliness during adolescence is expected, persistent and ongoing feelings of isolation from peers is not normative (Asher & Paquette, 2003). In general, the stability of feelings of social isolation during the adolescent developmental period has not received much attention in the adolescent research literature. Of the research that exists, the results are mixed in terms of the stability of feelings of social isolation over time. Further, a lot of the current data borrows from the child and adult literature on social isolation.

As stated previously, chronic feelings of social isolation appear to be a different construct than more temporary, state isolation. The results of previous research have revealed that while for some individuals feelings of isolation and loneliness are ongoing for a significant number of individuals these feelings are temporary or relatively short lived. For example, very brief studies of feelings of social isolation and loneliness (ranging from six to eleven weeks) have demonstrated test-retest correlations ranging from $r=.71$ and $.85$ (Jones & Moore, 1987; Spitzburg & Hurt, 1987). In contrast, longitudinal studies with longer time spans (ranging between one to three years) have

produced smaller test-retest correlations ranging between $r=.38$ and $.68$ (Boivin et al., 1995; Koenig & Abrams, 1999).

Other research studies have revealed that reported feelings of social isolation are relatively consistent across developmental time periods. Data from the Waterloo Longitudinal Project revealed that approximately two-thirds of socially withdrawn, isolated children maintained this status from ages 5 to 11 years across every 2-year data collection period (Rubin, 1993). The children with the stability for feelings of isolation and social withdrawal were at risk for psychological issues and social problems. Feelings of isolation were stable from the early childhood through middle childhood years and from the late childhood through early adolescent years.

Chronic feelings of social isolation also appear to be qualitatively different from feelings of social isolation at one point in time. For example, the research of Gerson and Perlman (1979) evaluated the difference between chronic and situational loneliness. The result of which was an operational definition (as defined by the study parameters) of which participants fit into a chronically lonely versus situationally lonely category. Results of the study divided individuals into three categories: situationally lonely, chronically lonely, and nonlonely participants. The results revealed participants who fell into the situationally lonely category attributing their loneliness to unstable causes (e.g. temporary, situational) and the chronically lonely to more stable, immutable circumstances. However, the results of this study also revealed that chronically lonely and the situationally lonely participants reported equal levels of depressive symptoms.

Other researchers have attempted to distinguish between situational and chronic feelings of loneliness from a measurement standpoint. Hanley-Dunn, Maxwell, & Santos

(1985) have used the revised UCLA loneliness scale as a tool to define chronic feelings of isolation by asking participants to indicate if they experienced a number of key loneliness indicators at any point in their life and to identify the duration of the loneliness symptoms. Results revealed that feelings of isolation were correlated with greater negative personal feelings and attributions at that time point. Further, in this specific research study, the chronic nature of loneliness was no better predictor of future loneliness scores than general loneliness scores (the revised UCLA loneliness scale).

Koenig & Abrams (1999) also examined the stability of loneliness over a long period of time in a group of older adolescents. The results indicated that adolescents' who reported feelings of isolation were typically not stable over time, and associations with mental health outcomes were only possible with adolescents who reported feelings of isolation at both time points. These results suggest that one-time loneliness assessments may not be an effective indicator of future loneliness measures for adolescents. Reports from adolescents of feelings of social isolation and loneliness at one time point may be associated with other present negative emotions, perceptions, and behavior. However, these reports were not particularly stable and provided little insight into future reports of isolation.

Although the research results are mixed, the stability of chronic social isolation appears to be an important focus of study. However, the stability of isolation over time is a variable that may have the potential to differentiate developmentally typical feelings of adolescent social isolation from more abnormal, pathological feelings of isolation. Of specific interest are those adolescents who experience chronic feelings isolation and a subsequent risk profile that may extend into young adulthood and potentially beyond.

Further, the occurrence of chronic isolation may be a key variable in the connection between feelings of social isolation and future mental health/psychosocial functioning.

Chronic Social Isolation and Future Risk

Based on the combined bodies of available adolescent research on peer relationships and social isolation, a fundamental question exists: Are adolescents who experience chronic feelings of social isolation at an increased risk for long-term problems such as emotional health problems as depressive symptoms, poor self-esteem, and even suicide? Further, are there other risks associated with social isolation such as school dropout, peer harassment, and increased screen time? Although feelings of chronic social isolation may be measured in different ways across research studies, there is consistent agreement that chronic loneliness and feelings of isolation is an important focus of study and may offer valuable insight into future psychological functioning as well etiological and clinical treatment implications.

Long Term Risk of Feelings of Social Isolation

Adolescent researchers have established that behavioral patterns, social skills, and perceptions of relationships developed in adolescence often continue into adulthood (Maggs, Schulenberg, & Hurrelmann, 1997). Therefore, it follows that if peers make significant and necessary contributions to the development of social skills and social competence, it follows that adolescents without the presence of high quality, peer relationships may have increased vulnerability to later life problems and future negative outcomes. Specifically, because adolescents who do not experience close peer relationships have limited opportunities for healthy peer interactions, it logically follows that these individuals would miss opportunities to learn skills of normal social

interactions and relationships. This then influences other aspects and environments in the adolescent's life. For example, because academic achievement often takes place within a social context, a lack of social skills and relationship skills could negatively influence academic progress. Because of these issues, researchers have evaluated the premise that adolescents without peer relationships are both concurrently and predictively at risk for later adjustment problems (Rubin, LeMar, & Lollis, 1990).

The research evaluating how participation in friendship predicts later social and emotional development assumes that the influence of friends on an individual's life is more than a temporary phenomenon. Burhmester (1996) differentiates between the immediate influence of high quality peer relationships in daily lives of children and adolescents and the long term developmental impact. The long term positive impact comes within the context of friendship interactions such as improved interpersonal skills or reinforcement of self worth. Thus, while feelings of isolation can be a normative experience during adolescence, chronic feelings of social isolation have the potential to illuminate pathways to psychopathology (Asher & Paquette, 2003).

Adolescents who participate in high quality friendships and supportive peer relationships experience fewer feelings of social isolation and loneliness than individuals who do not have high quality friendships (Parker & Asher, 1993). A review of contemporary research on the effects of relationships with peers reveals that a myriad of psychological benefits exist for adolescents who report close connections to peers. In fact, the quality of peer relationships in childhood and adolescence may be the single most important indicator of future psychological health in adulthood (Boivin et al. 1995, Mead, 1934; Rubin, Bukowski, & Parker, 1998). Individuals who report peer

relationships characterized by warmth, validation, and closeness are better adjusted including lower levels of behavioral problems as well as increased levels of self worth, social competence, leadership skills, and improved school performance (Hansen, Giacoletti, & Nangle, 1995; Savin-Williams & Berndt, 1990). Further, the presence of one friend in early adolescence also predicted performance in school, professional goals, and job performance in the young adults (Bagwell, Newcomb, & Bukowski, 1998). Therefore, close relationships with peers during adolescence are significantly and consistently associated with future psychological well being and competence.

Psychological health outcomes. Adolescents who not report close relationships with peers have consistently poor psychological health outcomes. A wealth of research studies have demonstrated a significant association between feelings of social isolation and poor psychological health (Hall-Lande, Eisenberg, Christenson, & Neumark-Sztainer, 2007; Kupersmidt, Sigda, Sedikides, & Voegler, 1999; Page, Wyre, & Cole, 1986). Specifically, feelings of social isolation and loneliness have been correlated with a host of maladaptive psychological behaviors including social withdrawal, poor social interaction quality, low self-esteem, and increased negative feelings during social interactions (Cacioppo, Hawkley, Berntson, 2003). Specifically, feelings of loneliness and social isolation were significantly associated with relationships defined by less intimacy and understanding, and with more caution, distrust, and conflict. These effects were present even after controlling for other psychological issues such as depression and self-esteem.

Several empirical studies have established the importance of friendship during the childhood and adolescent years for future adaptive development and psychological

functioning (Rubin, Bukowski, & Parker, 1998). Students with consistent, repeated feelings of isolation have been associated with decreased levels of self-esteem, negative self- image, and anxiety during middle and late childhood years (Hymel et al., 1990; Rubin, 1993). Further, researchers have shown that feelings of social isolation during childhood predicts increased internalizing issues in adolescence such as depressive symptoms and higher levels of loneliness (Boivin et al., 1995; Gazelle & Rudolph, 2004; Gazelle & Ladd, 2003). Additionally, feelings of social isolation and social withdrawal have been correlated with later interpersonal problems such as peer rejection and peer victimization (Asher & Paquette, 2003).

The available body of empirical evidence suggests a link between feelings of isolation, poor peer relationships and later maladjustment. Some of the most significant associations between an absence of peer relationships and later adjustment have been found in the prediction of criminal behavior, early school withdrawal and mental health issues (Bagwell, Newcomb, & Bukowski, 1998, Kupersmidt et al., 1999).

Depression. Feelings of social isolation and depression during adolescence have been consistently linked in the research literature. Several studies have revealed moderate to significant associations (correlation coefficients ranging from .40s to the .60s) between depression and feelings of social isolation or loneliness in adolescents and young adults (Koenig & Abrams, 1999; Nolen-Hoeksema & Ahrents, 2002). Several studies have suggested that feelings of social isolation and depression may share underlying interpersonal difficulties such as poor social skills and negative attributional style (Dill & Anderson, 1999). Although depression and feelings of social isolation consistently overlap within the research literature, they do appear to be distinct psychological

constructs (Koenig & Abrams, 1999). Depression is considered to be more pervasive as it involves negative feelings across multiple domains in one's life. In contrast, feelings of social isolation and loneliness involve negative feelings in more focused on social issues and relationships (Boivin et al., 1995).

Longitudinal research on adolescents has suggested that feelings of social isolation and loneliness may contribute to the development and maintenance of depressive symptoms. For example, previous research reveals that feelings of social isolation and loneliness predicts an increase in depression and depressive symptoms two and a half years later, even after controlling for initial symptoms of depression (Koenig & Abrams, 1999). Another study revealed that young adult males with increased depressive symptoms reported a lack of quality friendships and peer relationships during their late adolescent years (Frost et al., 1999).

A more recent longitudinal study conducted by Pelkonen, Marttunen, & Aro (2003) revealed that the absence of a close friendship at age 16 was associated with significantly increased depressive symptoms at age 22. These later depressive symptoms were significantly higher even when accounting for previous levels of depressive mood. A more recent longitudinal study of friendships in children and adolescents conducted by Pederson, Vitaro, Barker, & Borge (2007) revealed similar findings. Specifically, there was a significant relationship between number of years the participants in the study had without at least one reciprocal friendship and future levels of feelings of loneliness and increased depressive symptoms in later adolescence and young adulthood. These characteristics were stable even after controlling for individual personality variables, such as anxiety and disruptive behavior.

Self-esteem. One of the most consistent and robust findings within the adolescent literature is the association between feelings of social isolation and loneliness and decreased levels of self-esteem (Brage, Meredith, & Woodward, 1993; Hall-Lande et al., 2007; Hymel, Rubin, Rowden, & LeMare, 1990). However, these studies were cross-sectional in nature and offered little insight into the longitudinal associations between feelings of social isolation and its future impact on self-esteem.

A few research studies have examined the contributions of a friendship and feelings of isolation in adolescence and its impact on later life functioning. Bagwell, Newcomb, & Bukowski, (1998) followed up with young adults who had a previously reported having a stable, reciprocal best friend in early adolescence grade and a group of young adults who had been friendless in early adolescence. The results revealed that the preadolescents with friends had higher rankings of self-worth in adulthood even after accounting for rankings of self worth in preadolescence. In contrast, the absence of a close relationship and peer rejection were predictive of increased psychological issues such as low self-esteem and poor self concept that remained stable into adulthood. Another longitudinal study of early adolescents who reported having at least one stable best friend were later found to have significantly higher levels of emotional well being including increased self-esteem and fewer symptoms of depression than those study participants who did not report having a close friend (Bagwell, Newcomb, & Bukowski, 1998). Thus, chronic feelings of social isolation during adolescence may be a risk factor for poor psychological outcomes.

Suicidal behavior. The current literature base establishes feelings of social isolation and loneliness as established a risk factors for suicidal behavior during

adolescence. Previous research with high school and young adults have established correlations between feelings of social isolation, suicidal ideation and suicide attempts (Roberts, Roberts, & Chen, 1997; Weber, Metha, & Nelson, 1997). In studies conducted with individuals who had a history of suicide attempts, feelings of loneliness and isolation have been consistently listed as a precipitating variable for the suicide attempt (Nordentoft & Rubin, 1993). In a study of adolescent calls into a suicide crisis line, feelings of loneliness and isolation were one of the most commonly stated reasons why adolescents sought support from the crisis center hotline (Sermat, 1980). In fact, this study also revealed that feelings of loneliness and isolation were stated by approximately 80% of crisis hotline callers.

In contrast, other research studies have not found correlations between feelings of social isolation and suicide attempts. For example, a research study on adolescent suicide conducted by Boergers, Spirito, and Donaldson (1998) suggests that suicidal behavior during adolescence has more intrapersonal rather than interpersonal causes. Further, a recent research study conducted by Lasgaard, Goossens & Elklit (2011) revealed that even when depressive symptoms are controlled for, feelings of social isolation and loneliness are not predictive of suicidal behavior over time.

Picked on by peers. Both the adolescent and children's research consistently confirms that individuals who are rejected or victimized by peers also experience increased feelings of social isolation and loneliness (Asher & Paquette, 2003; Crick & Ladd, 1993; Parker & Asher, 1993; Rubin & Mills, 1988). The research consistently reveals that students who are victimized or rejected by peers report more feelings of social isolation and loneliness is stable from kindergarten to high school. These

associations have been consistently demonstrated across both gender, socioeconomic, and ethnic groups (Asher & Paquette, 2003). Further, other adolescent research reveals that students who report being lonely are rated by both parents and teachers as less well adjusted in the social peer group (Larson, 1999). An additional interesting finding was that friendship quality and peer rejection were found to have unique contributions for later life functioning. Lower levels of peer rejection in early adolescence were uniquely associated with overall life status adjustment ratings (Bagwell, Newcomb, & Bukowski, 1998). Based on the existing literature, feelings of social isolation during adolescence appear to be a risk factor for being picked on by peers.

School dropout. Previous research has revealed poor peer relationships as a correlate of school dropout (Asher & Paquette, 2003). Further, research reveals that there are multiple, interacting influences to dropout as individual operates within his or her environment including socioeconomic background, academic achievement, and family involvement variables (Finn, 1989; Newmann, 1981). Adolescents with more supportive friendships report higher levels of peer acceptance, increased social competence, higher levels of motivation, more active school involvement, and increased success and happiness in school (Ladd, Kochenderfer, & Coleman, 1996).

Previous research also supports the concept that both social isolation and alienation are primary contributors to school dropout (Finn, 1989; Newmann, 1981). Feelings of connections with peers appear to have a significant influence on dropping out of school. Further, school dropout is predicted by the level to which a student reports a connection to the “social fabric” of the school environment (Finn, 1989; McNeal, 1995). Further, social integration with peers is one of most essential variables in the middle and

high school experience and that meaningful social relationships with peers are critical for retention in school (Newman, 1981; Steinberg, 1996; Tinto, 1987).

Christenson & Havsy (2004) emphasize the importance of psychological connections such as positive peer relationships and a sense of belonging as important factors in promoting school engagement and preventing school dropout. Further, a longitudinal study conducted by Jimerson, Egeland, Sroufe, & Carlson (2000) revealed that socioemotional and behavioral adjustment of children throughout their schooling to facilitate both their immediate and long-term academic success. Other research on high school students has revealed that participation in extracurricular activities (such as team sports and fine arts) significantly increases feelings of connection to school and reduces the likelihood that a student will drop out of school (Gilman, Meyers, & Perez, 2004; McNeal, 1995).

Based on this information, it follows that a connection to peers may be a critical component of connection to school and dropout prevention. These results highlight the significant influence of social interactions and peer relationships in school dropout. Further, the data are consistent with previous research which suggests that dropping out of school is not a sudden or immediate decision, but a behavior for which other variables such as relationships with peers make significant and meaningful contributions.

Screen time. Another hypothesized potential risk factor for adolescents experiencing chronic feelings of social isolation is an over-reliance on solitary activities such as excessive watching of television, internet usage, or playing video games (Chadwick & Heaton, 1996; Larson & Verma, 1999). Although these activities alone are not detrimental, they become a potential risk factor when they consume too much time or

take time away from important activities such as developing peer relationships or academic time. For example, several studies have revealed a negative correlation between increased television viewing and grade point average (Shann, 2001).

Previous adolescent studies have mixed results on this issue as some have demonstrated that individuals reporting high levels of screen time do not have increased levels of social isolation (Hardie & Tee, 2007; Odabaşıoğlu, Özgür, Genç & Pektaş, 2007). Other research has shown that individuals who report high levels of screen time also report increased levels of social isolation and emotional loneliness (Caplan, 2003; Engelberg & Sjoberg, 2004). Thus, this study will examine the connections between chronic feelings of isolation and amount of screen time.

Gender differences. One area of interest to the current study is the relationship between social isolation, risk and gender in adolescence. Previous literature suggests that if there are gender differences in feelings of social isolation, these differences emerge during adolescence. Although the effect sizes may be small, adolescent males consistently report more feelings of loneliness and social isolation than adolescent females. Yet, the research literature provides little insight whether these gender differences in reported feelings of isolation continue into late adolescence and into young adulthood. Further, the established body of research provides little to no insight into the long-term implications of chronic social isolation across gender groups.

Previous research found gender differences in adolescent chronic social isolation and loneliness. The research of Moore and Schultz (1983) revealed a link between feelings of isolation, maladjustment, and gender. The study found that adolescent females tended to experience feelings of isolation for more extended periods than adolescent

males. Further, females who reported chronic feelings of isolation also experienced increased negative outcomes and emotional health issues such as increased depression. Further, previous research has revealed that feelings of social isolation are more detrimental in terms of psychological risk profile to females (Hall-Lande et al., 2007). These findings are consistent with current research literature in which social isolation may reflect a group orientation in females toward, more importance in relationships than in males (Archer & Lloyd, 2002; Ladd & Troop-Gordon, 2003).

Protective Factors

Adolescence is a time of elevated risk, yet it is a time in which individuals are highly sensitive to social support systems. Therefore, protective factors have the potential to exert a uniquely powerful influence in the lives of adolescents. A review of the literature on adolescent health presents an interesting research question: Can the protective elements of strong connections to school, family, or extracurricular activities such as participation in sports compensate for the chronic absence of close and meaningful peer relationships during the adolescent years? The inclusion of protective factors illuminates their influence on the relationship between social isolation and risk in adolescence.

Previous research studies reveal that protective factors may mediate the relationship between feelings of social isolation and risk (Hall-Lande et al., 2007), but a question remains about the potentially unique influence of chronic isolation and its ability to be influenced by protective factors. A central question exists, are feelings of chronic social isolation in adolescence amenable to protective influences or are feelings of chronic isolation during adolescence more entrenched, less amenable to change?

