Long-term Effects of Adolescent Social Support on Young Adult Depression and Suicide Risk

Jessica Coifman

A thesis

submitted in partial fulfillment of the

requirements for the degree of

Master of Public Health

University of Washington

2012

Committee:

Clarence Spigner

Carole Hooven

Elaine Thompson

Program Authorized to Offer Degree:

Health Services

University of Washington

Abstract

Long-term Effects of Adolescent Social Support on Young Adult Depression and Suicide Risk

Jessica Coifman

Chair of the Supervisory Committee:

Professor Clarence Spigner

Department of Health Services

Background: Suicide and depression in adolescence and young adulthood are major public health concerns. This study were examined the influence of social support in adolescence (*sense of support, amount of support, availability of support*) on adolescence and young adult emotional distress (suicide risk and depression). The potential moderating effects of social support on the relationship between adolescent emotional distress and young adult emotional distress were explored. **Methods:** The study sample included 568 participants, recruited by the *Reconnecting Youth Program*, who were in high school, identified as at-risk for school failure/dropout and followed into young adulthood. Data were collected in adolescence and young adulthood using items adapted from established measures for three psychosocial assessments. Each assessment asked an array of questions pertaining to adolescent/young adult health risks, such as suicide risk, depression, stress and substance abuse. Preliminary analyses included descriptive analysis of study variables and socio-demographics. Multiple linear regression analyses were used to test for the influence of three indicators of adolescent social support on emotional distress outcomes in adolescence and young adulthood, controlling for potential confounders. Moderating effects of adolescent social support on the relationship between adolescent and young adult emotional distress were examined by calculating separate interaction terms for each support variable and

indicator of adolescent emotional distress. **Results:** Results were similar to other research that has evidenced both the direct and moderating effects of social support on emotional distress. In adolescence, lower levels of social support for all measures were associated with greater emotional distress over and above other predictors. Higher *amount of support* and *sense of support* in adolescence predicted lower depression in young adulthood and higher sense of support predicted lower suicide risk in young adulthood. High *availability of support* in adolescence reduced the effect of adolescent depression and suicide risk on emotional distress outcomes in the transition to young adulthood. **Conclusions:** Not only are low levels of social support associated with higher levels of depression and suicide risk in adolescence, social support in adolescence independently predicted emotional distress outcomes in young adulthood. Given the impact of perceived social support on emotional distress in this transitional period, the design of interventions should focus on increasing adolescent social support.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGMENTS

I would like to express sincere appreciation to the Reconnecting Youth Program for their extended long-term support and especially to Carole Hooven for her compassion, patience and vast knowledge in the field. This thesis would never have been completed without the encouragement and devotion from Carole Hooven, fellow committee members Elaine Thompson and Clarence Spigner, and my greatest advocate Kitty Andert. And lastly, a special debt of gratitude for the unwavering support of my partner Emily Brulotte, family and friends.

Introduction

Previous research has shown that perception of social support is strongly associated with concurrent psychological well-being and emotional distress. However, little of this research has explored whether one's level of social support during adolescence affects later adult distress, including whether it can moderate the effects of adolescent emotional distress (i.e. suicide risk and depression).

Using a sample of 568 high school students (previously identified as youth at risk for school failure/drop-out) who were followed into young adulthood, this study examined the relationship between social support and emotional distress (both depression and suicide risk outcomes) during adolescence and whether perception of social support in adolescence can counteract the effects of earlier adolescent distress on young adult emotional distress.

Significance of the Problem

Suicide is the third leading cause of death for youth between the ages of 15-24, highlighting the need for suicide prevention as a public health priority (Centers for Disease Control [CDC], 2009; CDC, 2011). The rates of completed suicide may appear low upon first glance compared to the prevalence of other disorders, however when nonlethal suicidal behaviors and suicidal ideation are taken into account, the magnitude of the problem becomes evident. Beyond the obvious impact on themselves, suicidal behaviors have long-reaching detrimental effects on the healthy (Cash & Bridge, 2009; Denney, 2010). Although there are many researched risk factors for suicide, one of the strongest predictors and frequent co-morbid conditions is depression (Cash & Bridge, 2009; Gould, Greenberg & Velting, 2003; Wilcox,

Arria & Caldeira, 2010). Beautrais (2001) found that more than 90% of youth suicides have had at least one major psychiatric disorder and that depressive disorders are the most prevalent disorders among youth suicide victims, ranging from 49-64%. Suicide risk behaviors and depression are independently important and although literature supports that those adolescents who have higher levels of emotional distress (suicide and/or depression), often have a poorer sense of support, the research has often been cross-sectional in nature and therefore cannot explore the causal pathway of this relationship.

The transition from adolescence to young adulthood is pinpointed as a particularly stressful and dynamic life stage, due to changes in social network composition, availability of support (moving away from childhood home), and interpersonal relationships (Lenz, 2001). Although stressful transitions in adolescence increase emotional distress, particularly depressive symptoms, little is known about the effects of such risk as adolescents mature into young adulthood, especially about how social support effects depression and suicide trajectories during this period (Bell & Lee, 2008; Meadows, Brown & Elder, 2006).

The nature of the relationship between social support and emotional distress during this period is hypothesized in two approaches to social causation: the main-effects hypothesis and buffering hypothesis. The buffering hypothesis purports that social support moderates the impact that early adolescent emotional distress has on the continuation or re-occurrence of distress into early adulthood, whereas the main-effects hypothesis emphasizes how social support (sense, amount and availability) in adolescence is an independent risk factor for emotional distress (depression and suicide) in young adulthood (Heponiemi, Elovainio & Kivimaki, 2006; Needham, 2008).

Research on depression/suicide has focused predominantly on family support as the most influential type of social support for youth. However, by not including perceptions of peer and school support,

especially during the transition from adolescence to young adulthood where for most young people primary supports shift from family ties to peer and romantic relationships, the picture is incomplete

Transition to Young Adulthood

The transition from adolescence to young adulthood is a period of great 'flux'. This is a time where one negotiates and explores his/her role in society and newly-found adult status. Previous research has showcased that although the majority of adolescents' emotional well-being or distress generally persist in the transition to adulthood, this period can also be one of great opportunity. It can be a time for those who had a troubled youth to turn things around and achieve success, and conversely, for those who had a rather normative adolescence experience to now struggle in adapting to their new adult role (Arnett, 2000; Bell & Lee, 2008; Cohen, Kasen & Chen, 2003; Lenz, 2001; Poa, 2006; Schulenberg, Bryant & O'Malley, 2004).

Many milestones mark the transition from adolescence to adulthood in American culture. These developmental markers that signify success and/or failure to adapt from one's adolescent status into young adulthood can include, but are not limited to: post-secondary schooling (vocational training or 4 year degree), employment, financial autonomy, interpersonal relationships (romantic, family, peer), healthy lifestyle, and citizenship (community engagement, social conscience, voting) (Arnett 2000; Bell & Lee, 2008; Berry, 2004; Galambos, Howard & Krahn 2010; Schulenberg et al., 2004; Shanahan, 2000). Not only are all youth turning age 18 granted new legal status as an adult, but many will take their first full-time job and/or begin some form of post-secondary education, as well as endeavor to move out from their childhood homes and live at least semi-independently (Berry, 2004). The majority of youth are often moving away from the familiar routine of high school and an established peer group,

resulting in a period of instability when they must assume increasing responsibility for themselves. Apart from these external changes, it is during this period that decisions about careers and relationships are made and when one's worldviews are formed. As the adolescent becomes less dependent on structures associated with their immediate family's home, they begin to form unique identities that may result in further separation from former values, traditions and lifestyles (Berry, 2004; Lenz, 2001). Ultimately young adults are searching for meaning in their lives and answering the questions about what and who they will become (Sacker & Cable, 2010; Schulenberg et al., 2004).

It is clear that this period of transition encompasses more change and exploration unlike any other period in life. Arnett (2000) called this period in which many individuals are "somewhere in between" adolescence and adulthood, *emerging adulthood.* Much of the current research literature is based on Arnett's (2000) synthesis of previous developmental theories (Erikson, Levinson, Kohlberg etc.) and his assertion that *emerging adulthood* is a unique period of developmental ambiguity—distinct from the adolescent and adulthood stages. During this period, the individual is typically required to make major adjustments, to develop new skills, and learn to cope with new experiences (Bell & Lee, 2008; Berry, 2004; Carbonell, Reinherz & Beardslee, 2005; Lenz, 2001; Schulenberg et al., 2004).

Periods of transition tend to be ones of disconnectedness. This is particularly true for emerging adults, where high school graduation signals the beginning period of separation from school and family, ending a 12-13 year period of routine and stability for most (Hughes, 2001). The success of coping with this transition is most likely the foundation for coping with successive transitions during the life span (Arnett, 2000; Sacker & Cable, 2010; Shanahan, 2000). Additionally, making forward transitions (moving out from one's family home, beginning paid work, moving into a romantic partnership and becoming a parent) are both normative and desirable during this life stage and are associated with lower

stress levels (Bell & Lee, 2008; Cohen et al., 2003; Sacker & Cable, 2010). Young adults with increased levels of stress tend to identify more with adolescent roles, resist transition to adult status, or transition to adult status earlier than is considered normative (Bell & Lee, 2008).

Most depression research supports that early suicide risk (ideation and attempts) and depressive symptomology in adolescence are independent factors predicting later risk of emotional distress in young adulthood (Chen, Cohen & Johnson, 2009; Galambos, Howard & Krahn, 2006). Fergusson (2005) found a pervasive association between suicidal ideation and attempts in adolescence and long-term mental health, including increased risk for subsequent suicidal behaviors, major depression, anxiety disorders and substance use disorders. Support for his findings (Cash, 2009; Haber, Karpur & Deschenes, 2008; Katainen, Raikkonen & Keltikangas-Jarvinen, 1999; Keenan-Miller, Constance & Brennan, 2007; Lewinsohn, Rohde & Seeley, 2001; Mazza, Fleming & Abbott, 2010; Schulenberg et al., 2004) underline the importance of developing effective methods for identifying, managing and treating depressive episodes in adolescence, as well as understanding how/if factors like social support moderates emotional distress during this transitional stage. Late adolescence is a particularly important period for maintaining good relationships with family members and establishing support networks beyond the immediate family (Galambos, Leadbeater & Barker, 2004) and is a dynamic context for individual developmental change (Schulenberg et al., 2004).