Protective factors promote positive development and healthy outcomes and limit or reduce risk behavior and negative outcomes (Garmezy, 1985, 1991; Masten & Garmezy, 1991). Rutter (1990) views protective factors as exerting influence in the presence of stress and becoming more important with greater degrees of stress. Protective factors range from internal factors such as intelligence, creativity, and motivation to external factors such as family closeness, quality friendships, and community support (Masten & Garmezy, 1991; Werner, 1986, 1989). The increased vulnerability for risk during adolescence has created an interest in identifying protective factors that promote health and diminish the likelihood of risk behaviors and poor psychological outcomes (Resnick, Harris, & Blum, 1993; Resnick et al., 1997). Of the range of factors that influence adolescent health, the most prominent influences are families, schools, and peers (Hawkins & Weiss, 1985). Strong connections to school and family protect against a broad range of health risk behaviors in adolescence (Hawkins, Catalano, Kosterman, 1999; Resnick et al., 1997).

Previous literature has revealed that protective factors can mediate some of the risks associated with feelings of social isolation. Protective factors such as family connectedness, school connectedness, and academic achievement mediated the associations between social isolation and depression, self-esteem, and suicide attempts (Hall-Lande et al., 2007). The male participants who reported feelings of social isolation appeared to be able to draw from protective factors to buffer the negative effects of social isolation.

Family connectedness. Family connectedness refers to adolescents who report a sense of closeness and caring from their family members. A sense of family

connectedness is one of the most important contributors in positive outcomes and psychological health of adolescents (Blum & Reinhardt, 1997; Doll & Lyon, 1998; Field, Diego, & Sanders, 2001; Resnick et al., 1993; Resnick et al., 1997). The protective relationship between family connectedness and adolescent adjustment is significant, and consistently represents a fundamental aspect of adolescent health and well being. Adolescents from families with high levels of family connectedness report later participation in sexual activity, decreased pregnancy rates, lower levels of substance abuse, and fewer suicide attempts (DeVore & Ginsburg, 2005; Resnick et al., 1997).

Longitudinal studies of children and adolescents who have experienced severe adversity also strongly indicate the importance of caregiver relationships for successful adaptation and psychological health. Children with at least one competent and loving caregiver are more likely to display positive psychological outcomes and competence within their environment (Garmezy & Masten, 1991; Masten & Coatworth, 1998; Rutter, 1987). The protective elements of family connectedness appear to derive from the connection to at least one nurturing adult; independent of the actual family structure or organization (Resnick et al., 1993). Regardless of other risk factors, strong connections with family appear to provide children with the resources to promote healthy psychological development, (Pianta & Walsh, 1998). Thus, it follows that family connectedness may mediate the negative influences of social isolation in adolescence.

Academic achievement. Another prominent social context for adolescent development is the school setting. Schools are a forum in which adolescents have the opportunity to achieve both academically and socially. Although academic achievement is frequently defined by test scores and grades, it is also an indicator of an individual's

ability to adapt to expectations of the school environment (Masten & Coatworth, 1998). Low grade point average and grade retention are associated with a variety of risk factors including higher levels of emotional distress, substance use, involvement in violence and earlier onset of sexual intercourse (Resnick et al., 1997) as well as increased risk of dropout (Christenson, Sinclair, Lehr, & Hurley, 2000). Educational goals and active engagement in academics have been associated with resilience (Masten, Hubbard, Gest, Tellegen, Garmezy, & Ramirez, 1999) and positive outcomes such as school completion (Sinclair, Hurley, Christenson, Thurlow, & Evelo, 2002). As a result, academic achievement may represent a potential protective factor for socially isolated adolescents.

School connectedness. Connectedness with school is another protective factor in the lives of young people. School connectedness is defined as the experience of caring about school and a feeling of connection to the school environment and school staff. Although often closely connected to academic achievement, school connectedness does not always correspond with high academic performance. Academic achievement is considered to be one component of a connection to school, while attitude towards school, engagement, and a sense of connectedness also represent important contributions (Christenson et al., 2000; Resnick, 2000).

Connection to school is a critical protective factor against a variety of risk behaviors. Previous research supports that students with higher levels of school connectedness reported significantly lower levels of psychological problems, suicidal thoughts, suicide attempts, violent behavior, substance use, sexual behaviors (Resnick et al., 1997; Steinberg, 1996) and peer harassment (Eisenberg, Neumark-Stzainer, & Perry, 2003). The work of Goodenow (1993) suggests that low levels of school belongingness

may result in poor motivation, lower engagement, and potential withdrawal from school. Further, interventions targeted at promoting greater connections to school have demonstrated a reduction in the lifetime prevalence of violent criminal behavior, heavy drinking, sexual intercourse, and pregnancy (Hawkins et al., 1999).

Strong connections to school exert a powerful influence in the lives of students. For some students, relationships with educators are among the most meaningful in their lives (Anderson, Christenson, Sinclair, & Lehr, 2004; Garbarino, 1999; Hawkins et al., 1999; Pianta & Walsh, 1998). Strong connections to school are associated with safer behaviors, improved health outcomes for adolescents, better academic performance and more extracurricular involvement (Bonny, Britto, Klostermann, Hornung, Slap, 2000; Resnick et al., 1997). Relationships with students and teachers have been positively associated with students' motivation, achievement, feelings of belonging, and affect in school (Roeser, Eccles, & Sameroff, 1998, 2000). In addition, middle school students' perceptions of support and caring from teachers have been connected to students' current interest in class and school, which in turn, predict GPA (Wentzel, 1998).

Participation in team sports. The adolescent research literature consistently reveals that structured after school activities (such as team sports or fine arts activities) are related to many positive, protective benefits in the lives of adolescents. Although the literature in this area can best be described as emerging, the current studies have revealed significant positive associations between participation in structured activities and constructs such as self-esteem (Eccles & Barber, 1999) and personal life satisfaction (Gilman, Meyers, & Perez, 2004).

Structured extracurricular activities (SEAs) such as team sports are a potential protective factor that promotes resiliency in adolescents by modeling pro-social behaviors, connections with school, constructive use of time, and development in feelings of self worth and well-being (Larson, 2000). Participation in structured extracurricular activities such as team sports may offer uniquely protective effects as they may help to build and maintain social relationships with peers with like interests. Extracurricular activities can introduce adolescents into positive social groups and enhance both personal and interpersonal strengths (Mahoney, 2000). Further, school extracurricular activities can develop a sense of connection and identity for adolescents within the school community. Adolescents who participate in structured extracurricular activities report more positive assessments of their school and school environment which are established protective factors from withdrawing from school (Finn, 1989). This may be especially meaningful for students who are at risk of disengagement from school and dropping out (Davalos, Chavez, Guardiola, 1999; Larson, 2000).

Looking at the literature specific to participation in team sports, previous research studies have revealed that involvement in extracurricular team sports is significantly associated with lower levels of depressive symptoms in adolescence (Vilhjalmsson & Thorlindsson, 1998). Participation in rule-based games and activities with peers supported children's ability to understand and coordinate their perspectives of relationships with others to a concept of self as well as an organized perspective of the larger social group. A variety of social skills and relationship skills can be learned and connections to peer group and larger context of the school can be developed.

Previous research on adolescent participation in extracurricular activities suggests several primary conclusions. Overall, participation in structured school activities such as participation in team sports is associated with increased positive outcomes. These include increased academic achievement, decreased school dropout rates, reduced rates of substance abuse, lower rates of sexual activity for females, higher self-esteem, and decreased feelings of social isolation.

Gender differences for protective factors. The study of protective factors in adolescence also reveals some potential gender differences. Gender differences have been documented in terms of the significance of protective factors (Hall-Lande, Eisenberg, Christenson, & Neumark-Sztainer, 2007; Resnick, 2000) and in terms of coping responses (Copeland & Hess, 1995). Females depend on other people such as peers and family members for emotional support more often than do males (van Beest & Baerveldt, 1999). Family connectedness has been consistently cited as one of the strongest influences in the lives of females (Razzino, Ribordy, Grant, Ferrari, Bowden, & Zeisz, 2004; Resnick, 2000). Thus, the current study will also examine how the influence of protective factors operates differently across gender.

Conclusion

In summary, adolescents who experience ongoing feelings of social isolation may be particularly at risk for negative life outcomes and poor psychological health. Feelings of isolation and loneliness in adolescence have been associated with a host of psychosocial challenges (e.g. poor social skills, low quality social interactions, decreased self-esteem, peer victimization), emotional health issues (e.g. depression, suicidal behaviors), and negative educational/professional outcomes (e.g. school dropout, maladjustment, poor professional outcomes). Thus, chronic feelings of isolation and

loneliness have the potential to disrupt the development of psychosocial functioning, emotional health and later functional outcomes.

Adolescence presents many psychological difficulties and potential health risks; however, it is also a time in which individuals draw increased strength and support from the peer group. Because of the developmental importance of peer relationships during adolescence, psychological risks may be significantly more pronounced for adolescents who do not experience the protective benefits of close and meaningful social relationships with peers.

The research on the long term influence of chronic isolation during the adolescence years is relatively limited. At best, the literature borrows significantly from both child and adult literature. Few longitudinal studies exist that track the relationship between pathways to and from feelings of social isolation in adolescence. The current literature tends to focus on the early childhood or feelings of isolation and loneliness in the adult years. Despite its developmental significance in the arena of peer relationships, adolescence is a time that is often overlooked and understudied in the research literature. Further, the research on the influence of chronic isolation during adolescence is extremely limited.

In light of the current lack of high quality research on feelings of chronic social isolation in adolescence, the importance of longitudinal data on the relationship between chronic social isolation, future risk, and protective factors cannot be understated. The majority of available research focuses exclusively on participation in significant maladaptive behaviors such as participation in criminal activity, dropping out of school, and adult psychopathology. Although these issues are significant, there are other

important variables and outcomes that might be equally important to consider in the lives of adolescents. This comprehensive picture includes the integration of both protective and risk factors. Thus, the careful examination of the multiple factors in the lives of adolescents who experience chronic isolation in light of other important variables may be a powerful predictor in predicting both positive and negative outcomes that extend into adulthood.

CHAPTER THREE

Method

Data for this study were drawn from the Project EAT-II (Eating Among Teens-II) data set. This project is a longitudinal follow up study of Project EAT-I (Eating Among Teens-I), an observational study that used self-report measures of the emotional, behavioral, socioenvironmental, determinants of risk behaviors, emotional status, and eating behaviors among a large, ethnically diverse population in a major Midwestern metropolitan area. Project EAT I surveyed more than 4,700 adolescents from 31 metropolitan middle and high schools in Minnesota. Baseline surveys and body measurements were completed in school classrooms during the 1998 and 1999 school year. Surveys were administered by trained Project EAT research staff. Five years later (2003-2004), Project EAT-II attempted to resurvey original Project EAT-I survey participants to examine changes in their risk behaviors, emotional status, and eating behaviors as they progressed from early adolescence to middle adolescence and from middle adolescence to late adolescence/young adulthood. For the purposes of this study, the original survey data collection (Project EAT-I) will be referred to as Time 1 and the five year follow up data (Project EAT-II) will be referred to as Time 2. The group of students who were middle school students at Time 1 (1998-1999 school year) and high school students at Time 2 (2003-2004) will be referred to as the younger cohort. The group of students who were high school students at Time 1 (1998-1999 school year) and young adult students at Time 2 (2003-2004) will be referred to as the older cohort.

Participants

The Time 2 sample (Project EAT-II) of participants consisted of 2,516 total participants including 1,386 female adolescents (55.1%) and 1,130 male adolescents (44.9%) who completed surveys for both EAT-I (Time 1) and EAT-II (Time 2). Approximately one third (32.0%) of participants completed the high school survey and two thirds completed the young adult survey (68.0%). At Time 2 the mean age of the younger cohort was 17.2 years (SD 0.6) and the mean age of the older cohort was 20.4 years (SD 0.8). The participant sample was socioeconomically and ethnically diverse. Specifically, the approximate ethnic/racial background of the participants was as follows: 61.2% were white, 11.0% were African American, 4.2% were Hispanic, 17.9% were Asian American, 2.7% were Native American, and 3.0 % were of mixed or other race. In terms of socioeconomic status (SES), approximately 13.5% students were of low SES, 16.8% were of lower middle SES, 25.3% were of middle SES, 27.8% were upper middle SES, and 16.6% were high SES. Approximately one third of the sample was of low or low-middle socioeconomic status.

In terms of sexual orientation, approximately 92.7% of the sample reported being attracted to the opposite gender (straight), 1.7% of the sample reported being attracted to both genders (bisexual), 3.8% reported being attracted to the same gender (gay/lesbian), and 1.9 % reported to be questioning their sexuality (questioning). In terms of Body Mass Index, 7.4% reported being underweight, 69.2% reported being of average weight, 13.8% reported being overweight, and 9.7% reported being obese. In terms of Body Mass Index, 7.4% reported being underweight, 69.2% reported being of average weight, 13.8% reported being overweight, and 9.7% reported being obese. Descriptive demographic data for participants at Time 2 are shown in Table 1.

Procedures: Survey and Data Collection

The Project EAT-I survey was revised for use in Project EAT-II. For Project EAT-II, two versions of the survey were developed: 1 for younger adolescents of high school age and 1 for older adolescents/young adults who were out of high school. Approximately two-thirds of the items in the high school version and slightly over half of items in the young adult version were retained or slightly modified (e.g. change in young adult response options for age) as they were in the original survey.

EAT-II participants were stratified by high school and young adult groups, and randomly selected into six data collection waves. After an initial letter describing the study, surveys were sent by mail to the address provided by the participant during EAT-I. Subsequent mailings included two reminder postcards and three additional survey packets. After completed surveys were received, participants were sent a small financial incentive (e.g. check for \$ 20.00) for survey completion. In an attempt to increase the overall response rate, a final survey mailing was added to the data collection protocol. This final attempt was done in two separate waves (non-responders from waves 1-4 and waves 5-8). This mailing included a revised cover letter, a bright green mailing envelope, a mechanical pencil, and an increased incentive of \$50.00 for survey completion. Data collection ran from April 2003 to June 2004. All study protocols were approved by the University of Minnesota's Institutional Review Board Human Subjects Committee.

Measures

Social isolation. The independent variable, social isolation, was assessed using the question, "Do you have one or more close friends who you can talk to about your problems?" Response categories were "Yes, always"; "Yes, sometimes"; and "No" (see

Appendix A for survey items). A dichotomous variable was created by combining the two “yes” responses into a single “yes” response. The variable will then be dummy coded into 0/1 (not isolated/isolated) to allow the independent variable (social isolation) to be used as a predictor variable in a regression.

Chronic social isolation: Social isolation at both Time 1 and Time 2 was assessed with one item: “Do you have close friends with whom you can talk about your problems?” A composite variable incorporating both Time 1 and Time 2 self reports of social isolation will be created to represent the variable chronic social isolation.

Race/ethnicity. Race/ethnicity was assessed with one item: “Do you think of yourself as (1) white, (2) black or African America, (3) Hispanic or Latino, (4) Asian American, (5) Hawaiian or Pacific Islander, or (6) American Indian or Native American.” Respondents will be then grouped as white or non-white for multivariate analysis.

Socioeconomic status. Five levels of socio-economic status (SES) were based on the highest educational level completed by either parent or most respondents. Where this information is missing, eligibility for free or reduced cost school meals, and parental employment status will be used to infer SES.

Sexual orientation. Sexual orientation was assessed with one item: “Which of the following best describes your sexual orientation?” (1) attracted to the opposite gender, (2) attracted to the same gender, (3) attracted to both genders, (4) questioning. The variable will then be dummy coded into 0/1 (heterosexual/GLBQ) due to very small sample sizes.

Body mass index (BMI). BMI was based on self-reported height and weight measures, and calculated with the formula weight in kilograms divided by squared height in meters. The Must et al. (1999) classification system was used to derive four gender and

age specific BMI categories (<15th percentile, 15th-85th percentile, 85 to 95th percentile, and > 95th percentile). This system is based on data from the First National Health and Nutrition Study, and was selected because it provides contiguous values from childhood to adulthood, making it appropriate for this study population.

Protective factors. Four protective factors will be included. School connectedness was assessed as how respondents felt about going to school (“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”. Academic achievement was assessed by student self report of the two grades they received most often (“A-F”). Grade point average (ranging 0-4) was calculated based on these two grades. Family connectedness was assessed with a 4-item scale. Two separate questions asked, “How much do you feel your (mother, father) cares about you?” and “Do you feel that you can talk to your (mother, father) about your problems?” Five response categories for both questions were “not at all”, “a little”, “somewhat”, “quite a bit”, “very much”. Scores for the items were averaged to create a connectedness score ranging from 1 to 5, with higher scores relating to greater connectedness to family. Coefficient alphas ranged from 0.663 to 0.720). Participation in a team sport was assessed with “During the past 12 months, on how many sports teams did you play?”. Four response categories were, “0 teams”, “1 team”, “2 teams”, and “3 or more teams.” Respondents will be then grouped into 0 (no team sport participation) and 1 (team sport participation).

Psychological health outcomes. Dependent variables included self-esteem and depression. The scale for self-esteem had 6 items adapted from the Rosenberg self-esteem questionnaire (Rosenberg, 1965) and assessed level of agreement with statements

such as “I certainly feel useless at times” and “On the whole I am satisfied with myself.” Scores ranged from 6 to 24 with higher scores indicating higher levels of self-esteem. Coefficient alphas ranged from 0.810 to 0.836. Depressive mood was assessed using a six-item scale. Each item asked participants the extent to which, in the last 12 months, they had been troubled or bothered by symptoms of depression. Scores ranged from 6 to 18 with a score of 6 indicating the fewest symptoms of depression. Coefficient alphas ranged from 0.819 to 0.827.

Suicide attempts. Suicide attempts was measured with a single item: “Have you tried to kill yourself,” respectively. Response options were: “Yes, during the past year”, “Yes, more than a year ago”, “No”. Both yes responses were grouped together as a “Yes” response for analyses with suicide attempts.

Risk factors. Risk factors included Screen Time, Picked on by Peers, and School Dropout. Screen time was measured with several items: “In your free time on an average weekday, how many hours do you spend watching TV and videos?” and “In your free time on an average weekday, how many hours do you spend using a computer (not for homework)?” and “On an average weekend day (Saturday or Sunday), how many hours do you spend watching TV and videos?” and “In your free time on an average weekend (Saturday or Sunday), how many hours do you spend using a computer (not for homework)?” Response options included interval level responses such as “0 hours”, “½ hours”, “1 hour”, “2 hours”, “3 hours”, “4 hours”, “5+ hours”. Responses were combined to create one variable called screen time.