Social Support

Relevance of the important relationship between social support, depression, and suicide risk has been well documented. Current research stems from Durkheim's theoretical works highlighting suicide as a cause of death directly linked to social conditions. Durkheim (1951/1897) proposed that although

suicide is clearly an individual act, taking one's life is rooted in social relations and social structures. He argued that individuals who were well integrated into family and social life possessed deeper connections and derived greater purpose by being part of a group, thereby reducing their suicide risk. Contemporary research has shown that social integration, a sense of 'belonging' and developing and maintaining positive social relationships has far-reaching effects on a multitude of physical and mental health outcomes (Adam, Chyu & Hoyt, 2011; Ciarrochi & Heaven, 2008; Denney, 2010; Maimon & Kuhl, 2008; Ueno, 2004). Adam et al. (2011) found that multiple adverse relationship experiences and low social integration predicted increase in poorer general health and depressive symptoms. This highlights how intricately our health is interwoven with our social ties and support systems (Thoits, 2010).

Ultimately, the experience of being supported by others is a core human requirement (Turner, 1981). As evidenced, social relationships play a central role in our lives and research has repeatedly shown that people function 'best' when living in a socially supportive environment (Ciarrochi & Heaven, 2008; Hale, Hannum & Espelage, 2005). We depend on others to not only help meet our basic needs of sustenance and shelter, but also to provide instrumental and emotional support, and to serve as sources of companionship and comfort (Adam et al., 2011). Social support can affect health in a multitude of ways including in the regulation of thoughts, feelings, and behaviors so as to promote health, in fostering an individual's sense of meaning in life, and in facilitating health promoting behaviors (Callaghan & Morrissey, 1993; Carbonell, Reinherz & Giaconia, 2002).

Social support is particularly important during adolescence because it's a time of transition during which a young person must cope with a range of major physical, emotional and social changes (Ahmed, Minnaert & van der Werf, 2010; Cobb, 1976; Pinkerton & Dolan, 2007). And, as evidenced by previous

research (Cohen 2004; Rutter & Behrendt, 2004), social support in adolescence plays a crucial part in successful coping as well as in buffering the impact of adolescent distress on future health outcomes. Additionally, supportive relationships in late adolescence and emerging adulthood may facilitate successful transitions to roles of adulthood (Schulman, Kalnitzki & Shahar, 2009). However, in relation to emotional distress (suicide and depression), the research literature is limited in scope and the findings are mixed. Some highlight a direct relationship between social support and emotional distress (suicide and depression); whereas others have found that high social support is a protective factor that moderates emotional distress by buffering against the stresses of life.

These mixed findings may be attributed to the fact that social support is a multifaceted construct. Furthermore, the conceptualizations, definitions and measurements of social support vary from study to study. Cohen (1985) highlights the lack of agreement among theoreticians and researchers as to the definition of social support in saying that there are almost as many measures of social support as there are studies. However, even though different terminology is used, all definitions imply some type of positive interaction or helpful behavior provided to a person in need of support (Hupcey, 1998). Although it is difficult to measure social support objectively, because it's one's 'felt' experience, most contemporary research is in agreement that one's individual perception of social support is a more robust predictor of both physical and psychological well-being than external measures of support (Barrera & Garrison-Jones, 1992; Gladstone, Parker & Malhi, 2007; Sarason, Sarason & Pierce, 1994; Turner, 1994).

To date, the preponderance of social support literature in public health research has measured the strength of one's perceived social support on the basis of one or two global questions directly asking one to self-rate their general sense of support. Often, the actual source of support or support resources are

not specifically identified, nor are the support measures teased out between different relationships and resources, allowing few conclusions to be drawn. Some research has focused on the quantity of support resources as a single measure of social support, however this conceptualization doesn't necessarily explain the availability or strength of that relationship and whether or not the individual actually seeks out that resource as a support (Gladstone et al., 2007; Hupcey, 1998; Turner, 1994). Having said that, there is some merit to such a measure given that Adam (2011) did find a relationship between the number of supports identified and emotional distress when he found that those adolescents who perceived an absence of supportive social relationships expressed more loneliness, a variable often linked to depression. Given that a single measure of social support is insufficient to understand such a dynamic construct, some researchers have expanded their measurements beyond just a quantifiable number, to include perceived support availability and sense of support received. For example, Eggert (1994) found both that those adolescents with a greater availability of support, had less frequency of suicidal ideation, and that greater amount of support received, lessened the intensity of one's suicide thoughts and plans/preparations made for an attempt.

It is evident that all people need support, just in varying degrees and in different areas of life. Although a breadth of cross-sectional research exists for the adult population, there is limited longitudinal research examining the relationship between social support and suicide. Recently, however, more research has been conducted to explore social support and depression; most research has focused on the relationship between social support and depression based on two alternative hypotheses. The majority of the research findings support the main-effects hypothesis positing low social support as an independent risk factor for depression (Arria, O'Grady & Caldeira, 2009; Heponiemi et al., 2006; Stice, Ragan & Randall, 2004). Alternatively, researchers have also found support for the buffering hypothesis that highlights how social support buffers the impact of current depression on the continuation or re-

occurrence of future depression (Carbonell et al., 2002; Davidson, Demaray & Malecki, 2008; Dumont & Provost, 1999). An additional viewpoint (and one that is not addressed in this study) stresses the difficulty in distinguishing causal pathways due to the reciprocal relationship between social support and depression. In brief, those who are depressed are less likely to seek supportive resources and thus tend to alienate themselves from others; on the other hand, those who perceive themselves with little or no support tend to feel alone and isolated from others, contributing to feelings of depression (Ciarrochi & Heaven, 2008; Galambos et al., 2006; Gladstone et al., 2007; Needham, 2008).