Picked on by peers was measured with a series of questions such as “How often are you called names or insulted? “How often are you teased about your weight? Students

responded on a Likert scale, “Never”, “Less than once a year”, “A few times a year”, “A few times a month.”, and “At least once per week.” Scores ranged from 6 to 24 with higher scores indicating higher levels of peer harassment.

School dropout was measured by one question on the young adult survey, “What is the highest level of education that you have completed?” Responses included “middle school or junior high”, “some high school”, “high school graduate or GED”, “some college”, “technical school degree”, and “college graduate”. This number was cross referenced with age of the participant to create a school dropout variable.

Data Analysis

Descriptive data: As a first step in the data analysis, descriptive data will be run to understand the basic features of the data in the study. This data will consist of summaries about the overall participant sample and the measures.

Exploratory analysis: A second step in the data analysis, will explore the tracking associations between Time 1 and Time 2 social isolation and psychological health, risk behaviors, and protective factors using χ^2 (Chi-square) analysis, which is an appropriate analysis on the nominal variables.

Inferential statistics: A General Linear Model design (ANOVA, ANCOVA) will be conducted to analyze the association between chronic isolation and each of the outcome variables. The independent variable, chronic social isolation, will be defined as self reported chronic social isolation (social isolation at both Time 1 and Time 2 data collection points). A series of hierarchical models will be built that gradually will include more control variables potentially mediating the relationship between chronic social isolation and outcome variables (psychological health, risk behavior, etc.). This

multivariate analysis will be stratified by gender and controlled for demographic variables (race, SES, age, sexual orientation, BMI). Analyses will be conducted using SAS version 8.2 (SAS Institute, Cary, NC). A p-value less than 0.01 will be used as this is both a standard p-value estimate in educational psychology research as it is more conservative than a .05 and appropriate for larger sample sizes.

Standard weighting procedure: It is important to note that there was attrition from Time 1 and Time 2 data collections. The original Project EAT I sample was 4,734 students. Some subjects from Project EAT I were not enrolled in Project EAT II (n=1070 , 22.6%) because the contact information at EAT-I was incorrect (n=411) or no correct address was found at the follow-up (n=591). The remainder of the 3676 participants were contacted through the U.S. mail. Of that group, 2516 participants completed Project EAT II surveys. This total number of participants represented 68.4% of participants who were contacted for Project EAT-II and 53.0% of the original Project EAT I study population. Further, this study attrition was not equal across demographic groups. Therefore, the sociodemographic makeup of the Project EAT I and Project EAT II sample groups are not the same. Therefore, in all analyses the data are weighted to adjust for differential response rates using a response propensity method (Little, 1986) in which the inverse of the estimated probability that a participant responded at Time 2 was used as a weight. This weighting method resulted in estimates more representative of the socio demographic makeup of the participants in the Project EAT I sample (Neumark-Sztainer et al, 2005).

Chi-square tests

To answer research question number 1, “Are feelings of social isolation at Time 1 significantly associated with feelings of social isolation at Time 2?” a Chi-squared test will be run comparing Time 1 social isolation with Time 2 social isolation. The data will be stratified by gender and age to determine age and gender associations across time.

Further, demographic similarities and differences between chronically isolated students (isolated both Time 1 and Time 2) and non-isolated students” Chi-square tests will be run to examine differences in chronic social isolation across gender, race, age, socioeconomic status, sexual orientation, SES.

Generalized Linear Model (GLM)

To answer research question number 2, “What are the associations between chronic feelings of social isolation during adolescence and future risk including risk behaviors (school dropout, picked on by peers, screen time) and psychological health risks (self-esteem, depression, suicide),” a hierarchical linear model will be built with a series of 8 hierarchical models. The rationale behind this model is to describe to what degree the variation in dependent variables is explained by chronic social isolation status. GLM is a good fit for this type of data because the majority of the response data are continuous.

Using social isolation as the independent variable, an ANOVA will be performed for each potential dependent (risk) variable. The sample will be stratified by gender to account for potential gender differences in behavioral risk and psychological health risk variables. The basic model, Model 1, will consist of social isolation alone as the independent variable. Model 1 will illustrate the unique contribution of social isolation on risk behavior and psychological health.

Model 2 will add in the demographic variables (covariates) of race, school level, SES, BMI status, and GLBT status to the basic model. The addition of demographic variables (Model 2) into the model creates a background model of characteristics. The rationale behind Model 2 is to control for the influence of demographic variables on the relationship between social isolation and risk behavior/psychological health. Because covariates will be included in this model, and ANCOVA will be run on this model and subsequent models (Model 2-8).

To answer research question 3, “Do protective factors (family connectedness, school connectedness, academic achievement, and participation in team sports) influence the relationship between chronic social isolation and future risk (risk behaviors and psychological health risks)?”, I will continue to build on Model 2 by adding in the individual protective factors of family connectedness, academic achievement, school connectedness, and participation in team sports respectively. The inclusion of these modifiable protective factors will illustrate if significant associations remain between social isolation and the dependent variables after controlling for each protective factor and the demographic variables. The combination of all four protective factors (Model 7) will be added into the model to determine if a combination of protective factors would influence the association between social isolation and the dependent variables in a way that could not be seen in previous models.

Finally, the combination of all four protective factors (Model 8) plus sexual orientation status. The rational of including sexual orientation status in the final model was due to the small numbers of students in this category.

The final research question to be evaluated is, “Are adolescents who are isolated at one time point different in terms of risk profile from those that were never isolated or those that were always isolated”. A GLM as well as a series of three way t-test comparisons were used to answer this question.

CHAPTER FOUR

Results

Descriptive Data

Descriptive data on social isolation status is presented in Table 1. In looking at social isolation status in the overall sample, approximately 87.7% (n=2144) of the sample was never isolated (e.g. not isolated at Time 1 and not isolated at Time 2 data collection). In terms of gender breakdown, approximately 90.1% (n=1222) of the female study participants and 84.7% of the male study participants were never isolated. At Time 1 of this project, approximately 6.6% (n=164) of the entire sample reported social isolation (e.g. self report of not having friends with whom they could talk) with a higher percentage of males (n=100, 9%) reporting social isolation than females (n=64, 4.7%). At Time 2, approximately 7.2 % (n=179) of the entire sample reported social isolation with a higher percentage of males (n=94, 8.5%) reporting not having friends with whom they could talk (e.g. social isolation) than females (n=85, 6.2%). Taking the two time points together, approximately 12.2% of the entire sample reported not having friends with whom they could talk to at some time point (either Time 1 or Time 2). In terms of chronic feelings of social isolation, approximately 1.6% (n=38) of the overall sample including 0.9% (n=13) of females and 2.2 % (n=25) of males reported not having friends with whom they could talk (e.g. social isolation) at both Time 1 and Time 2 data

collection.

Table 2 provides an overall sample data including frequency and means (standard deviations) for risk and protective factors during the Time 2 data collection. In terms of self-esteem, the average or mean self-esteem score for the entire sample was 18.3 (range=6-24; SD=3.5). Overall female self-esteem scores (17.7, SD=3.5) were lower than male self-esteem scores (19.0, SD=3.4). The mean depressive symptoms score for the entire sample was 12.7 (range=7-21; SD=3.4) with females reporting higher levels of depressive symptoms 13.4 (SD=3.4) than males 11.7 (SD=3.2). In terms of suicidal behaviors, approximately 5.9% reported a suicide attempt in the past year with more females reporting suicide attempts (7.7%, n=105) than males 11.7 (SD=3.2). In terms of school dropout, approximately 3.1% (n=42) of females and 3.2% of males (n=35) reported dropout. The mean picked on by peers score was 7.8 (range=2-15, SD=3.0). The average overall picked on by peers score for females was 7.8 (SD=3.0) and 7.9 (SD=3.1) for males. In terms of screen time (range=4-28), females averaged approximately 13.5 hours per week and males averaged approximately 15.2 hours per week.

In terms of protective factors for the overall sample, the mean for grade point average was 2.9 (SD=0.84, range=0-4.0). Female GPA was 3.0 and male GPA was 2.9. Overall school connectedness was 3.2 (SD=1.06, range=1.00-5.00). Female school connectedness average score was 3.3 and male school connectedness average score was 3.1. Overall family connectedness scores were 3. 9(SD= 0.82, range=1.00-5.00). Female

and male family connectedness scores were each 3.9. In terms of participation in team sports, 64.1 % (n=1, 561) of the study participants reported participation in team sports in the past year. Female participation in team sports was 60.1% (n=800) and participation in team sports was 69.0% (n=761).

Chi Square Analysis

To answer research question number 1, “Are feelings of social isolation at Time 1 significantly associated with feelings of social isolation at Time 2?” a Chi-square test was run comparing Time 1 social isolation with Time 2 social isolation (see Table 3).

The results indicated that among those who were isolated at Time 1 data collection, a significant number of participants were also isolated at Time 2 data collection (χ^2 (1)=87.88 p<.0001). Thus, reports of social isolation at Time 1 was significantly

associated with social isolation at Time 2. Looking at the data on age and gender

associations and how isolation tracks over time reveals several general data trends. In

both the younger male cohort (middle school at Time 1 and high school at Time 2) and

older male cohort (high school at Time 1 and young adult at Time 2), there was a

significant association between reported isolation at Time 1 and reported isolation at

Time 2. Thus, in both younger male cohort (χ^2 (1)=27.16, p<.0001) and older male

cohort (χ^2 (1)=22.92, p<.0001), feelings of isolation tracked over time. The data on the

younger female cohort did not reveal a significant association between Time 1 and Time

2 reports of isolation. In the older female cohort, there was a significant association

between reported isolation at Time 1 and reported isolation at Time 2 ($\chi^2 (1)=43.24$, $p<0.0001$). Chi-squared results for isolation across Time 1 and Time 2 are provided in Table 3.

Demographic similarities and differences between chronically isolated students (isolated both Time 1 and Time 2) and non-isolated students were also explored (see Table 4). As stated previously, the total number of study participants who were chronically isolated (isolated at both Time 1 and Time 2 data points) was 38 students (1.6% of the sample). To examine characteristics of participants who were chronically isolated further, chi-squared tests were run to examine differences in chronic social isolation across gender, race, age, socioeconomic status, sexual orientation. Across the two data collection times, 1.2% of females were chronically isolated (isolated both times) and 3.0% of males were chronically isolated ($\chi^2=10.32$; $p=0.001$). Across the two data collection times, approximately 3.2% of students of color were chronically isolated and 0.9% of white students were chronically isolated ($\chi^2=17.19$; $p<.0001$). Across the two data collection times, 2.5% of the younger cohort (high school students) were chronically isolated (isolated both times) and 1.9 % of the older cohort (young adults at Time 2) were chronically isolated ($\chi^2=0.99$; $p=0.32$). In terms of socioeconomic (SES) status, the distribution followed a linear pattern following the income distribution with students in the low SES reporting the most chronic social isolation and those in the high SES reporting the least isolation ($\chi^2=12.89$, $p=0.0118$.001). In terms of sexual orientation,

1.9% of straight students were chronically isolated, 0.0% of bisexual students were chronically isolated, 3.2 % of gay students were chronically isolated, and 12.4% of questioning students were chronically isolated. Overall, the comparison chronic isolation and sexual orientation (straight versus gay, lesbian, bisexual, questioning) was significant ($\chi^2=8.96$; $p=.003$).

To summarize these research data, general trends were that isolation at Time 1 was significantly associated with isolation at Time 2. Therefore, social isolation at one time point may be considered a risk factor for social isolation at a later time point. Further, it appears from the data that being male, low income, being a student of color were all demographic risk factors for chronic social isolation. Although the sample size for GLBQ (gay, lesbian, bisexual, questioning) students was very small, the data also suggest that GLBQ status was a potential risk factor for chronic social isolation.

Generalized Linear Model

To answer research question 2, “What are the associations between chronic feelings of social isolation during adolescence and Time 2 risk behaviors/conditions including risk behaviors (school dropout, picked on by peers, screen time) and psychological health risks (self-esteem, depressive symptoms, suicide),” a generalized linear model was built with a series of 8 hierarchical models. The rationale behind this model was to describe to what degree the variation in dependent variables is explained by

the key independent variable, chronic social isolation status. GLM results for the variables of self esteem, depression, screen time, and picked on are presented in Table 5. Predicted probabilities for the variables of suicide attempts and dropout are presented in Table 6.

Using chronic social isolation as the independent variable, a Generalized Linear Model was performed for each potential dependent (risk) variable. The sample was stratified by gender to account for potential gender differences in behavioral risk and psychological health risk variables. The basic model, Model 1, consisted of chronic social isolation alone as the independent variable. Model 1 can be considered the naïve model as it demonstrated the contribution of chronic social isolation on risk behavior and psychological health without including any additional variables or co-variates.

To investigate the influence of chronic social isolation alone on psychological health and risk behavior, Model 1 included social isolation as the single independent variable. As shown in Table 5, the data are reported in least square means and F values. In looking at the variable of self-esteem (variable range=6-24), the mean self-esteem score among chronically isolated males was 17.5, compared to 19.0 for non-isolated males. Thus, chronic social isolation was significantly associated with lower levels of self-esteem ($F=6.61$, $p=.01$) for males. In looking at the variable of self-esteem for females, the mean self-esteem score among chronically isolated females was 14.3, compared to 17.8 for non-isolated females. Thus, chronically isolated females reported

significantly lower levels of self-esteem ($F=17.52$, $p<0.001$). Chronic social isolation was significantly associated with higher levels of depressive symptoms ($F=17.51$, $p<.0001$) and higher levels of screen time ($F=7.48$, $p=0.006$) for females. As shown in Table 6, chronic social isolation was also significantly associated with school dropout ($F=6.67$, $p=0.009$).

In Model 1, chronic social isolation was not significantly associated with increased levels of depressive symptoms, higher levels of school dropout, or higher levels of screen time in males. Further, chronic social isolation was not significantly associated with higher levels of suicide attempts or higher levels of being picked on by peers in either males or females.

Model 2 added in the demographic variables (covariates) of race, school level, SES, BMI status to the basic model (see Tables 5). The addition of demographic variables (Model 2) into the model creates a background model of characteristics. The rationale behind Model 2 is to control for the influence of demographic variables on the relationship between social isolation and risk behavior/psychological health. After adjusting for demographic variables, chronic social isolation was no longer associated with decreased self-esteem in males ($F=3.47$, $p=0.06$). In females, the significant association remained between chronic social isolation and lower levels of self-esteem ($F=18.89$, $p<.0001$) and higher levels of depressive symptoms ($F=17.16$, $p<0.0001$) even after adjusting for demographic variables (see Table 5). For females, the significant

association remained between chronic social isolation and total screen time ($F=11.13$, $p<0.001$ females).

In Model 2, the association between chronic social isolation and the variables of depressive symptoms, suicide attempts, school dropout, screen time, and being picked on remained non-significant in males. Further, suicide attempts and being picked on remained non-significant in females. For females in Model 2, there was no longer a significant association between chronic isolation and school dropout (see Table 6).

Protective factors were then included in the hierarchical model in order to answer research question 3, "What is the influence of protective factors for adolescents who experience feelings of chronic social isolation?" The protective factors included in this model were Family Connectedness (Model 3), Academic Achievement (Model 4), School Connectedness (Model 5), Participation in Team Sports (Model 6) and a combined model of Family Connectedness, Academic Achievement, School Connectedness, and Participation in Team Sports (Model 7). Results of the continuous variables (self esteem, depression, screen time, picked on) in Models 3-8 are presented in Table 5. Results of the predicted probabilities for dichotomous variables (suicide attempts, school dropout) in Models 3-8 are presented in Table 6.

When family connectedness was added into the model as a single protective factor (Model 3), chronic social isolation remained significantly associated with lower levels of self-esteem ($F=17.66$, $p<0.0001$), higher levels depressive symptoms ($F=14.69$,

$p < .0001$), higher levels of screen time ($F=10.35, p < 0.001$) for females. Further, the association between chronic isolation and higher levels of being picked on by peers ($F=7.42, p < 0.01$) re-emerged for females in Model 3. For males, the association between chronic social isolation and the variables of self-esteem, depressive symptoms, screen time, and being picked on by peers remained not significant (see Table 5). For suicide attempts and school dropout, neither chronically isolated males nor females reported significantly higher risk when compared to non-isolated adolescents (see Table 6).

When academic achievement was added into the model as a single protective factor (Model 4), a moderate significance in the association between chronic social isolation and decreased self-esteem ($F= 7.56, p=0.01$) and increased depressive symptoms ($F=6.33, p=0.01$) emerged in males (see Table 5). Similar to the previous models, chronically socially isolated females presented with lower levels of self-esteem ($F=17.99, p < .0001$), higher levels depressive symptoms ($F=8.92, p < .01$), and higher levels of screen time ($F=8.21, p < .01$). Further, the significant association between chronic social isolation and dropout ($F= 8.26, p < .01$) re-emerged for females when controlling for academic achievement (see Table 6). Further, socially isolated males continued to not display increased levels of screen time (see Table 5) or an increased risk of dropping out (see Table 6). Similar to previous models, increased levels of being picked on by peers (see Table 5) and suicide attempts (see Table 6) and were not significant for chronically socially isolated males or females in Model 4.

When school connectedness was factored into the equation as a single protective factor (Model 5), lower levels of self-esteem ($F=7.30$, $p=.007$) remained for males (see Table 5). For socially isolated females, the analysis continued to reveal lower levels of self-esteem ($F=17.73$, $p=<.0001$), higher levels of depressive symptoms ($F=8.50$, $p=.0040$), higher amounts of screen time ($F=8.28$, $p=0.004$), and increased risk for dropout ($F=7.63$, $p=.005$). Depressive symptoms were no longer significant for males in Model 5. Screen time and dropout remained not significant for males. Picked on by peers (see Tables 5) and suicide attempts (see Tables 6) were not significant for either males or females in this model.

When participation in team sports was factored into the model (Model 6), the data revealed lower levels of self-esteem ($F=6.92$, $p=0.008$) and higher levels of depressive symptoms ($F=5.34$, $p=.02$) re-emerged for males (see Table 5). For socially isolated females, the analysis continued to reveal lower levels of self-esteem ($F=22.96$, $p=<.0001$), higher levels of depressive symptoms ($F=10.14$, $p=0.002$) (see Table 5). Screen time and dropout remained not significant for males. For females, both dropout and screen time were no longer significant when controlling for school connectedness. Being picked on by peers and suicide attempts remained not significant for either males or females.

When all four protective factors (family connectedness, school connectedness, academic achievement, participation in team sports), the analysis continued to reveal lower levels of self-esteem ($F=6.82$, $p<0.01$) and higher levels of depressive symptoms ($F=5.65$, $p<.01$) for males (see Table 5). For socially isolated females, analysis continued to reveal significantly lower levels of self-esteem ($F=19.83$, $p=<.0001$), significantly higher levels of depressive symptoms ($F=8.10$, $p=0.01$). For socially isolated females, the

higher risk of school dropout ($F=13.76$, $p=0.0002$) re-emerged for females in Model 7.

Similar to previous models, chronic isolation was not significantly associated with dropout in males. Further, screen time, being picked on by peers, and suicide attempts remained not significant for either males or females in Model 7.

Model 8 consisted of all demographic variables and all four protective factors (family connectedness, school connectedness, academic achievement, participation in team sports) with an additional demographic variable of sexual orientation added into the model. This demographic variable was added in as a separate demographic variable due to the small numbers of gay, lesbian, bisexual, and questioning students. The final analysis (Model 8) in this GLM revealed lower levels of self-esteem ($F=5.95$, $p<0.01$) and higher levels of depressive symptoms ($F=5.46$, $p<.01$) for males (see Table 5). For socially isolated females, analysis revealed significantly lower levels of self-esteem ($F=19.31$, $p<.0001$), significantly higher levels of depressive symptoms ($F=7.74$, $p<0.01$), and a higher risk of dropping out of school ($F=13.39$, $p=0.0003$). Further, the significant association between social isolation and screen time ($F=6.85$, $p<.01$) re-emerged for females in this model. Similar to previous models, chronic isolation was not significantly associated with dropout or screen time in males. Further, being picked on by peers and suicide attempts remained not significant for either males or females in Model 8.

To summarize this section of data analysis, chronic isolation appears to have a different effect on risk behavior across gender. Across models, the most consistent findings were that chronic social isolation was associated with poorer self-esteem and more depressive symptoms even after adjusting for demographic variables and protective

factors in both males and females. Chronic social isolation was also associated with school dropout and total screen time in several models for females only. No significant associations were found between chronic isolation and suicide attempts or being picked for either males or females.

GLM and Three Way T-Tests

To answer the final research question, “Are kids who are isolated at one time point different from those that were never isolated or those that were always isolated”. A GLM and a series of follow up three way t test comparisons were run to explore this question. In the GLM, Models 1 (naïve model) consisted of the three groups (never isolated, isolated at one time point, isolated both times points) as a composite variable. Students were categorized into three different groups based on isolation status at the two different time points (Time 1 and Time 2). It should be noted that isolation at one time could be either Time 1 or Time 2. Model 8 (complete model including all demographics and protective factors) was also run comparing all three groups. Both risk and protective variables were examined including self-esteem, depression, screen time, picked on by peers, suicide attempts, dropout, family connectedness, school connectedness, academic achievement, and participation in team sports.

Using isolation status as the independent variable, a Generalized Linear Model was performed for each potential dependent (risk) variable. The sample was stratified by gender to account for potential gender differences in behavioral risk and psychological health risk variables. Model 1 illustrates the unique contribution of isolation status on risk behavior and psychological health. Additionally, a series of t-tests were run to look at specific differences across the three groups. Results of are summarized in Table 7.

As shown in Table 7, the GLM revealed that isolation status was significantly associated with lower levels of self-esteem ($F=9.92$ $p<.0001$) and higher levels of depressive symptoms ($F=5.97$, $p=0.003$). For females, social isolation status was significantly associated with higher levels of depressive ($F=9.97$, $p<.0001$), and lower levels of self-esteem ($F=19.74$, $p<0.001$). In terms of total screen time, social isolation status was not significantly associated with screen time for males, but it was significantly associated with screen time ($F=5.58$, $p=0.003$) for females. Social isolation status was not significantly associated with suicide attempts or school dropout for males or in females.

In looking at the t-test comparisons (see Table 7), several general patterns in the data emerged. First, at many points in the analysis that the group of never isolated students looked different from the other two groups (isolated at one time point, chronically isolated). For example, at times in the model never isolated students looked very different than the other two groups in terms of the psychological variable of self-esteem. The results revealed that students who were never isolated had significantly higher levels of self-esteem than the isolated at one time and chronically isolated group. Students (particularly male students) who were never isolated also appeared to have significantly higher levels of family connectedness than the group of students who were isolated at one time or the students who were chronically isolated.

The second general pattern is that at many times throughout the analysis, the group of students who were isolated at both time points (chronically isolated) also looked like a different or unique group. For example, students who reported isolation at both times (chronically isolated) appeared to have a more problematic overall profile (e.g.

significant differences in self-esteem, depressive symptoms, family connectedness, GPA, participation in team sports). The most striking statistical differences in risk and protective profile occurred in the comparisons of the never isolated and chronically isolated groups (see Table 7).

Finally, the isolated at one time point group looked like both never and chronically isolated depending on the variable of interest. In some cases the group of students who were isolated at one time point looked like the never isolated group of students. For example, when looking at the variables of suicide, drop out, and team sports the isolated at one time point group looked very similar to never isolated group. At other times, the isolated at one time point looked liked the chronically isolated group (GPA, school connectedness). In terms of self-esteem, isolation at any time point either at one time point or chronically isolated yielded similar results.

As seen in Table8, the final Model 8 or complete model of the GLM consisted of all demographic variables including sexual orientation and all four protective factors (family connectedness, school connectedness, academic achievement, participation in team sports). In terms of self-esteem, although the least square (ls) means data followed the general linear trend of the never isolated having the highest levels of self-esteem, followed by the isolated at one time group, and then the chronically isolated group with the lowest levels of self-esteem, the differences across the three groups was not significant ($F=3.83$, $p=0.02$) in males (see Table 8). For females, the association between social isolation status and self-esteem analysis revealed significant differences across the three groups, with the never isolated group displaying significantly decreased self-esteem levels ($F=13.59$, $p=<.0001$). For females, the relationship between isolation status and

self-esteem has remained significant and robust throughout the model. For males, there was a mildly significant difference in depressive symptoms ($F=4.27$, $p<.01$) across the three groups. However, this model did not reveal significant differences in across the three groups of females in depressive symptoms ($F=3.84$, $p=0.02$) across groups.

Suicide attempts did not look significantly different across the three groups for either males or females. For school dropout, in looking at the differences across the three groups, there did not appear to be a significant difference across the three groups for males ($F=2.64$, $p=0.07$). However, for females there was a significant difference across groups for females and school dropout ($F=7.06$, $p=0.0009$) when controlling for all variables plus GLBQ. As in similar models, the data in both males and females followed a linear trend with the never isolated group having the lowest levels of dropout, followed by the isolated at one time group, and the chronically isolated group with the highest levels of dropout. Screen time was not significantly different across groups in either males or females. Similar to previous models, social isolation status was not significantly associated with being picked on in both males and females. However, in both males and females these data also followed a similar trend as other models in which the never isolated group had the lowest levels of being picked on by peers, followed by the isolated at one time group, and the chronically isolated group with the highest reported levels of being picked on by peers.

CHAPTER FIVE

Discussion

The relationship between chronic social isolation, risk, and protective factors remains an important issue in the field of adolescent health. The accumulated bodies of theoretical writings converge on the idea that the presence of a friendship during adolescence is a critical developmental task. Therefore, this study hypothesized that adolescents who do not report close friendships are at risk for poor life outcomes into adulthood. The purpose of this study is to explore the longitudinal associations between chronic social isolation in adolescence and risk including psychological health (e.g. self-esteem and depressive symptoms) and risk behaviors (e.g. screen time, picked on by peers, suicide attempts, school dropout). The potential mediating influence of protective factors (e.g. family connectedness, school connectedness, academic achievement, participation in team sports) was also examined.

Explanation of Findings

A place to begin this discussion is to tell the story of who the chronically isolated students were in this study. An overview of demographic characteristics of the data revealed some interesting demographic trends. Approximately 7% participants in this study experienced current feelings of social isolation. This finding is consistent with previous literature which reveals that approximately 8–12% of children and adolescents experience significant feelings of isolation or loneliness at some time point (Asher & Gazelle, 1999). In terms of students who reported ongoing, chronic social isolation, the overall number was much smaller with approximately 1.5% of the individuals in this

study reporting social isolation at both Time 1 and Time 2 data points. Students in this study who were chronically isolated were more likely to be male, students of color, GLBQ (gay, lesbian, bisexual, questioning) and of lower socioeconomic status. In the case of gender, males reported almost twice the level feelings of social isolation when compared with females. These results are consistent with previous literature indicating that males as a group consistently report more feelings of social isolation than females during the adolescent years (Hall-Lande et al., 2007; Koenig & Abrams, 1999; Marceon et al., 1987). It may be the case that females navigate the developmental transition from childhood to adolescence then into young adulthood by developing close relationships with friends. As adolescents shift away from the focus on parents towards peers, females' ability to draw support from peer relationships may be a protective factor or buffer against feelings of social isolation. Therefore, gender differences in feelings of isolation may also represent a developmental shift between males and females during the adolescent years. It may also be the case that this finding may represent a measurement issue in that the different responses across gender could be attributed to the question wording. For example, the question refers "to friends with whom you can talk to about problems" which may be more associated with females conceptualizations of friendship and a less valid measure of male perceptions of friendship and close relationships.

The analysis of race and feelings of chronic isolation also provided some interesting outcomes. In this study, students of color were significantly and consistently more isolated than white students. While this finding was particularly robust in this study, the literature base does not offer a lot of previous data to confirm this finding. There is some recent research to suggest that the developmental transition as well as some of the

external transitions during adolescence such as school changes may increase feelings of social isolation in African American and Latino students more than in white students (Benner & Graham, 2009). Other research suggests that there are significantly different perceptions of what constitutes friendship and belonging across ethnic and racial groups (Walton & Cohen, 2007), and that social isolation may be more closely related to feelings of school connectedness and academic achievement for racial minority students (Zirkel & Cantor, 2004). Further, research consistently confirms that adolescents tend to develop friends within their own ethnic or racial groups (Joyner & Kao 2000; Rude & Herda, 2010). Thus, it is unclear if this finding is a reflection of students of color in predominantly white high schools and communities, or race may be confounded with other measured variables such as socioeconomic status (SES).

The analysis of socioeconomic status and feelings of isolation also revealed some interesting results. In terms of socioeconomic status, low-income students reported significantly more social isolation than all other socioeconomic groups. In fact, an analysis of demographic results revealed a linear pattern following the income distribution with students in the low socioeconomic status (SES) reporting the most chronic social isolation and those in the high SES reporting the least isolation. Little to no data exists in the area of socioeconomic status and feelings of isolation for adolescents. However, there are several potential hypotheses. The residential mobility and frequent changing of schools that is more common for students in poverty may prevent the development of close, meaningful relationships with peers. Further, students in poverty may have less access to activities that might promote friendships or to activities that might decrease feelings of isolation. Additionally research consistently indicates that

students in poverty have greater difficulties learning the social skills necessary for healthy social relationships (Bradley, Corwyn, McAdoo, Garcia-Coll, 2001). Thus, a potential hypothesis could be that the effects of poverty influence the ability to develop social skills, which in turn influences connections and friendships with peers, which has further connections to feelings of social isolation.

The final demographic variable to be examined in this study was sexual orientation. Although the numbers were extremely small and considerable caution must be exercised in terms of any conclusions, the available data on the relationship between sexual orientation and feelings of chronic social isolation were interesting. Students who were not straight such as gay/lesbian and questioning were significantly more likely to experience feelings of chronic social isolation. This finding is consistent with previous literature on sexual minority adolescents that reveals more frequent reports of social isolation for students who identify as gay or bisexual (Lasser & Tharinger, 2003; Safren & Heimberg 1999). Further, the group of participants who fell into the “questioning” sexual orientation subgroup were significantly more likely to report feelings of social isolation. Previous studies have found that questioning youth are at a significantly increased risk of negative outcomes even when compared to LGB students (Birkett, Espelage, Koenig, 2009). A potential hypothesis is that students who are questioning may be searching for an identity and not have a group of friends with whom to identify. These students may choose not to disclose their sexual identity, but they may choose to isolate themselves from peers or keep an emotional distance from friends to avoid pressure of having to disclose their sexual orientation (D’Augelli, 2002). This finding further

highlights the protective benefits of feeling connected to a larger group of people with whom you identify as a buffer against social isolation.

In conclusion, the exploration of demographic variables revealed some interesting exploratory findings. Any conclusions from these demographic results should be viewed with extreme caution, as cell sizes for many of these groups were extremely small. Despite the measurement issues and small sample sizes associated with this analysis, these exploratory findings represent some interesting potential areas of future study as well as insights in practical interventions.

Longitudinal Associations of Chronic Isolation

In general, the results of this study revealed that being isolated at one time point was significantly associated with feelings of social isolation at a later time point. The current finding is especially interesting in that this study utilized a rather narrow measurement of the construct of chronic isolation. Thus, it appears that self reported feelings of social isolation was a significant risk factor for isolation at a later time point. Further, this finding is in agreement with previous research on adolescents which confirms that feelings of isolation are a significant risk factor for future feelings of social isolation and loneliness during adolescence (Asher & Paquette, 2003; Junntilla & Vauras, 2009).

Yet, it is also important to note that many participants who reported feelings of isolation at Time 1 did not report feelings of isolation at Time 2. Thus, the overall predictive validity of the one-time reports of isolation during adolescence should be interpreted with caution. These findings are consistent with the previous work of Hanley-Dunn et. al (1995) which suggests that for adolescents one-time loneliness assessments

used in isolation may not be an effective or reliable indicator of future loneliness measures. Further, other previous research has demonstrated that test-retest correlations on feelings of isolation and loneliness decreased over longer time spans (Boivin et al., 1995; Koenig & Abrams, 1999). Therefore, one time self reports of isolation in adolescence may be vulnerable to potential measurement error. One-time reports of social isolation in adolescence may be associated with other present negative emotions, perceptions, and behavior occurring at that specific time point. While a one-time report of social isolation may be indicator of future risk for a specific subset of individuals, it may not be a reliable indicator of future feelings of isolation for the majority of adolescents.

Further, the current data highlight a few important points around both timing and gender effects of feelings of chronic social isolation. For females, feelings of social isolation during high school appear to be more predictive of ongoing, chronic feelings of social isolation. The middle school years appear to be a less stable predictor of future feelings of social isolation for females as many who reported feelings of social isolation during middle school no longer reported feeling isolated during high school. Thus, it may be the case that for females, the middle school years are a time of more social volatility, less emotional stability, and inconsistent social relationships. For males, both middle school and high school appeared to be more predictive of ongoing, future feelings of social isolation. A possible interpretation of this finding is that feelings of social isolation and the subsequent behavioral patterns emerge during the transition to adolescence, continue through high school, and are sustained into young adulthood for males.

Taken together, these findings represent the complexity of adolescent social isolation—with the dual features of both stability and volatility. Feelings of isolation or

loneliness during adolescence may be inherent part of the human adolescent condition. However, for a small subgroup of adolescents the presence of feelings of social isolation at one time point was a significant risk or predictive factor for future, ongoing feelings of social isolation. In general, one-time reports of social isolation and ongoing, repeated reports of social isolation may be different constructs in adolescence. Chronic feelings of social isolation may represent more intractable, longstanding types of social isolation. While it may be the case that a one- time report of isolation may be a normative experience for adolescents, that chronic feelings of isolation may be a signal of more serious, clinically significant issues for adolescents and young adults. This subgroup of chronically isolated students is an important focus of both future research and potential intervention.

Chronic Social Isolation, Risk, and Protective Factors

This study also explored the relationship between chronic social isolation, risk, and protective factors. Overall, the results revealed that the outcomes for adolescents with ongoing, chronic feelings of isolation were not altogether favorable. Previous research confirms that chronic, ongoing feelings of isolation during adolescence are associated with numerous indices of later maladjustment including mental health issues, poor academic performance, school dropout, suicidal behavior, health issues, and substance abuse (Asher & Paquette, 2003; Boivin, Hymel, Bukowski, 1995; Heinrich & Gullone, 2006). The results of the current study continue to highlight the difference in effects of chronic isolation across gender groups. Further, protective factors did not significantly mediate these relationships.

Psychological health. The current study examined the relationship between chronic feelings of isolation and psychological health issues such as depression and self-esteem. The association between chronic isolation and poor psychological health was significant throughout the model. When compared to non-isolated adolescents, chronically isolated participants showed consistently higher levels of depressive symptoms and lower levels of self-esteem.. Further, the protective factors of connections to family, academic achievement, school connectedness, and team sport participation did little to diminish this association.

The associations between chronic feelings of isolation and higher levels of depressive symptoms were particularly robust in this study. Previous cross sectional research reveals that loneliness and feelings of social isolation are a correlate of depressive symptoms, independent of co-variates including demographic factors, gender, and other psychosocial variables (Lasgarrd, Goossens, & Elkit, 2011). Yet, previous research also suggests that depression may be an antecedent to feelings of loneliness and isolation (Qualter, Brown, Munn, & Rotenberg, 2010). Other research suggests that higher levels of depression predict increased levels of loneliness and feelings of social isolation (Koenig & Abrams, 1999; Moore & Schultz, 1983). One possibility is that depression and feelings of isolation may share a reciprocal relationship. It may be the case that several depression related mechanisms such as the feelings of sadness and emptiness associated with social isolation may lower self-esteem and increase feelings of depression. In turn, feelings of depression and low self-esteem may contribute to additional social failures and increased feelings of social isolation.

Based on these findings, one interpretation could be that depression and chronic

feelings of social isolation are related, yet distinct constructs. Longitudinal assessments consistently associate feelings of isolation and loneliness to increased feelings of dysphoria and depressive symptoms. Correlations between feelings of isolation and depressive symptoms have been moderately high in adolescents (approximately .40 to .60), yet not a perfect correlation (Koenig et al., 1999; Moore & Schultz, 1983). Although the association between feelings of social isolation and depression is not a new finding, it may be important to examine if chronic feelings of social isolation may be a component of larger clinical presentation for which feeling of isolation may be a part. It may be the case that ongoing, chronic feelings of isolation may be one component of a more complex constellation of externalizing issues such as poor peer relationships and internalizing issues such as depression and poor self-esteem.

An interesting component of the findings around psychological health and chronic feelings of social isolation was the differences across gender. Similar to the previous research (Hall-Lande et. al, 2007; Heinrich & Gullone, 2006; Lasgaard, Goossens, Elkit, 2011), this study revealed a significant and enduring association between chronic isolation and poor psychological health in females. Even after accounting for known protective factors, social isolation remained significantly associated with depressive symptoms and lower levels of self-esteem in females. These results were highly significant and remained relatively unaffected by the inclusion of protective factors. It may be the case that for females psychosocial functioning and self-esteem are so dependent upon peer relationships in adolescence that it is difficult to separate these constructs.