Purpose of Study

Suicide and depression in adolescence and young adulthood are major public health concerns. Both have far-reaching effects on a decedent's family and community. It is critical to understand potential risk and/or protective factors for suicide, for early identification of individuals at risk for emotional distress when preventative measures can be taken. Given that depression is the most relevant co-morbid condition of youth exhibiting suicidal behaviors and an independent marker of heightened distress, particularly during the transition to young adulthood, emotional distress outcomes were measured in terms of both suicidal behaviors and depression. Previous research highlighted the importance of social support for individuals experiencing high emotional distress, however, most of this research was cross-sectional, with little exploration of potential causal pathways between emotional distress and social support. The longitudinal design of this study allows exploration of, if, and how perceived social support in adolescence influences emotional distress in the transition to young adulthood. The study has two primary aims:

- *Aim 1* was to examine the relationship between social support and emotional distress in adolescence. It was hypothesized that adolescents with low social support have higher levels of emotional distress.

- *Aim 2* was to identify whether perception of social support (amount of support, sense of support, and availability of support) in adolescence influences emotional distress in young adulthood.

Two hypotheses were tested: a main-effects hypothesis that social support is an independent protective factor for emotional distress in young adulthood, and a buffering hypothesis that social support moderates the influence of adolescent emotional distress on young adult emotional distress. Given the existing support for each of these hypotheses, it was posited that low social support in adolescence is an independent risk factor for emotional distress in young adulthood (main-effects), and that high social support in adolescence is a protective factor against future emotional distress in young adulthood (buffering effect).

Methods

Sample & Procedures

The study sample included 568 adolescent participants (53 % male, 47 % female) between the ages of 14 and 19 (Mean = 15.97; SD= 1.19) who were initially recruited in urban and suburban school districts in the Pacific Northwest and Southwest as part of the Reconnecting Youth program. Students were eligible for recruitment if they met established criteria for risk of school failure or dropout. All procedures for the original and this follow-up study was IRB approved. Written informed assent was obtained from students and written informed consent was obtained from at least one parent/guardian.

In the original study, participating youth completed a comprehensive survey called the High School Questionnaire (HSQ) (Eggert et al., 1995) at school, which inquired about a wide array of adolescent health risks, such as suicide risk, depression, stress, and substance abuse. Those who were identified as not currently at risk for suicide were excused from the study at this point. Youth screening in as at risk were asked to complete an in-person computer-assisted interview with a clinician called the *Measure of Adolescent Potential for Suicide* (MAPS) (Eggert et al., 1994), an in-depth assessment of each youth's risks for suicide. Approximately 5 years later, the follow-up survey known as the Young Adult Profile of Experiences (POE-YA) was administered by trained research staff by phone. The POE-YA is a direct extension of the HSQ with questions/items modified to reflect the potential change of social context from adolescence to young adulthood.

Measures

Data was collected using items adapted from established measures or scales constructed specifically for the Reconnecting Youth program of research. Measures have been previously tested for reliability, validity, ease of use, interpretability and developmental appropriateness. Most responses were provided on a 7-point Likert-type scale, ranging from 0 to 6 in frequency, in all three of the assessments (HSQ, MAPS, POE-YAQ). See Appendix for full description of measures used in this study.

Table 1

Reliability of Measures

Measures	**Cronbach's Alpha (α)**
Adolescent Depression (T1)	.87
Adolescent Suicide Risk (T1)	.86
Availability of Support (T1)	n/a*
Amount of Support (T1)	.74
Sense of Support (T1)	.78
Young Adult Depression (T2)	.86
Young Adult Suicide Risk (T2)	.86

* Cronbach alpha coefficients computed only for scaled measures; no alpha coefficient for availability of support because measure based on single clinician rating, yet inter-rater reliability was established between supervisor ratings and interviewer ratings.

Emotional distress was assessed using both suicide and depression variables at both adolescent and young adult time-points. *Suicide risk behaviors* were measured in the HSQ Life Experiences Scale by asking participants to rate 7 items addressing suicidal thoughts, direct and indirect threats and past attempts using a 7-point scale (0=never, 6=always).

Depressed Affect was measured with 6 items derived from the Center of Epidemiologic Studies Depression Scale (CES-D) for use with adolescents. Participants were asked to rate the following items on a 7-point scale (0=never, 6=always): "I feel depressed," "I feel that people dislike me," "I feel lonely," "I can't shake feeling down," "I feel that nobody truly cares about me," and "I feel sad."

Perceived social support in adolescence was assessed by three support variables drawn from the HSQ and MAPS. *Amount of support* was measured by the HSQ Amount of Support/Help Scale. Adolescents rated at least 5 of 7 sources of support, identified by the youth as supportive/helpful to non-supportive/a hindrance, on a -10 to +10 scale. Someone supportive was defined as one you can count on, who listens to you and is available when you're happy or sad, motivates and encourages you to do your best and someone helpful was one you can count on who actually helps you with a task like homework or shows you different ways to handle problems. Sources identified in the scale included mother/female guardian, father/male guardian, brothers, sisters, classmates, best friend, and favorite teacher.

Sense of support was derived from the mean of at least 4 of 6 items on the 7-point HSQ Sense of Support Scale. The items assessed whether one felt like they had someone to turn to, felt alone versus well integrated into a peer group, had strained versus comfortable family ties and communication, and whether they felt cared for.

Availability of support was measured by a single global rating assessed by the clinician. The rating (0-6) is a summary score the clinician makes based on the youth's responses on the HSQ Availability of Support Scale that assesses the number of youth-identified support sources and their degree of perceived access and availability.

Analysis

The aims of the study were to examine the influence of social support in adolescence (*sense of support*, *amount of support*, and *availability of support*) on adolescent and young adult emotional distress. In addition, the potential moderating effect of social support on the relationship between adolescent emotional distress and young adult emotional distress was explored.

Descriptive analyses of the study variables were performed, examining means and distributional properties (standard deviations) for the three social support measures, depression, suicide risk, as well as for socio-demographic characteristics, including race/ethnicity, age and gender. Internal consistency for all scales used in the study was examined (see Table 1).

Aim 1: Multiple linear regression analyses tested the influence of three adolescent social support (*sense of support, amount of support, availability of support*) variables on the emotional distress outcomes (depression and suicide risk behaviors) in adolescence, controlling for potential confounders.

Aim 2: Multiple linear regression analyses tested the influence of adolescent social support on young adult emotional distress, controlling for socio-demographic characteristics and adolescent emotional distress (depression and suicide risk behaviors).

The moderating effects of adolescent social support on the relationship between adolescent and adult emotional distress were examined by calculating separate interaction terms for each of the adolescent social support variables and the indicators of adolescent emotional distress (T1). Using multiple linear regression, significant interactions between adolescent emotional distress and each of the adolescent social support measures were examined.

In each analysis, variables that explain T2 emotional distress were entered in three steps. For example, in Step 1, the control variables gender and race/ethnicity and a predictor variable T1 depression were entered. In Step 2, the social support variable, available support, was added. And in Step 3, the interaction term for T1 depression and available support was added. Tables 5-10 in Appendix A list all steps in each analysis.

Results

Preliminary Analysis

Table 2 presents the demographics of the study population followed from adolescence (T1) through young adulthood (T2). Descriptive statistics for the key variables are outlined in Table 3.

Table 2

Participant Demographics

Age (M, SD)		
T1 Age (Adolescence)	M = 15.97	SD = 1.9
T2 Age (Young Adulthood)	M = 21.70	SD = 2.20
Gender (n, %)	N = 568	
Male	n = 299	52.6%
Female	n = 269	47.4%
Race/Ethnicity (n, %)		
African American	n = 90	15.8%
Asian Pacific Islander	n = 46	8.1%
Caucasian	n = 226	39.8%
Hispanic	n = 113	19.9%
Native American	n = 47	8.3%
Mixed Ethnicity / Other	n = 40	7.0%

An independent-samples *t*-test was conducted to compare study variables (depression, suicide risk, *availability of support*, *sense of support*, and *amount of support*) by gender. There were significant differences in adolescence for depression between males (M=1.37, SD=1.17) and females (M=1.85, SD=1.34); $t(567)=-4.50$, $p<.00$; for suicide risk between males (M=.24, SD=.65) and females (M=.43, SD=.93); $t(566)=-2.87$, $p<.00$; for *sense of support* between males (M=4.92, SD=.92) and females (M=4.58, SD= 1.05); $t(565)=4.02$, $p<.00$. In young adulthood, there was a significant difference of

reported levels of depression between males (M=1.04, SD=.99) and females (M=1.33, SD=1.08); *t*(565)=-3.37, *p*<.00. The results indicate that gender is related to reported depression in adolescence and young adulthood, to suicide risk in adolescence, and to *sense of support* in adolescence. The influence of gender, across these measures, appears more pervasive in adolescence than in young adulthood.

Table 3

Descriptives of Key Variables

	Mean	Standard Deviation	N
T1 Depression	1.598	1.274	567
T1 Suicide Risk Behaviors	.333	.797	568
Availability of Support	4.198	1.062	561
Amount of Support	5.002	2.737	565
Sense of Support	4.759	.997	567
T2 Depression	1.179	1.046	567
T2 Suicide Risk Behaviors	.092	.256	565

T1 is time point 1 during adolescence / T2 is time point 2 during young adulthood
All variables are measured on a 7-point Likert-type scale with values ranging from 0-6, except Amount of Support that is the mean of 7 items rated on a -10 to +10 scale.

A one-way between subjects ANOVA was conducted to examine for associations between race/ethnicity and the major study variables. There were no significant associations with race/ethnicity, except for *amount of support* in adolescence [F(5,553)=2.26, *p*<.05] and for depression in young adulthood [F(5,555)=3.87, *p*<.05] . Post hoc comparisons using the Tukey HSD test indicated that *amount of support* (M=5.97, SD=2.34) reported by Native American youths was significantly higher (M=4.63, SD=2.73; *p*<.05) than *amount of support* reported by Caucasian youths. Additionally, depression in

young adulthood was significantly lower for Native Americans (M=.83, SD=.94) than for those identified as Mixed Ethnicity or Other (M=1.6, SD=1.3). Regression analysis revealed that although membership in certain ethnic groups significantly influenced the likelihood of young adult depression, ethnicity did not influence the relationship of predictor variables and outcome variables.

Aim 1 Results

Bivariate correlations (Table 4) among variables for the total sample were generally in the expected direction. There was a strong positive correlation (r=.53, $p<.01$) between the two emotional distress (T1 suicide risk and T1 depression) variables at adolescence, as well as moderate positive correlations between pairs of the social support variables (r=.34 to .44, $p<.01$).