Although males who were socially isolated did display increased levels of depressive symptoms and decreased self-esteem when compared to non-isolated males, it was not as consistent and at a milder level than for that of females. Thus, although chronic isolation in males is not without consequences and may not be a preferred situation, chronic social isolation does not appear to be as devastating to psychological health for adolescent males as it is for adolescent females. One possibility is that males may be able to draw emotional health benefits from a variety of other sources outside of peer relationships, or they did not internalize feelings of isolation as a negative personal trait. This finding highlights the potential subjective quality of risk as the negative psychological outcomes are sometimes reliant on how an individual internalizes or evaluates a situation. Based on this data, it appears that feelings of chronic social isolation may be qualitatively different for females than it is for males.

Suicide attempts. This study also evaluated the relationship between chronic feelings of social isolation and suicide attempts. Although increased depressive symptoms and decreased self-esteem were a significant issue for individuals who reported chronic feelings of social isolation, at no point in the model were there significant elevations in suicide attempts for individuals who reported chronic feelings of social isolation. The finding of the current study is interesting because it suggests that in spite of some of the negative influences of social isolation such as decreased self-esteem and increased depressive symptoms which are established antecedents to suicidal ideation and suicide attempts (Guyer, McDorman, Martin, Peters, Strobino, 1998; Kokkevi et al., 2011), there does not appear to be a significant association between chronic feelings of social isolation and suicide attempts. Other studies have found that even when depressive

symptoms are controlled for, feelings of social isolation and loneliness is not predictive of suicidal behavior over time, suggesting more intrapersonal rather than interpersonal causes (Boergers et al., 1998; Lasgaard & Goossens & Elklit, 2011). It is difficult to draw clear conclusions from this finding, one interpretation could be that feelings of social isolation do not share a direct pathway with suicidal behavior, yet may be a part of a larger clinical presentation for which chronic feelings of social isolation may be one part. The relatively low sample size and the subsequent lower power may also partially contribute to this outcome. Additional data collection points as well as an increased sample size of socially isolated adolescents may further illuminate the relationship between chronic social isolation and suicide attempts.

School dropout. One of the most compelling findings from this study was the association between chronic social isolation and school dropout. The data around chronic feelings of social isolation and dropout is yet another interesting story of gender. For males, social isolation was not predictive of school dropout at any point in the model.. This finding suggests that for males in this study, chronic social isolation is not a significant risk factor for dropout. Thus, relationships with peers may not be an essential component for connection with school for males.

The current data on chronic social isolation and dropout tell a much different story for females. Females who reported ongoing, chronic feelings of social isolation were significantly more likely to drop out of school. This association remained significant even with the inclusion of multiple protective factors many of which would be seemingly related to engagement in school such as school connectedness and academic achievement. Logically, it would be expected that protective influences directly related to

engagement in school such as good academic achievement and feeling connected to school would exert a stronger influence on school dropout than chronic feelings of social isolation. Yet, the significant association between chronic social isolation and increased school dropout remained.

In framing this finding within the existing research, it appears that meaningful participation in peer relationships creates a context that either supports or diminishes a student's sense of belonging or engagement in school. Some previous research also demonstrates that students who are not connected with peers are at an increased risk for school dropout (Finn, 1989; Hymel et al., 1990; Jimerson, Egeland, Sroufe, Carlson, 2000; Newmann, 1981; Risi, Gerhardstein, Kistner, 2003). For adolescent females, the presence of close friendships may play a significant role in preventing school dropout. Thus, the presence of meaningful peer relationships may be one mechanism that supports continuation in school and contributes to the prevention of school dropout for female students.

Screen time. The analysis of the relationship between screen time and chronic isolation revealed some interesting findings across gender. Overall, the results revealed that males who reported chronic feelings of social isolation did not have significantly increased screen time, but chronically isolated females did spend significantly more time on the computer and or watching television when compared to non-isolated peers. Previous adolescent studies reveal mixed results on this issue. While some research has revealed a significant association between increased screen time and isolation (Caplan, 2003; Engelberg & Sjoberg, 2004), other research has demonstrated that individuals reporting higher levels of screen time do not report increased levels of social isolation

(Hardie & Tee, 2007; Odabaşoğlu, Özgür, Genç & Pektaş, 2007). Thus, the current findings of the current study are consistent with the previous literature.

A central question in this finding focuses on the measurement of risk versus outcome. Specifically, does increased screen time remove individuals from social interactions and lead to feelings of social isolation, or do individuals who are already isolated pursue solitary activities like watching television or the internet? It makes sense that adolescents who are not spending time with friends may be more likely to spend leisure time watching television or screen related activities. Thus, this finding may represent an outcome of feelings of social isolation. Further, a potential hypothesis for the gender differences is that a central part of the social life of adolescent males involves screen time activities such as playing video games with friends.

Picked on by peers. The data on picked on by peers presented some interesting and somewhat unexpected results. Conventional wisdom along with the support of previous literature would suggest that students who are isolated and those picked on by peers are the same group. Yet, study participants who reported ongoing, chronic feelings of social isolation did not report increased levels of being picked on by peers. Thus, individuals who were picked on by peers and students who were chronically isolated appear to be distinct groups in this study. This finding is contrary to previous research literature that significantly associated feelings of social isolation and loneliness in children and adolescents with being rejected and or victimized by peers (Asher & Paquette, 2003; 1985; Boivin et al., 1995; Cassidy & Asher, 1992; Kochenderfer-Ladd & Wardrop, 2001; Storch, Brassard, Masia-Warner, 2003). The different findings in this study may be attributed to the fact that this existing research base was primarily focused

on children and younger adolescents. Additionally, this finding further highlights the idea that chronic social isolation may be its own unique construct. Chronic feelings of isolation may be a quieter, more internalized sense of isolation rather than more the overt and public experience of being harassed by peers. Further, this finding in may represent a potential measurement issues as the way the question wording itself have tapped more into students who experienced the more internalized, private feelings of isolation and not tapped into the experiences of individuals who were victims of the more overt, public experience of peer alienation and peer harassment.

The Influence Protective Factors

The influence of protective factors on the relationship between chronic social isolation and risk was also examined in this study. The theory behind this inclusion was that adolescents who lack close relationships with friends could potentially find protective influences through relationships with family, connectedness to school, academic achievement, or participation in team sports (Hall-Lande et. al, 2007). Previous research had established that protective factors such as family connectedness or academic achievement could significantly influence the relationship between feelings of social isolation and risk. However, the role of protective factors was far less significant in this iteration of the study. Protective factors did not appear to significantly mediate the relationship between social isolation and risk. In contrast to previous research (Hall-Lande et. al, 2007) in which protective factors influenced the relationship between social isolation and risk for adolescents, the inclusion of protective factors into the current model did not change the model significantly. The current finding lends further support to the concept that from a measurement standpoint, chronic isolation is something different

from isolation measured at one time point. Chronic social isolation may be more psychologically intractable and may be less amenable to the influence of outside protective factors than reported feelings of social isolation at one time point.

Comparison of Never Isolated, Isolated One Time, and Chronically Isolated

Further exploration on the construct of social isolation and risk was explored with a three-way comparison of never isolated, one time isolated, and chronically isolated students. This analysis explored whether students with one-time isolation scores look similar or different from students who were never or chronically isolated? The general trends in the data revealed that students who were chronically isolated consistently had more negative outcomes than students who were never isolated or students who were isolated at one time point. For example, both males and females who reported feelings of chronic social isolation had consistently more negative outcomes than either the isolated one time or never isolated such as lower self-esteem, increased depressive symptoms, increased suicide attempts, increased dropout, increased screen time, and increased rates of being picked on. It is important to note that not all of these results were significant. For the final model, the most significant differences across groups for the final model were depressive symptoms for males. For females, significant differences across the three groups were in the variable of self-esteem and dropout. In general, these results confirm that students who were chronically isolated appear to have more negative outcomes than students who are never isolated and even students who are isolated at one time point.

Strengths

This study offers several unique strengths and valuable contributions to the field of adolescent health literature. To our knowledge, this is the first longitudinal study to

explore the relationship between chronic social isolation, risks, and protective factors in adolescence. The longitudinal nature of the data allows for tracking of changes and risks associated with feelings of social isolation over time. Further, the combination of multiple risk and protective factors offers a complex view of the multiple, interacting variables in the lives of adolescents and young adults. The inclusion of protective factors suggests potential pathways for healthy adolescent development and strategies for prevention and intervention. Additionally, the large, diverse population based sample used in the current study yields results that may be more generalizable to the larger adolescent and young adult population. Additionally, the sample is large enough to conduct statistically valid analysis on a fairly small subgroup of adolescents.

Limitations

In reviewing these results, it is also important to consider some of the limitations of this research study. Despite the large number of participants in the overall sample and statistical controls such as response weighting, the cell sizes for some demographic groups became extremely small in some of the analyses. Because of many of these cell size limitations, the findings of this study can be considered exploratory and suggestive for a future study.

Another potential limitation of the current study is the measurement of the independent variable, chronic social isolation. As in the previous iteration of this study, the independent variable was measured with a single question. This single response may not provide a comprehensive picture of feelings of social isolation in adolescents. Further, the wording of the question may have been interpreted differently across genders. It would be interesting to see if a more thorough assessment of social isolation

would produce similar results. A more detailed picture of how an individual feels about his or her isolation status would further inform some of the associations with social isolation. In order to have a more comprehensive understanding of chronic social isolation, additional information such as self assessment of feeling of isolation or more detailed information such as quality and quantity of friendships, would yield a more comprehensive understanding of chronic social isolation and its associated risk factors. Further, supplemental data from external sources such as peer ratings, parent ratings, or teacher ratings could lend further validity to the assessment of social isolation.

Although the data in this study were collected across two time points, it should be viewed as cross sectional. Because the data are primarily correlational, direct causation between feelings of chronic social isolation, risk behavior, and protective factors cannot be inferred from these results. Based on the current analysis, it is unclear whether chronic social isolation causes psychological problems/risk behaviors or if adolescents with existing psychological problems/risk tendencies isolate themselves from peers. Additional or repeated data collection on the association between ongoing feelings of social isolation, risk, and protective factors would contribute to greater understanding of this relationship. Further, intervention studies using a well developed, experimental design would help to overcome some of these statistical limitations.

Future Research Directions

As researchers continue to evaluate the complex relationship between feelings of chronic social isolation, risk, and protective factors, it is recommended that researchers and practitioners re-conceptualize the significance of chronic feelings of social isolation. Additional longitudinal studies would be beneficial in further defining and understanding

chronic feelings of social isolation in adolescence. For example, adolescents who would be isolated at a third time point may further reduce measurement error and represent truly isolated students and not situation specific or more temporary types of isolation. This additional data could provide further information on the measurement question regarding validity of one time point versus multiple measurements of social isolation. Further, as some students transition into adulthood they may find more meaningful relationships and thus experience fewer feelings of social isolation. It would be interesting to further explore the statistical differences in reported feelings of chronic social isolation across demographic groups with a larger sample size. The data around chronic feelings of isolation and GLBQ students are an area of particular interest that merits further exploration.

The current study utilized a very narrow perspective of chronic social isolation. Although the inferences that can be made are limited, the current study found some interesting exploratory findings. A more well developed idea of chronic social isolation including an individual self assessment, information about the quality versus quantity of friends, and associated risk behaviors would be beneficial in developing a more comprehensive picture of chronic social isolation. There is little to no research focusing on the role of individual beliefs, feelings, and expectations in adolescent feelings of social isolation. In order to develop a more comprehensive understanding of the complex dynamics of adolescent social isolation, future research should examine both objective and subjective measures of adolescent loneliness and isolation. For example, it would be important to develop a measure that measured both feelings of social isolation as well as a person's attitude towards feeling isolated as a focal point future research.

The gender question remains an interesting area for future research. Although females who were chronically isolated demonstrated significantly more risk and negative outcomes in this study, it may be the case that the correct questions are not being asked of males, or that chronic feelings of social isolation may affect males in a different ways than females. It is likely that a different type of research question would yield different results as it pertains to chronic social isolation in males. Additional exploration of the association between feelings of chronic social isolation, school dropout, and gender would be an interesting area of future study. These findings in females were very robust and merit additional exploration. Further, as screen time only becomes a larger part of the lives of adolescents, the association between screen time feelings of chronic social isolation remains an interesting future area of study.

Practical Implications

The results of the current study offer potential insights into systems level prevention and intervention. From a prevention stand point, it may be beneficial for prevention resources to promote school climates that support the development and maintenance of healthy relationships. Systems wide intervention such as promoting a positive, inclusive school climate in which all students feel valued and connected is important. Further, opportunities for meaningful school involvement such as participation in inclusive extracurricular activities may help to support the development of healthy relationships and reduce feelings of social isolation in students.

For students who demonstrate a risk for chronic feelings of social isolation, applied interventions are needed. The results of the current study provide ongoing support to the idea that the development and maintenance of quality relationships is an

important focus of intervention. Interventions such as cooperative groups and social skills interventions; working directly with individual students who are reporting feelings of social isolation; and working with families may all be effective intervention strategies in promoting healthy relationships and reducing feelings of social isolation (Juntilla et al., 2008; Qualter, 2003). It may be the case that providing supportive interventions to individuals and families in the early stages may help to disrupt the negative cycle of chronic social isolation and the associated poor psychological health issues.

Although future research on adolescents who experience chronic social isolation is needed, the current study presents evidence to suggest that chronic feelings of isolation during adolescence may have a negative influence on several risk behaviors including psychological health, engagement in school (dropout), and screen time etc. These data may have practical application for the work of school mental health professionals such as school psychologists in developing effective prevention and intervention programs.

Conclusion

Adolescence can be a volatile and turbulent emotional time. Adolescence is considered a sensitive period in development during which individuals strive towards independence and towards close friendships with peers. As our society continues to struggle with the complex issues of loneliness and social isolation, the impact of chronic feelings of social isolation during adolescence represents an important area of future study and intervention. To date, few longitudinal studies exist that examine the complex relationship between ongoing chronic isolation, risk, and protective factors in adolescence. The results of the current study reveal that chronic feelings of social isolation during adolescence have a negative influence on psychological health and

school dropout. These results were particularly significant for females in this study. This examination of the relationship between chronic feelings of social isolation, risk, and protective factors may help to elucidate areas of vulnerability as well as opportunities for prevention and intervention.

References

- Allgood-Merten, B., Lewinsohn, P., & Hops, H. (1990). Sex differences and adolescent depression. *Journal of Abnormal Psychology, 99*, 55-63.
- Anderson, A.R., Christenson, S.L., Sinclair, M.F., & Lehr, C. (2004). Check & Connect: The importance of relationships for promoting engagement with school. *Journal of School Psychology, 42*(2), 95-113.
- Archibald, F.S., Bartholomew, K., & Marx, R. (1995). Loneliness in early adolescence: A test of the cognitive discrepancy model of loneliness. *Personality and Social Psychology Bulletin, 21*, 296–301.
- Aseltine, R., Gore, S., & Colten, M. (1998). The co-occurrence of depression and substance abuse in late adolescence. *Development and Psychopathology, 10*(3), 549-570.
- Asher, S. R., & Gazelle, H. (1999). Loneliness, peer relations, and language disorder in childhood. *Topics in Language Disorders, 19*, 16-33.
- Asher, S. R., & Paquette, J. A. (2003). Loneliness and peer relations in childhood. Current. *Directions in Psychological Science, 12*, 75-78.
- Archer, J. & Lloyd, B.B. (2002). *Sex and gender (2nd edition)*. Cambridge: Cambridge University Press.
- Avison, W. R., & McAlpine, D. D. (1992). Gender differences in symptoms of depression among adolescents. *Journal of Health and Social Behavior, 33*, 77-96.
- Bagwell, C., Newcomb, A., & Bukowski, W. (1998). Preadolescent friendship and peer rejection as predictors of adult adjustment. *Child Development, 69*, 140-153.

- Bakken, L., & Romig, C. (1992). Interpersonal needs in middle adolescents: Companionship, leadership, and intimacy. *Journal of Adolescence*, 15, 301-316.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37, 122-147.
- Beest, M. van, & Baerveldt, C. (1999). Paddling with Two, or paddling One's Own Canoe? The Relationship between Parental Support and Support from Friends for Adolescents. *Adolescence*, 34, (133), 193-201.
- Benner, A.D. & Graham, S. (2009). The transition to high school as a developmental process among multi-ethnic urban youth. *Child Development*, 80, 356-376.
- Berndt, T.J. (1996). Exploring the effects of friendship quality on social development. In W.M. Bukowski, A.F. Newcomb, & W.W. Hartup (Eds.) *The company they keep: Friendship in childhood and adolescence*. (pp 346-365). Cambridge, United Kingdom: Cambridge University Press.
- Berndt, T.J. (1999). Friends' influence on students' adjustment to school. *Educational Psychologist*, 34, 15-28.
- Berndt, T. J., Hawkins, J. A., & Jiao, Z. (1999). Influences of friends and friendship on adjustment to junior high school. *Merrill Palmer Quarterly*, 45, 13-41.
- Birkett, M., Espelage, D. L., & Koenig, B. W. (2009). LGB and questioning students in schools: The moderating effects of homophobic bullying and school climate on negative outcomes. *Journal of Youth and Adolescence*, 38(7), 989-1000.
- Birmaher, B., Ryan, N. D., Williamson, D. E., Brent, D. A., Kaufman, J., Dahl R. E.,

- Perel, J., & Nelson, B. (1996). Childhood and adolescent depression: A review of the past 10 years. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 1427-1439.
- Blum, R. (1998). Improving the health of youth: A community health perspective. *Journal of Adolescent Health*, 23 (5), 254-258.
- Blum, R. W., & Rinehart, P. M. (1997). *Reducing The Risk: Connections That Make a Difference in The Lives of Youth*. Minneapolis, MN: University of Minnesota.
- Boergers, J., Spirito, A., & Donaldson, D. (1998). Reasons for adolescent suicide attempts: Associations with psychological functioning. *Journal of the American Academy of Child and Adolescent Psychiatry*, 37, 1287–1293.
- Boivin, M., Hymel, S., & Bukowski, W. M. (1995). The roles of social withdrawal, peer rejection, and victimization by peers in predicting loneliness and depressed mood in childhood. *Development and Psychopathology*, 7, 765-785.
- Bonny, A., Britto, M., Klostermann, B., Hornung, R., & Slap, G. (2000). School disconnectedness: Identifying adolescents at risk. *Pediatrics*, 106 (5), 1017-1021.
- Booth-LaForce, C. Rubin, K., Rose-Krasor, L., Burgess, K. (2004) Attachment and Friendship Predictors of Psychosocial Functioning in Middle Childhood and the Mediating Roles of Social Support and Self-Worth. In K. Kerns & Richardson, R.A. (Eds.), *Attachment in Middle Childhood*. (pp. 161-188). New York: Guilford.
- Bradburn, N. M. (1969). *The structure of psychological well-being*. Chicago: Aldine.
- Bradley, R.H., Corwyn, R.F., McAdoo, H.P., Garcia Coll, C. (2001). The home

- environments of children in the United States: Part 1, Variations by Ethnic and Income Group. *Child Development*, 72, 1844-1867.
- Brage, D., Meredith, W., & Woodward, J. (1993). Correlates of loneliness among Midwestern adolescents. *Adolescence*, 28(111), 685–694.
- Breiman, L., Friedman, J., Olshen, R., & Stone, C. (1984). *Classification and regression trees*. Belmont, CA: Wadsworth International Group.
- Brennan, T. (1982). Loneliness at adolescence. In L. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research, and therapy* (pp. 269-290). New York: Wiley.
- Brent, D. A., Perper, J., & Goldstein, C. (1988). Risk factors for adolescent suicide. A comparison of adolescent suicide victims with suicidal inpatients. *Archives of General Psychiatry*, 45, 581-588.
- Brown, S.A., Mott, M.A.& Stewart, M.A. (1992). Adolescent alcohol and drug abuse. In C.E. Walker & M.C. Roberts (Eds.), *The Handbook of Clinical Child Psychology* (pp.677-693). New York: John Wiley.
- Bukowski, W.M., Hoza, B. & Boivin, M. (1993). Popularity, friendships, and emotional adjustment during early adolescence. In B. Laursen (Ed.), *Close friendships in adolescence* (pp.23-37). San Francisco: Jossey-Bass.
- Buhrmester, D. (1996). Need fulfillment, interpersonal competence, and the developmental contexts of early adolescent friendship. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence* (pp. 158 –185). New York: Cambridge University Press.