The correlations between emotional distress and concurrent social support variables ranged from -.18 to -.64. Adolescent depression (T1) was negatively correlated with all three social support variables; the correlations were low for both *availability of support* (r=-.20, $p<.01$) and *amount of support* (r=-.28, $p<.01$), and relatively strong for *sense of support* (r=.-64, $p<.01$). Adolescent suicide risk (T1) was also negatively correlated with each social support variable; *availability of support* (r=-.18, $p<01$), *amount of support* (r=-.23, $p<01$), and *sense of support* (r=-.35, $p<.01$). All six of the concurrent correlations between the emotional distress variables and social support variables were negative and significant, indicating that higher levels of social support were linked with lower levels of depression and suicide risk in adolescence.

Correlations between the adolescent risk and protective factors (T1 depression, T1 suicide risk, *availability of support, amount of support, sense of support*) and young adult emotional distress

outcomes (T2 depression, T2 suicide risk) were also computed. There were strong positive correlations between the adolescent emotional distress (depression and suicide risk) variables and young adult emotional distress (see Table 3). Although all three social support variables were negatively correlated with young adult emotional distress variables, *sense of support* was more strongly correlated with both T2 depression (r=-.29, $p<.01$) and T2 suicide risk (r=-.18, $p<.01$), than the other two social support measures.

Table 4
Bivariate Correlations

	T1 Depression	T1 Suicide Risk	Availability of Support	Amount of Support	Sense of Support	T2 Depression	T2 Suicide Risk
T1 Depression	1	.531**	-.195**	-.283**	-.640**	.343**	.199**
T1 Suicide Risk	-	1	-.183**	-.232**	-.352**	.196**	.263**
Availability of Support	-	-	1	.438**	.421**	-.095*	-.099*
Amount of Support	-	-	-	1	.336**	-.158**	-.109**
Sense of Support	-	-	-	-	1	-.285**	-.181**
T2 Depression	-	-	-	-	-	1	.419**
T2 Suicide Risk	-	-	-	-	-	-	1

T1 is time point 1 during adolescence / T2 is time point 2 during young adulthood
** Correlation is significant at the $p<0.01$ level (2-tailed).
* Correlation is significant at the $p<0.05$ level (2-tailed).

Aim 2 Results

The second aim sought first to determine whether adolescent social support (T1) predicted emotional distress in young adulthood (T2), controlling for socio-demographic characteristics and adolescent emotional distress (T1) (depression and suicide risk behavior), and second to test for significant interactions between adolescent social support (T1) and emotional distress (T1) when predicting

emotional distress in young adulthood (T2). To test for the main-effects and interactions, a series of hierarchical regression analyses were performed following the same procedure each time (see Appendix A for Tables 5-10).

In accord with the main-effects hypothesis, social support evidenced some positive effects. Controlling for gender, race/ethnicity and adolescent depression (T1), both *amount of support* (β=-.09, $p<.05$) and *sense of support* (β=-.10, $p<.05$) were negatively associated with T2 depression (see Tables 6 and 7). *Sense of support* (β=-.09, $p<.05$) was also negatively associated with T2 suicide risk ($p<.05$) (see Table 10). In other words, higher *amount of support* and *sense of support* in adolescence predicted lower depression in young adulthood and higher *sense of support* in adolescence predicted lower suicide risk in young adulthood.

Several statistically significant interactions were observed, demonstrating the importance of social support on emotional distress across time. *Available support* in adolescence moderated the impact of adolescent depression on young adult depression (β=-.32, $p<.05$; $F(5,547)=17.37$, $p<.001$) and adolescent suicide risk on young adult suicide risk (β=-.35, $p<.01$; $F(5,546)=11.80$, $p<.001$) (see Tables 5 and 8). In adolescence, the effect of *amount of support* in adolescence on adolescent suicide risk approached statistic significance (β=-.11, $p<.07$; $F(5,546)=10.88$, $p<.001$) (see Table 6). There were no statistically significant interactions for sense of support on emotional distress variables. These interactions are graphed (see Figures 1-3) and centered at 1 standard deviation above and below the mean for both the T1 emotional distress variable and social support variable in order to demonstrate the predicted values for T2 emotional distress. In sum, perceived *availability of support* in adolescence partially reduced the effect of adolescent depression and suicide risk on emotional distress outcomes in the transition to young adulthood.

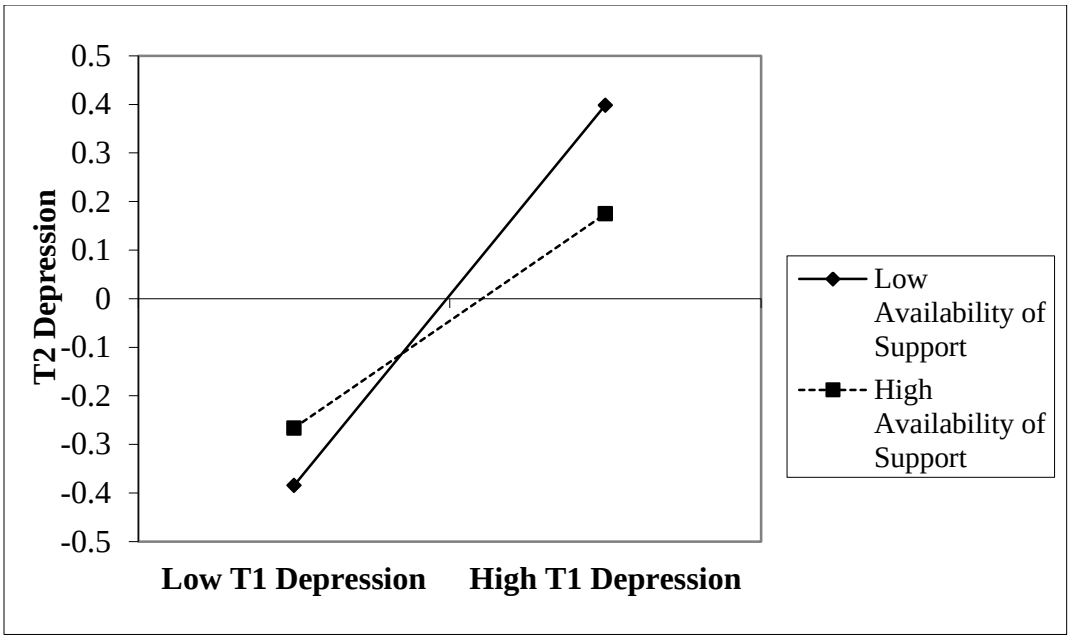

Figure 1. Moderating Effect of Availability of Support and Adolescent Depression (T1) on Young Adult Depression (T2)

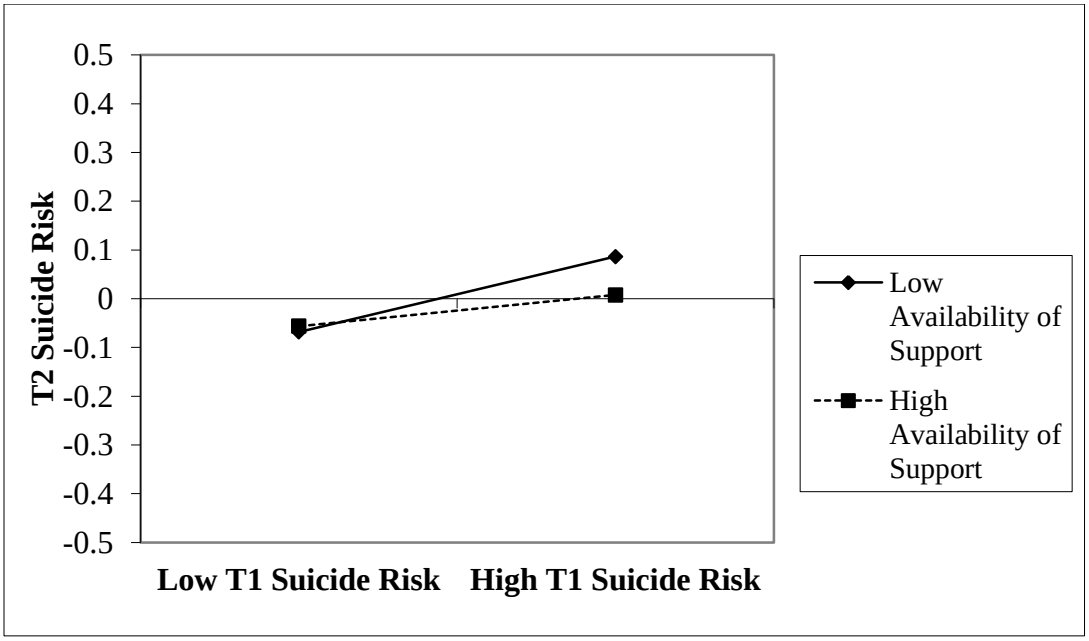

Figure 2. Moderating Effect of Availability of Support and Adolescent Suicide Risk (T1) on Young Adult Suicide Risk (T2)

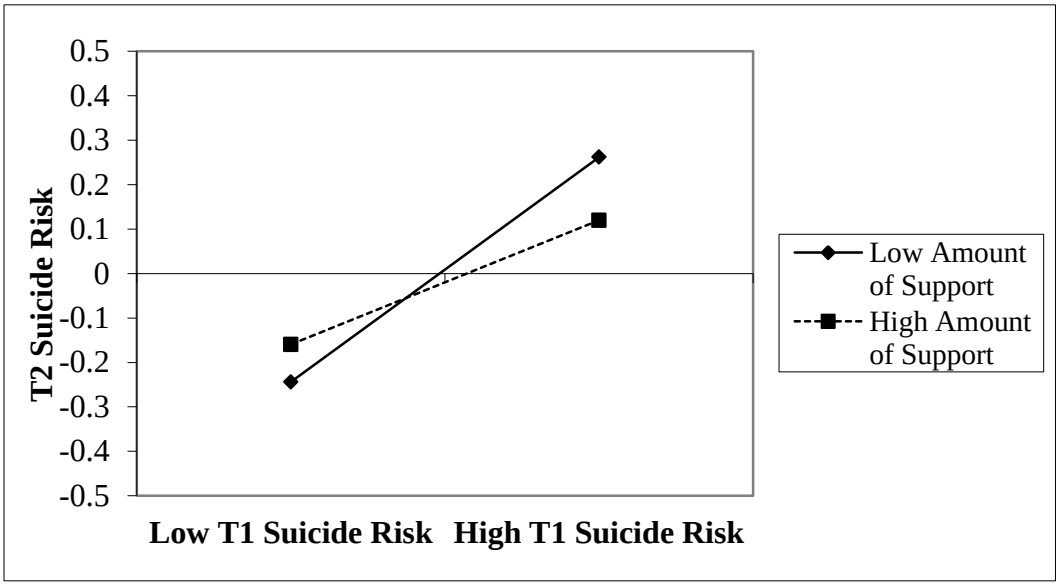

Figure 3. Moderating Effect of Amount of Support and Adolescent Suicide Risk (T1) on Young Adult Suicide Risk (T2)