Cacioppo, J. T., Hawkley, L. C., & Berntson, G. G. (2003). The anatomy of loneliness.

Current Directions in Psychological Science, 12, 71-74.

Caplan, S. (2003). Preference for online social interaction: A theory of problematic internet use and psychosocial well-being. *Communication Research*, 30, 625-648.

Caspi, A., Elder, G.H, Bem, D.J. (1988). Moving away from the world. Life course patterns of shy children. *Developmental Psychology*, 2, 824-831.

Cassidy, J., & Asher, S. R. (1992). Loneliness and peer relations in young children. *Child Development*, 63, 350-365.

Center for Disease Control and Prevention (2005). Health, United States, Suicide Fact Sheet. Retrieved December 31, 2005 from the Center for Disease Control and Prevention website: <http://www.cdc.gov/ncipc/factsheets/suifacts.htm>

Center for Disease Control and Prevention (2005). Health, United States, Body Mass Index for Children and Adolescents. Retrieved December 31, 2005 from the Center for Disease Control and Prevention website:

<http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm>

Chadwick, B.A. & Heaton, T.B (1996). *Statistical handbook of adolescents in America*. New York: Oryx Press.

Chartier, G. M., & Lassen, M. K. (1994). Adolescent depression: Children's Depression Inventory norms, suicidal ideation, and (weak) gender effects. *Adolescence*, 29, 859-864.

Christenson, S.L. & Havsy, L.H. (2004). Family-school-peer relationships: Significance for social-emotional and academic learning. In J.E. Zins, R.P. Weissberg, M.C. Wang, & H.J. Walberg (Eds.), *Building academic success on social and*

- emotional learning: What does the research say?*(pp. 59-75). New York, NY: Teachers College Press.
- Christenson, S.L., Sinclair, M.F., Thurlow, M.L., & Evelo, D. (1999). Promoting student engagement with school using the Check & Connect model. *Australian Journal of Guidance & Counseling*, 9 (1), 169-184.
- Christenson, S.L., Sinclair, M.F., Lehr, C.A., & Hurley, C.M. (2000). Promoting successful school completion. In D. Minke & G. Bear (Eds.) *Preventing school problems-promoting school success: Strategies and programs that work*. Bethesda, MD: National Association of School Psychologists.
- Claes, M. E. (1992). Friendship and personal adjustment during adolescence. *Journal of Adolescence*, 15, 39-55.
- Clark, M. L., & Ayers, M. (1993). Friendship expectations and friendship evaluations. *Youth & Society*, 24, 299-313.
- Copeland, E. & Hess, R. (1995). Differences in young adolescents' coping strategies based on gender and ethnicity. *Journal of Early Adolescence*, 15, 203-219.
- Crick, N., & Ladd, G. (1993). Children's perceptions of their peer experiences: Attributions, loneliness, social anxiety, and social avoidance. *Developmental Psychology*, 29, 244-254.
- D'Augelli, A. R. (2002). Mental health problems among lesbian, gay, and bisexual youths ages 14 to 21. *Clinical Child Psychology and Psychiatry*, 7, 439-462
- Davalos, D. B., Chavez, E. L., & Guardiola, R. J. (1999). The effects of extracurricular activity, ethnic identification, and perception of school on student dropout rates. *Hispanic Journal of Behavioral Sciences*, 21, 61-77.

- DeVore, E. & Ginsburg, K. (2005). The protective effects of good parenting in adolescence. *Current Opinion in Pediatrics*, 17(4), 460-465.
- DeWilde, Kienhorst, Diekstra, & Wolters, (1993). The specificity of psychological characteristics of adolescent suicide attempters. *Journal of American Academy Child and Adolescent Psychiatry*, 32(1), 51-59.
- Dill, J.C., & Anderson, C.A. (1999). Loneliness, shyness, and depression: The etiology and interrelationships of everyday problems in living. (pp. 93-125). Chapter in T. Joiner and J.C. Coyne (Eds.) *The interactional nature of depression: Advances in interpersonal approaches*. Washington, D.C.: American Psychological Association.
- Doll, B. & Lyon, M. (1998) Risk and resilience: Implications for the practice of school psychology. *School Psychology Review*, 27, 348-363.
- Dubois, D., Felner, R., Brand, S., Adan, A., & Evans, E. (1992). A Prospective Study of Life Stress, Social Support, and Adaptation in Early Adolescence. *Child Development*, 63, (3), 542-557.
- Eccles, J. S., & Barber, B. L. (1999). Student council, volunteering, basketball, or marching band: What kind of extracurricular involvement matters? *Journal of Adolescent Research*, 14, 10-43.
- Eisenberg M, Neumark-Sztainer D, Perry C. (2003). Peer harassment, school and school success. *Journal of School Health*. 73(8):311-316.
- Engelberg, E. & Sjoberg, L. (2004) 'Internet use, social skills and adjustment' *Cyber Psychology & Behavior*, 7, 41-47.
- Erickson, E. (1968) *Identity youth and crisis*. New York: New York. W. W. Norton.
- Field, T., Diego, M., & Sanders, C. (2001). Adolescent depression and risk factors.

- Adolescence*, 36, 491-498.
- Finn, J. D. (1989). "Withdrawing From School." *Review of Educational Research*, 59(2), 117-142.
- Fombonne, E. (1998). Increased rates of psychosocial disorders in youth. *European Archives of Psychiatry and Clinical Neuroscience*, 248, 14-21.
- Frost, J. (1999). A comparison of two measures of perfectionism. *Personality and Individual Differences*, 14, 119–126.
- Garbarino, J. (1999). *Lost males: Why our sons turn violent and how we can save them*. New York: Anchor Books.
- Garmezy, N. (1985). Stress-resistant children: The search for protective factors. In J. E. Stevenson (Ed.). *Recent research in developmental psychopathology: Journal of Child Psychology and Psychiatry*, (pp. 213-233). Oxford: Pergamon Press.
- Garmezy, N. (1991). Resiliency and vulnerability to adverse developmental outcomes associated with poverty. *American Behavioral Scientist*, 34, 416-430.
- Garmezy, N. & Masten, A. (1991). The protective role of competence indicators in children at risk. In Mark Cummings, Anita Green, and Katherine Karraker (Eds.). (1991). *Life-span developmental psychology: Perspectives on stress and coping*. Hillsdale, NJ, England: Lawrence Erlbaum Associates.
- Gazelle, H., & Ladd, G. W. (2003). Anxious solitude and peer exclusion: A diathesis-stress model of internalizing trajectories in childhood. *Child Development*, 74, 257–278.
- Gazelle, H., & Rudolph, K. D. (2004). Moving toward and away from the world: Social

- approach and avoidance trajectories in anxious solitary youth. *Child Development*, 75, 829–849.
- Gerson, A. & Perlman, D. (1979). Loneliness and expressive communication. *Journal of Abnormal Psychology*, 88(3), 258-261.
- Gilman, R., Meyers, J., & Perez, L. (2004). Structured extracurricular activities among adolescents: Findings and implications for school psychologists. *Psychology in the Schools*, 41(1), 3.
- Goodenow, C. (1993a). Classroom belonging among early adolescent students: Relationships to motivation and achievement. *Journal of Early Adolescence*, 30, 79-90.
- Goodenow, C. (1993b). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools*, 30, 79-90.
- Greco, L.A., & Morris, T.L. (2001). Treating childhood shyness and related behavior: Empirically investigated approaches used to promote positive social interactions. *Clinical Child and Family Psychology Review*, 4, 299-318.
- Greeley, J., & Oei, T. (1999). Alcohol and tension reduction. In K. E. Leonard & H. T. Blanc (Eds.), *Psychological theories of drinking and alcoholism* (pp. 14-53). New York: Guilford Press.
- Guyer, B., MacDorman, M., Martin, J., Peters, K., & Strobino, D. (1998). Annual summary of vital statistics--1997. *Pediatrics*, 102, 1333-1349.
- Hall-Lande, J.A., Eisenberg, M.E., Christenson, S.L., Neumark-Sztainer, D. (2007).

- Social isolation, psychological health, and protective factors in adolescence. *Adolescence*, 42, 265-286.
- Hansen, D. J., Giacoletti, A. M., & Nangle, D. W. (1995). Social interactions and adjustment. In V. B. Van Hasselt & M. Hersen (Eds.), *Handbook of adolescent psychopathology: A guide to diagnosis and treatment*. New York: Lexington Books.
- Hanley-Dunn, P., Maxwell, S. E., & Santos, J. F. (1985). Interpretation of interpersonal interactions: The influence of loneliness. *Personality and Social Psychology Bulletin*, 11, 445-456.
- Hardie, E., & Tee, M.Y.(2007). Excessive Internet use: The role of personality, loneliness and social support Networks in Internet addiction. *Australian Journal of Emerging Technologies and Society*, 5(1), 34-47.
- Harter, S., Marold, D. B., Whitesell, N. R., & Cobbs, G. (1996). A model of the effects of parent and peer support on adolescent false self behavior. *Child Development*, 67, 160-174.
- Hartup, W.W. (1996). The company they keep: Friendships and their developmental significance. *Child Development*, 67, 1-13.
- Hawkins, J., Catalano, R., & Miller, J. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, 112, 64-105.
- Hawkins, J., Catalano, R., Kosterman, R. (1999). Preventing adolescent health-risk behaviors by strengthening protection during childhood. *Archives of Pediatric Adolescent Medicine* 153, 226-234.

- Hawkins, J. & Weiss, J. (1985). The social development model: An integrated approach to delinquency prevention. *Journal of Primary Prevention*, 6, 73-97.
- Heinrich, L., & Gullone, E. (2006). The clinical significance of loneliness: A literature review. *Clinical Psychology Review*, 26, 695-718.
- Hinde, R.A. (1979). *Towards understanding relationships*. New York: European Social Psychology.
- Hymel, S., Rubin, K.H., Rowden, L. & LeMare, L. (1990). Children's peer relationships: Longitudinal prediction of internalizing and externalizing problems from mid to late childhood. *Child Development*, 61, 2004-2021.
- Jimerson, S., Egeland, B., Sroufe, L., & Carlson, E. (2000). A prospective longitudinal study of high school dropouts: Examining multiple predictors across development. *Journal of School Psychology*, 38 (6), 525-549.
- Jones, W., & Moore, T. (1987). Loneliness and social support. *Journal of Social Behavior and Personality*, 2, 145-156.
- Joyner, K. & Kao, G. (2000). School Racial Composition and Adolescent Racial Homophily. *Social Science Quarterly*, 81(3), 810-825.
- Junttila, M., & Vauras, M. (2009). Loneliness of school-aged children and their parents. *Scandinavian Journal of Psychology*, 50, 211-219.
- Kandel, D.B. (1982). Epidemiological and psychosocial perspectives on adolescent drug use. *Journal of the American Academy of Child Psychiatry*, 21, 328-347.
- Koenig, L. J., & Abrams, R. F. (1999). *Adolescent loneliness and adjustment: A focus on*

gender differences. In K. J. Rotenberg & S. Hymel (Eds.), *Loneliness in childhood and adolescence* (pp. 296-322). New York: Cambridge University Press.

Kokkevi A, Rotsika V, Arapaki A, Richardson C. (2011). Increasing self-reported suicide attempts by adolescents in Greece between 1984 and 2007. *Social Psychiatry Epidemiology Psychiatry*, 46(3), 231-237.

Kochenderfer-Ladd, B., & Wardrop, J. (2001). Chronicity and instability of children's peer victimization experiences as predictors of loneliness and social satisfaction trajectories. *Child Development*, 72, 134-151.

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S, Mukophadhyay, T & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*, 53 (9), 101-107.

Kuczmarski, R., Ogden, C., Grummer-Strawn, L., Flegal, K., Guo, S., Wei, R., Mei, Z., Curtin, L., Roche, A., Johnson, C. (2000). *CDC Growth Charts: United States. Advance Data*. June 8, 314:1-27.

Kupersmidt, J. B., Sigda, K. B., Voegler, M. E. & Sedikides, C. (1999). Social self-discrepancy theory and loneliness during childhood and adolescence (pp. 263-279). In K. Rotenberg & S. Hymel (Eds.) *Loneliness in childhood and adolescence*. New York: Cambridge University Press.

Ladd, G.W., Kochenderfer, B.J., & Coleman, C.C. (1996). Friendship quality as a predictor of young children's early school adjustment. *Child Development*, 67, 1103-1118.

Ladd, G. W., & Troop-Gordon, W. (2003). The role of chronic peer difficulties in the

- development of children's psychological adjustment problems. *Child Development*, 74, 1344-1367.
- Larson, R.W. (2000). Towards a psychology of positive youth development. *American Psychologist*, 55, 170–183.
- Larson, R. W. (1999). The uses of loneliness in adolescence. In K. J. Rotenberg & S. Hymel (Eds.), *Loneliness in childhood and adolescence* (pp. 296–322). New York: Cambridge University Press.
- Larson, R. W., & Verma, S. (1999). How children and adolescents spend time across the world: Work, play, and developmental opportunities. *Psychological Bulletin*, 125, 701-736.
- Lasgaard, M, Goossens, L., Elkit, A. (2011). Loneliness, Depressive Symptomatology, and Suicide Ideation in Adolescence: Cross-Sectional and Longitudinal Analyses. *Journal of Abnormal Child Psychology*, 39:137–150
- Lasgaard, M. (2007). Reliability and validity of the Danish version of the UCLA loneliness scale. *Personality and Individual Differences*, 42, 1359–1366.
- Lasser, J. & Tharinger, D. (2003). Visibility management in school and beyond: A qualitative study of gay, lesbian, and bisexual youth. *Journal of Adolescence*, 26, 234-244.
- Little, R.J.A. (1986). Survey nonresponse adjustments. *International Statistical Review*, 54, 139-157.
- Maggs, J. L., Schulenberg, J., Hurrelmann, K. (1997). *Developmental transitions*

- during adolescence: Health promotion implications.* In J. Schulenberg, J. L. Maggs, & K. Hurrelmann (Eds.), (pp. 522-546). New York: Cambridge University Press.
- Mahoney, J. L. (2000). Participation in school extracurricular activities as a moderator in the development of antisocial patterns. *Child Development*, 71, 502-516.
- Marcoen, A., Goossens, L., & Caes, P. (1987). Loneliness in pre-through late adolescence: Exploring the contributions of a multidimensional approach. *Journal of Youth and Adolescence*, 16, 561-576.
- Masten, A.S. & Garmezy, N. (1985). Risk, vulnerability and protective factors in developmental psychology. In B. B. Lahey, & A.E. Kazdin, (Eds.), *Advances in child clinical psychology*, (pp. 1-52). New York: Plenum Press.
- Masten, A., Hubbard, J., Gest, S., Tellegen, A., Garmezy, N., Ramirez, M. (1999). Competence in the context of adversity: Pathways to resilience and mal-adaptation from childhood to late adolescence. *Development and Psychopathology*, 11(1), 143-169.
- Masten, A., & Coatworth, J. (1998). The development of competence in favorable and unfavorable environments: Lessons from research on successful children. *American Psychologist*, 53, 205-220.
- Masten, A. S., Neeman, J., & Andenas, S. (1994). Life events and adjustment in adolescence: The significance of event independence, desirability, and chronicity. *Journal of Research on Adolescence*, 4, 71-98.
- McNeal , R. (1995). Extracurricular Activities and High School Dropouts. *Sociology of Education*, 68(1), 62-81.

McPherson, S., Smith-Lovin, M., & Brashears, J .(2008). The ties that bind are fraying.

Contexts, 7(3), 32-36.

Mead, G.H. (1934). *Mind, self, and society*. Chicago: University of Chicago Press.

Millstein, S. & Litt, C. (1990). Adolescent Health. In S. Shirley Feldman and Glen R. Elliott (Eds.) *At the Threshold: The Developing Adolescent*. Cambridge, MA: Harvard University Press.

Mijuskovic, B. (1979). *Loneliness, philosophy, psychology, and literature*. The

Netherlands: Van Gorcum, Assen.

Moore, D., & Schultz, N. R. (1983). Loneliness at adolescence: correlates, attributions, and coping. *Journal of Youth and Adolescence*, 12(2), 95–100.

Morgan, M., & Grube, J. (1991). Closeness and peer group influence. *British Journal of Social Psychology*, 30, 159-169.

Neumark-Sztainer D., Story M., Hannan, P., Perry, C., Irving, L. (2002). Weight-related concerns and behaviors among overweight and non-overweight adolescents: Implications for preventing weight-related disorders. *Archives of Pediatrics and Adolescent Medicine*, 156, 71-178.

Neumark-Sztainer, D., Story, M., Hannan, P., & Moe, J. (2002). Overweight status and eating patterns among adolescents: Where do youth stand in comparison to the Healthy People 2010 Objectives? *American Journal of Public Health*, 92(5), 844-851.

Newman, F. (1981). Reducing student alienation in high schools: Implications of theory. *Harvard Educational Review*, 51, 546–564.

Nolen-Hoeksema, S., & Ahrens, C. (2002). Age differences and similarities in the

- correlates of depressive symptoms. *Psychology and Aging*, 17, 116–124.
- Nordentoft, M. Rubin P.(1993) Mental illness and social integration among suicide attempters in Copenhagen. *Psychiatrica Scandinavica*, 8, 278-285.
- Odabaswglu, G., Öztürk, Ö., Genç, Y., & Pektaş, Ö. (2007). The clinical profile of Internet addiction. *Journal of Dependence*, 8, 46-51.
- Ollendick, T.H., Weist, M.D., Browne, D.P., Greene, R.W. (1992). The predictive validity of teacher nominations. A five year follow-up of at risk youth. *Journal of Abnormal Child Psychology*, 18, 699-713.
- Ostrov, E., Offer, D., & Howard, K. I. (1989). Gender differences in adolescent symptomatology: A normative study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 28, 394-398.
- Page, R.M., Cole, G.E., & Wyre, S. (1986). The role of loneliness in health and wellness. *Home Healthcare Nurse*, 4(1), 6-10.
- Parker, J. & Asher, S. (1993). Friendship and friendship quality in middle childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychopathology*, 29(4), 611-621.
- Parkhurst, J. & Asher, S. (1992). Peer rejection in middle school: Subgroup differences in behavior, loneliness, and interpersonal skills. *Developmental Psychology*, 28(2), 231-241.
- Parkhurst, J.T., & Hopmeyer, A.G. (1998). Sociometric popularity and peer-perceived popularity: Two distinct dimensions of peer status. *Journal of Early Adolescence*, 18, 125–144.

Pedersen, S., Vitaro, F., Barker, E. D., & Borge, A. I. H. (2007). The timing of middle-childhood peer rejection and friendship: Linking early behaviour to early-adolescent adjustment. *Child Development*, 78, 1037–1051.

Pelkonen, M. (2003). Risk for depression: a 6-year follow-up of Finnish adolescents.

Journal of Affective Disorders, 77, 41–51.

Peplau, L.A., & Perlman, D. (Eds.). (1982). *Loneliness: A sourcebook of current theory, research, and therapy*. New York: Wiley-Interscience.

Piaget, J. (1932). *Six psychological studies*. New York: Random House.

Pianta, R. & Walsh, P. (1998). Applying the construct of resilience: Cautions from a developmental systems perspective. *School Psychology Review*, 27(3), 407-421.

Pollack, W., & Shuster, T. (2000). *Real males' voices*. New York: Random House.

Pope, S. K., Smith, P. D., Wayne, J. B., & Kelleher, K. J. (1994). Gender differences in rural adolescent drinking patterns. *Journal of Adolescent Health*, 15, 359-365.

Qualter, P. & Munn, P. (2002). The separateness of social and social isolation in childhood. *Journal of Child Psychology and Psychiatry*, 43(2), 233-244.

Qualter, P., Brown, S.L., Munn, P., & Rotenberg, K.J. (2010). Childhood loneliness as a predictor of adolescent depressive symptoms: An 8-year longitudinal study. *European Child and Adolescent Psychiatry*, 19(6), 493-501.

Razzino, B., Ribordy, S., Grant, K., Ferrari, J., Bowden, B. & Zeisz, J. (2004). Gender-related processes and drug use: Self-expression with parents, peer group selection, and achievement motivation. *Adolescence*, 39, 167-177.

Resnick, M. (2000). Protective factors, resiliency, and healthy youth development.

Adolescent Medicine: State of the Art Reviews, 2, 157-163

- Resnick, M., Bearman, P., Blum, R., Bauman, K., Harris, K., Jones, J., Tabor, J., Beuhring, R., Sieving, M., Shew, M., Ireland, M., Bearinger, L., & Udry, J. (1997). Protecting adolescents from harm: Findings from the national longitudinal study on adolescent health. *JAMA*, 278, 823-832.
- Resnick M., Harris L., & Blum R. (1993). The impact of caring and connectedness on adolescent health and well-being. *Journal of Pediatrics and Child Health*, 29, 1-9.
- Rew, L. & Horner, S. (2003). Personal strengths of homeless adolescents living in a high-risk environment. *Advances in Nursing Science*, 26(2), 90-101.
- Risi, S., Gerhardstein, R., & Kistner, J. (2003). Children's classroom peer relationships and subsequent educational outcomes. *Journal of Child and Adolescent Psychology*, 32, 351-361.
- Roberts R E, Chen Y R, Roberts C R, (1997). Ethnocultural differences in prevalence of adolescent suicidal behaviors. *Suicide and Life-threatening Behavior*, 27(2), 208-217.
- Roeser, R, Eccles, J., & Sameroff, A., (1998). Academic and emotional functioning in early adolescence: Longitudinal relations, patterns, and prediction by experience in middle school. *Development and Psychopathology*, 10(2), 321-352.
- Roeser R.W., Eccles, J.S., & Sameroff A.J. (2000). School as a context of early adolescents' academic and social-emotional development: A summary of research findings. *Elementary School Journal*, 100(5), 443-471.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rubin, K.H. (1993). *The Waterloo Longitudinal Project: Continuities of social*

- withdrawal from early childhood to early adolescence.* In K.H. Rubin & J. Asendorpf (Eds.), Social withdrawal, inhibition, and shyness in childhood. Hillsdale, N.J.: Erlbaum.
- Rubin, K.H., Bukowski, W., & Parker, J.G. (1998). Peer interactions, relationships, and groups. In W. Damon & N. Eisenberg. (Eds), *Handbook of Child Psychology* (5th). Volume 3 (pp. 619-700). New York: Wiley.
- Rubin, K.H. & Burgess, K. (2001). Social withdrawal. In M.W. Vasey & M.R. Dadds (Eds.), *The developmental psychopathology of anxiety*. (pp. 407-434). Oxford, UK: Oxford University.
- Rubin, K.H. & Coplan, R.J. (2001). Peer relationships in childhood. In M. Bornstein & Lamb (Eds.). *Developmental Psychopathology: An advanced textbook*. Hillsdale: New Jersey: Erlbaum Associates.
- Rubin, K.H., Dwyer, K.M., Booth-Laforce, C., Burgess, K.B., & Rose-Krasnor, L. (2004). Attachment, friendship, and psychosocial functioning in early adolescence. *Journal of Early Adolescence*, 24 (4), 326-356.
- Rubin, K.H., LeMare, L.J. & Lollis, S. (1990). Social withdrawal in childhood: Developmental pathways to rejection. In S.R. Asher & J.D. Coie (Eds.), *Peer rejection in childhood* (pp. 217-249). New York: Cambridge University Press.
- Rubin, K.H., & Mills, R.S. (1988). The many faces of social isolation in childhood. *Journal of Consulting and Clinical Psychology*, 56, 916-924.
- Rubin, K.H. & Stewart, S.L. (1996). Social withdrawal in childhood: Conceptual and empirical perspectives. *Advances in Clinical Child Psychology*, 17, 157-196.
- Rubin, K. H., Bukowski, W M., & Parker, J. G (2006). Peer interactions, relationships,

- and groups. In N. Eisenberg, W Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (6th ed., pp. 571-645). Hoboken, NJ: Wiley.
- Rubin, K. H., Burgess, K. B., Kennedy, A. E., & Stewart, S. L. (2003). Social withdrawal in childhood. In E. J. Mash & R. A. Barkley (Eds.), *Child psychopathology* (2nd ed., pp. 372- 406). New York: Guilford Press.
- Rubinstein, C., Shaver, P., & Peplau, L. A. (1979). Loneliness. *Human Nature*, 2, 59–65.
- Rude, J. & Herda, D. (2010). Best Friends Forever?: Race and the Stability of Adolescent Friendships. *Social Force*, 89, 585-607.
- Rutter, M. (1985). Resilience in the face of adversity: Protective factors and resistance to psychiatric disorders. *British Journal of Psychiatry*, 147, 598-611.
- Rutter, M. (1986). The developmental psychopathology of depression: Issues and perspectives. In M. Rutter, C. E. Izard, & P. B. Read (Eds.), *Depression in young people: Developmental and clinical perspectives*. New York, NY: Guilford Press.
- Rutter, M. (1990). Psychosocial resilience and protective mechanisms. In J. Rolf, A. Masten, D. Cicchetti, K. Neuchterlein, & S. Weintraub (Eds.), *Risk and protective factors in the development of psychopathology*. New York: Cambridge University Press.
- Rutter, M. (1996). Stress research: Accomplishments and tasks ahead. In R.J. Haggerty, L.R. Sharrod, N. Garmezy, and M. Rutter (Eds.), *Stress, risk and resilience in children and adolescents—Processes, mechanisms and interventions*. Cambridge: Cambridge University Press.

Rutter, M. (1999). Psychosocial adversity and child psychopathology. *British Journal of Psychiatry*, 174, 480-493.

Rutter, P. A., & Behrendt, A. E. (2004). Adolescent suicide risk: Four psychosocial factors. *Adolescence*, 39, 295-293.

Safren, S.A., & Heimberg, R.G. (1999). Depression, hopelessness, suicidality, and related factors among sexual minority and heterosexual adolescents. *Journal of Consulting and Clinical Psychology*, 67, 859-866.

Sanders, C., Field, T., Diego, M., & Kaplan, M. (2000). Moderate involvement in sports is related to lower depression levels among adolescents. *Adolescence*, 35, 793-797.

Savin-Williams, R. C., & Berndt, T. J. (1990). Friendship and peer relations. In S. S. Feldman & G. R. Elliot (Eds.). *At the threshold: The developing adolescent*. Cambridge, MA: Harvard University Press.

Sermat, V. (1980). Some situational and personality correlates of loneliness. In J. Hertog, J.R. Audy, & W.A. Cohen (Eds). *The anatomy of loneliness*. New York: International University Press.

Shann, M.H. (2001). Students' use of time outside of school: A case for after school programs for urban middle school youth. *The Urban Review*, 33, 339–356.

Sinclair, M., Hurley, C., Christenson, S., Thurlow, M., & Evelo, D. (2002). Connections that keep kids coming to school. In R. Algozzine and P. Kay (Eds.) *Preventing Problem Behaviors*. Thousand Oaks, CA: Corwin Press, Inc.

- Sippola, L. K., & Bukowski, W.M (1999). Self and other: Loneliness from a developmental perspective. In: In K. Rotenberg & S. Hymel (Eds.), *Loneliness in childhood and adolescence* (pp.280-295). New York, NY: Cambridge University Press.
- Smucker, M. R., Craighead, W. E., Craighead, L. W., & Green, B. J. (1986). Normative and reliability data for the Children's Depression Inventory. *Journal of Abnormal Child Psychology*, 14, 25-39.
- Spitzberg, B. H., & Hurt, H. T. (1987). The measurement of interpersonal skills in instructional contexts. *Communication Education*, 36, 28-45.
- Spruijt & de Goode, (1997). Transitions in family structure and adolescent well-being. *Journal of Adolescence*, 32(128), 897-911.
- Steinberg, (1996). *Beyond the class-room: Why school reform has failed and what parents need to do*. New York: Simon & Schuster.
- Stocker, C. M. (1994). Children's perceptions of relationships with siblings, friends and mothers: Compensatory processes and links with adjustment. *Journal of Child Psychology and Psychiatry*, 35(8), 1447-1459.
- Storch, E. A., Brassard M. R., Masia-Warner, C. L. (2003a). The relationship of peer victimization to social anxiety and loneliness in adolescence. *Child Study Journal*, 33(1), 1-18.
- Sullivan, H. S. (1953). *The interpersonal theory of psychiatry*. NY: W. W. Norton & Company.

- Tiet, H., Bird, M., Davis, C., Hoven, P., Cohen, P., Jensen, and Goodman, S. (1998). Adverse life events and resilience. *Journal of the American Academy of Child and Adolescent Psychiatry*, 37(11), 1191-1201.
- Tomori, M., Zalar, B., Plesnicar, K. (2000). Gender differences in psychosocial risk factors among Slovanian adolescents. *Adolescence*, 35(139), 431-443.
- Van Beest, M., & Baerveldt, C. (1999). The relationship between adolescent's social support from parents and peers. *Adolescence*, 34, 193-201.
- Vilhjalmsson, R., Thorlindsson, T. (1998). Factors related to physical activity: a study of adolescents. *Social Science in Medicine*, 47, 665-675.
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92, 82-96.
- Weber, B., Metha, A.. & Nelson, E. (1997). Relationships among multiple suicide ideation risk factors in college students. *Journal of College Student Psychotherapy*, 11, 49-64.
- Weinberg, N. (2001). Risk factors for adolescent substance abuse. *Journal of Learning Disabilities*, 34 (4), 343-351.
- Weiss, R. (1973) *Loneliness: The Experience of Emotional and Social Isolation*. Cambridge, MA.: MIT Press.
- Weissman, M. & Klerman, G. (1977) Sex differences in the epidemiology of depression. *Archives of General Psychiatry*, 34, 98-111.
- Wentzel, K. R. (1998). Social relationships and motivation in middle schools: The role of

- parents, teachers, and peers. *Journal of Educational Psychology*, 90, 202-209.
- Werner, E. (1986). Resilient offspring of alcoholics: A longitudinal study from birth to age 18. *Journal of Studies on Alcohol*, 47(1), 34-40.
- Werner, E. E. (1989). High-risk children in young adulthood: A longitudinal study from birth to 32 years. *American Journal of Orthopsychiatry*, 59(1), 72-81.
- Windle, M., Miller-Tutzauer, C., & Domenico, D. (1992). Alcohol use, suicidal behavior, and risky activities among adolescents. *Journal of Research on Adolescence*, 2, 317-330.
- Young, J.E. (1982). Loneliness, depression, and cognitive therapy: Theory and application. In L. A. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research and therapy*. (pp. 379-406). New York: John Wiley and Sons.
- Youniss, J., & Smollar, J, (1985). Adolescent relations with mothers, fathers, and friends. Chicago: University of Chicago Press.
- Zhang, J., & Jin, S. (1996). Determinants of suicide ideation: A comparison of Chinese and American college students. *Adolescence*, 31, 451-467.
- Zirkel, S., & Cantor, N. (2004). 50 years after Brown v. Board of Education: The promise and challenge of multicultural education. *Journal of Social Issues*, 60, 1-16.

Table 1

Demographic Data and Personal Characteristics from Project EAT -2—Data Stratified by gender

Characteristics	Females (n=1386 [55.1%])	Males (n=1130, [44.9%])	Total (n=2516 [100.0 %])
School level			
High School	440, 31.8%	366, 32.4%	806, 32.0%
Young Adult	946, 68.3%	764, 67.6%	1710, 68.0%
Race			
White	789, 57.6%	736, 65.5%	1525, 61.2%
African American	167, 12.2%	107, 9.5%	274, 11.0%
Hispanic	58, 4.2%	47, 4.2%	105, 4.2%
Asian American	265, 19.3%	182, 16.2%	447, 17.9%
Native American	41, 3.0%	27, 2.4%	68, 2.7%
Mixed/Other	50, 3.7%	25, 2.2%	75, 3.0%
Socioeconomic status			
Low	217, 16.0%	113, 10.3%	330, 13.5%
Lower middle	235, 17.4%	178, 16.2%	413, 16.8%
Middle	338, 25.0%	282, 25.6%	620, 25.3%
Upper middle	347, 25.7%	336, 30.5%	683, 27.8%
High	216, 16.0%	192, 17.4%	408, 16.6%

Table 1—continued

Demographic Data and Personal Characteristics from Project EAT -2—Data Stratified by gender

Characteristics	Females (n=1386 [55.1%])	Males (n=1130, [44.9%])	Total (n=2516 [100.0 %])
Sexual Orientation			
Straight	1213, 50.0 %	1037, 42.7%	2250, 92.7%
Bisexual	20, 0.8%	21, 0.9%	41, 1.7%
Gay	73, 3.0%	18, 0.7%	91, 3.8%
Questioning	28, 1.2%	18, 0.7	46, 1.9%
Body Mass Index			
Underweight	97, 7.6%	77, 7.2%	174, 7.4%
Average	896, 70.0%	731, 68.2%	1627, 69.2%
Overweight	195, 15.2%	130, 12.1%	325, 13.8%
Obese	93, 7.3%	93, 7.3%	227, 9.7%
Isolation Status			
Never Isolated	1222, 90.1%	922, 84.7%	2144, 87.7%
Isolated Time 1	64, 4.7%	100, 9.0%	164, 6.6%
Isolated Time 2	85, 6.2%	94, 8.51%	179, 7.2%
Isolated Both	13, 0.9%	25, 2.2%	38, 1.6%

Note. Values are either raw numbers (n) or percentage (%).**

Table 2

Risk and Protective Factors (for entire sample HS & YA, both genders)—Overall sample percents and means (SD)

Characteristics	Females	Males	Overall Sample
Risk Factors			
Self-esteem (range, 6-24)	17.7, (SD=3.5)	19.0, (SD=3.4)	18.3, (SD=3.5)
Depression (range, 7-21)	13.4, (SD=3.4)	11.7, (SD=3.2)	12.7, (SD=3.4)
Suicide attempts	n=105, (7.7%)	n=40,(3.6%)	n=145, (5.9 %)
School Dropout	n=42, (3.1%)	n=35, (3.2%)	n=77, (3.1%)
Picked on (range, 2-15)	7.8, (SD=3.0)	7.9, (SD=3.1)	7.8, (SD=3.0)
Screen Time (range, 4-28)	13.5, (SD=4.8)	15.2, (SD=5.2)	14.2, (SD=5.1)
Protective Factors			
GPA (range, 0-4)	3.0, (SD=0.8)	2 .9, (SD=0.9)	2.9, (SD=0.8)
School Conn. (range 1-5)	3.3, (SD=1.0)	3.1, (SD=1.1)	3.2, (SD=1.1)
Family Conn. (range, 1-5)	3.9 , (SD=0.8)	3.9 , (SD=0.8)	3.9 , (SD=0.8)
Participation team sports	800, (60%)	761, (69%)	1, 561, (64%)

Note. *% are overall frequency values for entire sample. Other values are mean and standard deviations for the entire sample

Table 3

Predicted Probabilities of Chronic Social Isolation Across Age and Gender Cohorts

Overall Sample					
		Isolated Time 2		Total	
		No	Yes		
Isolated Time 1	No	Count	2075	160	2235
		Row %	92.8%	7.2%	100%
Isolated Time 1	Yes	Count	138	51	189
		Row %	72.8%	27.2%	100%
		Total	2213	211	2424

X2 (1)=87.88, p < 0.0001

Younger Cohort Males					
				Total	
		No	Yes	Count	Row %
Isolated Time 1	No	Count	268	31	299
		Row %	89.7%	10.3%	100%
Isolated Time 1	Yes	Count	28	18	46
		Row %	60.8%	39.2%	100%
		Total	296	49	345

X2 (1)=27.16, p < 0.0001

Older Cohort Males					
				Total	
		No	Yes	Count	Row %
Isolated Time 2	No	Count	618	44	662
		Row %	93.3%	6.7%	100%
Isolated Time 2	Yes	Count	56	17	73
		Row %	77.0%	23.0%	100%
		Total	674	61	735

X2 (1)=22.92, p < 0.0001

Table 3--*continued**Predicted Probabilities of Chronic Social Isolation Across Age and Gender Cohorts*

		Younger Cohort Females		
Isolated Time 1	No	Count	371	29
		Row %	92.8%	7.2%
	Yes	Count	24	2
		Row %	92.7%	7.3%
		Total	395	31
	X2 (1)=0.0, p =0.978			426
Older Cohort Females				
Isolated Time 1	No	Count	817	56
		Row %	93.6%	6.4%
	Yes	Count	30	15
		Row %	66.7%	33.3%
		Total	847	71
	X2 (1)=43.24, p < 0.0001			918

Note. % =percentage of participants in the overall sample who were isolated at both Time 1 and Time 2 (chronically isolated).

N=raw number of participants who were isolated at both Time 1 and Time 2 (chronically isolated).

* p < 0.01

Table 4—*Predicted Probabilities of Chronic Isolation by Demographic Group*

Variable	Chronic Isolation (n, %)	X2	df	p
Gender				
Male	34, 3.0%	10.32	1	p=0.001
Female	17, 1.2%			
Race				
White	41, 0.9%	17.19	1	p<0.0001
Students of color	10, 3.2%			
School Age Level				
High school	19, 2.5%	0.99	1	p=0.3199
Young adult	31, 1.9%			
SES				
Low	15, 3.5%	12.89	4	p=0.0118
Low middle	10, 2.1%			
Middle	13, 2.0%			
High middle	6, 1.1%			
High	1, 0.3%			
Sexual Orientation				
Straight	42, 1.7%	8.96	2	p=0.003
GLBQ	10, 0.4%			

Note. % =percentage of participants in the overall sample who were isolated at both Time 1 and Time 2 (chronically isolated).

N=raw number of participants who were isolated at both Time 1 and Time 2 (chronically isolated).

Note. GLBQ=Gay, lesbian, bisexual, questioning.

* p < 0.01

Table 5

Generalized Linear Model (GLM)—Least square means and F-values

Males	Model 1			Model 2			Model 3			Model 4		
	N	Y	F stat									
Self-esteem (range, 6-24)	19.0	17.5	6.61*	19.0	17.7	3.47	19.0	17.9	2.67	19.1	17.0	7.56*
Depression (range, 7-21)	11.7	12.4	1.71	11.8	12.5	1.28	11.7	12.3	0.78	11.6	3.4	6.33*
Screen Time (range, 4-28)	15.1	16.7	2.70	15.2	17.7	4.68	15.2	17.8	4.76	15.2	17.7	4.63
Picked on (range, 2-15)	7.8	8.4	1.20	7.9	8.6	1.41	7.8	8.5	1.01	7.9	9.0	2.57
Males	Model 5			Model 6			Model 7			Model 8		
	N	Y	F stat									
Self-esteem (range, 6-24)	19.1	17.0	7.30*	19.1	17.1	6.92 *	19.1	17.1	6.82*	18.0	16.2	5.95*
Depression (range, 7-21)	11.7	13.4	5.96	11.7	13.5	5.34*	11.6	13.4	5.65*	12.0	13.6	5.46*
Screen Time (range, 4-28)	15.2	17.7	4.66	15.2	17.9	5.23	15.3	17.8	4.62	15.5	18.1	4.82
Picked on (range, 2-15)	7.9	9.0	2.41	7.9	8.9	2.18	7.9	8.9	2.08	8.0	9.0	2.02

Note: N==did not report feelings of social isolation at both time points. Y= reported feelings of isolation at both time points (chronically isolated); Model 1 – Chronic social isolation

Model 2 - Chronic social isolation, race, school level, SES, BMI

Model 3 - Chronic social isolation, race, school level, SES, BMI, Family connectedness

Model 4 - Chronic social isolation, race, school level, SES, BMI, GPA

Model 5 - Chronic social isolation, race, school level, SES, BMI, School Connectedness

Model 6 - Chronic social isolation, race, school level, SES, BMI, Participation in team sports

Model 7-- Chronic social isolation, race, school level, SES, BMI; Family connectedness, GPA, School Connectedness, Participation in team sports

Model 8-- Chronic social isolation, race, school level, SES, BMI, Sexual orientation, Family connectedness, GPA, School Connectedness, Participation in team sport

* p < 0.01; ** p < 0.001; *** p < 0.0001

Table 5--continued

Generalized Linear Model (GLM)—Least square means and F-values

Females	Model 1			Model 2			Model 3			Model 4		
	N	Y	F stat									
Self-esteem (range, 6-24)	17.8	14.3	17.52***	17.8	14.1	18.89***	17.8	14.0	17.66***	17.8	13.7	17.99**
Depression (range, 7-21)	13.5	16.9	17.51***	13.4	16.9	17.16***	13.4	16.8	14.69***	13.4	16.2	8.92*
Screen Time (range, 4-28)	13.5	17.0	7.48**	13.7	18.0	11.13**	13.8	18.2	10.35**	13.7	17.6	8.21**
Picked on (range, 2-15)	7.7	9.2	3.39	7.9	9.8	6.15	7.9	10.1	7.42*	7.8	8.6	0.76
Females	Model 5			Model 6			Model 7			Model 8		
	N	Y	F stat									
Self-esteem (range, 6-24)	17.7	13.7	17.73***	17.8	13.4	22.96***	17.7	13.2	19.83***	17.3	12.8	19.31***
Depression (range, 7-21)	13.4	16.2	8.50*	13.4	16.3	10.14*	13.4	16.3	8.10*	13.9	16.7	7.74**
Screen Time (range, 4-28)	13.7	17.6	8.28*	13.7	18.0	10.91	13.8	17.7	6.97	14.0	17.9	6.85*
Picked on (range, 2-15)	7.85	8.53	.63	7.84	8.76	1.23	7.83	9.08	1.82	8.16	9.33	1.65

Note: N==did not report feelings of social isolation at both time points. Y= reported feelings of isolation at both time points (chronically isolated);

Model 1 – Chronic social isolation

Model 2 - Chronic social isolation, race, school level, SES, BMI

Model 3 - Chronic social isolation, race, school level, SES, BMI, Family connectedness

Model 4 - Chronic social isolation, race, school level, SES, BMI, GPA

Model 5 - Chronic social isolation, race, school level, SES, BMI, School Connectedness

Model 6 – Chronic social isolation, race, school level, SES, BMI, Participation in team sports

Model 7-- Chronic social isolation, race, school level, SES, BMI; Family connectedness, GPA, School Connectedness, Participation in team sports

Model 8-- Chronic social isolation, race, school level, SES, BMI, Sexual orientation, Family connectedness, GPA, School Connectedness, Participation in team sport

* p < 0.01; ** p < 0.001; *** p < 0.0001

Table 6

Predicted Probabilities of Suicide Attempts and School Dropout for Chronically Isolated

Males	Model 1			Model 2			Model 3			Model 4			
	N	%	Y%	F	N%	Y%	F	N%	Y%	F	N%	Y%	F
Suicide Attempts (0 or 1)	3.0	6.0	0.51	4.0	4.0	0.03	4.0	3.0	0.09	4.0	5.0	0.01	
Dropout (0 or 1)	4.0	10	3.18	3.0	8.0	1.50	3.0	8.0	1.44	3.0	-1.0	1.04	
Males	Model 5			Model 6			Model 7			Model 8			
Suicide Attempts (0 or 1)	4.0	5.0	0.01	4.0	4.0	0.02	4.0	4.0	0.04	11.0	10.0	0.10	
Dropout (0 or 1)	3.0	-1.0	1.17	3.0	-2.0	1.66	3.0	-2.0	1.35	3.0	-2.0	1.42	

Note: N==did not report feelings of social isolation at both time points (not chronically isolated).

Y= reported feelings of isolation at both time points (chronically isolated)

Model 1 – Chronic social isolation

Model 2 - Chronic social isolation, race, school level, SES, BMI

Model 3 - Chronic social isolation, race, school level, SES, BMI, Family connectedness

Model 4 - Chronic social isolation, race, school level, SES, BMI, GPA

Model 5 - Chronic social isolation, race, school level, SES, BMI, School Connectedness

Model 6 – Chronic social isolation, race, school level, SES, BMI, Participation in team sports

Model 7-- Chronic social isolation, race, school level, SES, BMI; Family connectedness, GPA, School Connectedness, Participation in team sports

Model 8-- Chronic social isolation, race, school level, SES, BMI, Sexual orientation, Family connectedness, GPA, School Connectedness, Participation in team sport

* p < 0.01; ** p < 0.001; *** p < 0.0001

Table 6--continued

Predicted Probabilities of Suicide Attempts and School Dropout for Chronically Isolated

Females	Model 1			Model 2			Model 3			Model 4		
	N%	Y%	F	N%	Y%	F	N%	Y%	F	N%	Y%	F
Suicide Attempts (0 or 1)	9.0	2.1	3.10	9.0	1.9	2.31	9.0	21.0	2.51	9.0	15.0	0.53
Dropout (0 or 1)	4.0	16.0	6.67**	3.0	11.0	2.76	3.0	15.0	5.23	3.0	17.0	8.26*
Females	Model 5			Model 6			Model 7			Model 8		
Suicide Attempts (0 or 1)	N%	Y%	F	N%	Y%	F	N%	Y%	F	N%	Y%	F
9.0	15.0	0.51	9.0	24.00	3.64	9.0	17.0	0.85	13.0	20.0	0.72	
Dropout (0 or 1)	3.0	17.0	7.63*	3.0	15.0	5.56	3.0	23.0	13.76**	4.0	30.0	13.39**

Note: N==did not report feelings of social isolation at both time points (not chronically isolated).

Y= reported feelings of isolation at both time points (chronically isolated)

Model 1 – Chronic social isolation

Model 2 - Chronic social isolation, race, school level, SES, BMI

Model 3 - Chronic social isolation, race, school level, SES, BMI, Family connectedness

Model 4 - Chronic social isolation, race, school level, SES, BMI, GPA

Model 5 - Chronic social isolation, race, school level, SES, BMI, School Connectedness

Model 6 – Chronic social isolation, race, school level, SES, BMI, Participation in team sports

Model 7-- Chronic social isolation, race, school level, SES, BMI; Family connectedness, GPA, School Connectedness, Participation in team sports

Model 8-- Chronic social isolation, race, school level, SES, BMI, Sexual orientation, Family connectedness, GPA, School Connectedness, Participation in team sport

* p < 0.01; ** p < 0.001; *** p < 0.0001

Table 7

Comparison of Social Isolation Groups—F-Values & T test comparison

		Isolated LSMeans			GLM (Model 1)		T-test comparisons		
		Never (1)	One Time (2)	Both Times (3)	F	p-value	1 vs 2	1 vs 3	2 vs 3
Self esteem (range, 6-24)	M	19.2	18.2	17.5	9.92	< 0.0001	**	*	
	F	18.0	16.6	14.3	19.74	<0.0001	***	***	*
Depression (range, 7-21)	M	11.6	12.5	12.4	5.97	0.003	*		
	F	13.4	13.9	16.9	9.97	<0.0001		***	**
Suicide attempts (0 or 1)	M	0.0%	0.0	10.0%	0.47	0.62			
	F	10.0%	10.0%	20.0%	1.72	0.18			
Dropout (0 or 1)	M	0.0%	10.0%	10.0%	1.86	0.16			
	F	0.0%	10.0%	20.0%	3.52	0.03		*	
Family Connectedness (range, 1-5)	M	3.9	3.5	3.4	—	—	***	**	
	F	3.7	3.5	2.8	—	—		***	**
GPA (range, 0-4)	M	2.8	2.6	2.5	—	—			
	F	2.9	2.7	2.8	—	—	*		
School Connectedness (range, 1-5)	M	3.1	2.9	3.3	—	—			
	F	3.4	3.0	3.5	—	—	***		
Team Sports (0 or 1)	M	70.0%	60.0%	20.0%	—	—		***	***
	F	60.0%	50.0%	20.0%	—	—		*	

Note.*Least square means represent the score or range of the continuous variable. % are predicted probabilities for dichotomous variable

* p < 0.01; ** p < 0.001; *** p < 0.0001

Table 8

Generalized Linear Model (GLM)—Final Model in Three Way Comparison

Males	Never Isolated	Isolated One Time	Chronically Isolated	F-Value	GLM p-value
Outcome					
Self-Esteem (range, 6-24)	18.14	17.71	16.24	3.83	0.02
Depressive Symptoms (range, 7-21)	11.82	12.38	13.58	4.27	<0.01
Suicide Attempts (0 or 1)	11%	10%	9%	0.32	0.73
Dropout (0 or 1)	2%	6%	2%	2.64	0.07
Total Screen Time	15.36	16.44	18.12	4.64	0.01
Picked On (range, 2-15)	7.90	8.14	8.85	1.20	0.30

Note. Model 8-- Chronic social isolation, race, school level, SES, BMI, Sexual orientation, Family connectedness, GPA, School Connectedness, Participation in team sports

Note.*Least square means represent the score or range of the continuous variable. % are predicted probabilities for dichotomous variable

* p < 0.01

Table 8--continued

Generalized Linear Model (GLM)—Final Model in Three Way Comparison

Females Outcome	Never Isolated	Isolated One Time	Chronically Isolated	F-Value	GLM p-value
Self-Esteem (range, 6-24)	17.42	16.50	12.79	13.59	<0.0001
Depression (range, 7-21)	13.95	13.87	16.72	3.84	0.02
Suicide Attempts (0 or 1)	14%	12%	21%	0.59	0.55
Dropout (0 or 1)	5%	3%	25%	7.06	0.0009
Total Screen Time (range, 4-28)	13.94	14.50	17.87	4.08	0.02
Picked On (range, 2-15)	8.10	8.55	9.33	1.97	0.14

Note. Model 8-- Chronic social isolation, race, school level, SES, BMI, Sexual orientation, Family connectedness, GPA, School Connectedness, Participation in team sports

* p < 0.01

Appendix A: Survey Items

Variable	Description
Social Isolation	HS: Q41; YA: Q55 <i>Do you have one or more close friends who you can talk to about your problems?</i>
	Yes, always
	Yes, sometimes
	No
Chronic Social Isolation	Q46 (Time 1): <i>Do you have one or more close friends who you can talk to about your problems?</i>
	Yes, always
	Yes, sometimes
	No
	-and-
	HS: Q41; YA: Q55 (Time 2): <i>Do you have one or more close friends who you can talk to about your problems?</i>
	Yes, always
	Yes, sometimes
	No
Race	HS: Q6; YA: Q5 <i>Do you think of yourself as...?</i> White, Black or African American, Hispanic or Latino, Asian American, Hawaiian or Pacific Islander, American Indian or Native American

Appendix A (*continued*)

Survey Items

Variable	Description
BMI	HS & YA-Q 59 <i>How tall are you?</i>
	HS & YA-Q60 <i>How much do you weigh?</i>
	HS & YA-Q64 <i>At this time, do you feel that you are:</i>
	Very underweight
	Somewhat underweight
	About the right weight
	Somewhat overweight
	Very overweight
SES	HS: Q43 <i>How far in school did your mother go?</i>
	Did not finish high school
	Finished high school or got a GED
	Did some college training or training after high school.
	Finished college
	Master's degree or PhD
	I don't know
	HS: Q49 <i>How far in school did your father go?</i>
	Did not finish high school

Appendix A (*continued*)

Survey Items

Variable	Description
Suicide	HS—Q79; YA--Q80. <i>Have you ever tried to kill yourself?</i>
Attempts	Yes, during the past year Yes, more than a year ago No
Depressive Symptoms	HS—Q79; YA--Q 78. <i>During the past 12 months, how often have you been bothered or troubled</i>
	a. <i>Feeling too tired to do things</i> b. <i>Having trouble going to sleep or staying asleep</i> c. <i>Feeling unhappy, sad, or depressed</i> d. <i>Feeling hopeless about the future</i> e. <i>Feeling nervous or tense</i> f. <i>Worrying too much about things</i> g. <i>Changes in your appetite</i>
	Not at all Somewhat Very Much

Appendix A (*continued*)

Survey Items

Variable	Description
Self esteem	HS-Q83; YA-Q84. <i>Indicate how strongly you agree with the following statements:</i> <i>a. On the whole, I am satisfied with myself</i> <i>b. I feel that I have a number of good qualities</i> <i>c. At times I think I am no good at all</i> <i>d. I am able to do things as well as most other people</i> <i>e. I wish that I could have more respect for myself</i> <i>f. I certainly feel useless at times</i>
	Strongly disagree
	Disagree
	Agree
	Strongly agree
Dropout	YA-Q13 What is the highest level of education that you have completed? Middle or junior high Some high school High school graduate or GED Some college Technical school degree College graduate

Appendix A (*continued*)

Survey Items

Variable	Description
Screen Time	<p>HS& YA-Q 70a <i>In your free time on an average weekday, how many hours do you spend watching TV & Videos....</i></p> <p>0 hour; ½ hour; 1 hour; 2 hours; 3 hours; 4 hours; 5+ hours</p>
	<p>HS& YA-Q 70c <i>In your free time on an average weekday, how many hours do you spend using a computer (not for homework)....</i></p> <p>0 hour; ½ hour; 1 hour; 2 hours; 3 hours; 4 hours; 5+ hours</p>
	<p>HS& YA-Q 71a <i>In your free time on an average weekend day (Saturday or Sunday), how many hours do you spend watching TV & Videos....</i></p> <p>0 hour; ½ hour; 1 hour; 2 hours; 3 hours; 4 hours; 5+ hours</p>
	<p>HS & YA-Q71 c <i>In your free time on an average weekend day (Saturday or Sunday), , how many hours do you spend using a computer (not for homework)....</i></p> <p>0 hour; ½ hour; 1 hour; 2 hours; 3 hours; 4 hours; 5+ hours</p>

Appendix A (*continued*)

Survey Items

Variable	Description
Picked on by peers	HS& YA-Q81 <i>How often do any of the following things happen?</i> a. You are treated with less respect than other people b. People act as if they better than you are c. You are called names or insulted d. You are teased about your appearance e. You are teased about your weight

Appendix A (*continued*)

Survey Items

Variable	Description
Family Connectedness	HS--Q45; YA—Q49 <i>How much do you feel you can talk to you mother about your problems?</i>
	HS--Q46; YA—Q51 <i>How much do you feel your mother cares about you?</i>
	HS—Q51; YA—Q50 <i>How much do you feel you can talk to you father about your problems?</i>
	HS—Q52; YA—Q52 <i>How much do you feel your father cares about you?</i>
	Not at all
	A little
	Somewhat
	Quite a bit
	Very much

Appendix A (*continued*)

Survey Items

Variable	Description
School Connectedness	HS-Q87 <i>How do you feel about going to school?</i> I don't like school at all I don't like school very much I like school about half the time I like school most of the time I like school all of the time
Academic Achievement	HS--Q 88; Y—Q91 <i>Mark two grades you get most often?</i> A B C D F or incomplete
Team Sports	HS-Q69 <i>During the past <u>12 months</u>, on how many sports teams did you play?</i> 0 teams 1 team 2 teams 3 or more teams