Discussion

While numerous studies have focused on the effects of social support on mental health outcomes, few studies have examined the predictive utility of adolescent social support on future, young adult well-being—and none to date have examined the relative influences of alternate conceptualizations of social support on young adult well-being. This study demonstrates the importance of social support in adolescence on indicators of young adult well-being, depression and suicide risk. Even though the study sample is composed of youth who were initially screened in as at-risk for school dropout/failure, the rates of adolescent depression and suicide risk are comparable to existing research findings (CDC, 2011) for general adolescent populations, with 12% of these youth at moderate to high suicide risk and 31% experiencing moderate to high levels of depression. These high rates of adolescent emotional distress highlight the public health importance of this study and need for targeted interventions to prevent persistence of elevated depression and suicide risk in young adulthood (Fergusson et al., 2005). Additionally, results of this study provide evidence that perceived low levels of social support in adolescence are associated with self-reported poor mental health and elevated emotional distress in both adolescence and young adulthood, over and above adolescent distress or demographic characteristics.

The first research aim tested the influence of each of the social support variables measured in adolescence on the emotional distress outcomes in adolescence (T1). Notably, lower levels of perceived social support (availability, amount, and sense of support) were associated with greater emotional distress over and above other predictors. This study revealed differences in the relationships between each of the social support measures on adolescent distress, emphasizing, as predicted, that each measure captured social support differently. *Sense of support* had the strongest relationship with both depression and suicide risk in adolescence. The *sense of support* measure was based on questions addressing self-

perceptions of emotional support from family and friends as well as an overall sense of belonging and connection to others. It is likely that its stronger relationship to emotional distress was because it more accurately assessed 'felt experience' than the other two social support measures. This measure also assessed one's perception of how much support he/she receives from others, whereas *amount of support* is a measure of network integration and *availability of support* is based on a clinician's global rating of quantity and availability of youth-identified support resources. This finding is consistent with research that demonstrated that individual perception of social support is a more robust predictor of psychological well-being measures not based on self-report (Gladstone et al., 2007).

Also of note, all three support measures indicated a stronger concurrent relationship with depression, than with suicide risk. This finding complements existing social support research literature highlighting a stronger link between moods and social support, than between suicide risk behaviors and social support. Some theorists (Stice et al., 2004; Lazarus, R. & Folkman, S., 1984**)** believe that social support and depression are reciprocally related and that depressive pathology promotes support erosion which then, in turn, leads to an increase in depressed feelings. An alternative explanation may be that the depression measure used in this study included questions pertaining to hopelessness and loneliness, concepts both closely related to one's sense of belonging, and thereby social support as well.

Given these results, and to understand these relationships and their predictive potential over time, this research re-assessed emotional distress for these youth during the transition into young adulthood. In accordance with other studies (Galambos, 2004), emerging adulthood in this sample was characterized by decreased depressive symptomology and suicide risk, lending credence to the proposition that this transition period can be one of great opportunity (Arnett, 2000). To clarify the relationship between adolescent social support and young adult emotional distress, gender, race/ethnicity, and adolescent

levels of depression and suicide risk were controlled for in the analysis. Results from this study are consistent with other social support research that has evidenced both direct (Heponiemi et al., 2006) and moderating (Demaray et al., 2009) effects on emotional distress.

Of the three social support measures, both *amount of support* and *sense of support* directly influenced young adult depression symptomology, irrespective of the level of depression reported in adolescence. This is particularly interesting, given that adolescent depression is a robust predictor of young adult depression and therefore this finding highlights the benefit of feeling supported during adolescence. Additionally, *sense of support* was the only measure that had a direct influence on young adult suicide risk. This is an important finding, as typically social support is considered to be a protector when negative influences are in place. In this case, lack of social support directly contributes later emotional distress (Cohen, et al., 1985).

The moderating effects were examined for adolescent social support (separately for each of the three measures) on the relationships between adolescent depression and young adult depression and adolescent suicide risk and young adult suicide risks. There were no significant interactions involving *amount of support* or *sense of support* measures. *Availability of support*, however, reduced the effect of adolescent emotional distress on young adult emotional distress, that is, the effects of T1 depression and suicide risk on T2 depression and suicide risk, respectively. Specifically, young adults with high emotional distress and low availability of social support in adolescence showed disproportionately elevated emotional distress in young adulthood.

Social support remains a complex and illusive concept. To address the existing array of terminology and definitions of social support, three measures of social support were examined. Each captured some type of positive interaction or helpful behavior provided to the adolescent by others. The analysis

revealed the measures to be highly intercorrelated, yet they seemed to capture perceptions of social support differently. Thus, the stronger effects of adolescent *sense of support* and *amount of support* on emotional distress across time may highlight the greater importance of one's perceptions of social support over tangible aid. The *sense of support* scale measures the internal experience of being supported, including quality of emotional support and nurturance, as well as one's overall sense of belonging. In contrast, *amount of support* captures how integrated one is in his/her social network, as well as the degree of support experienced by different network sources.

On the other hand, *availability of support*, did not evidence any direct influence on young adult emotional well-being. It reflects another dimension of support based on the clinician's assessment, as a summary of self-reports, identifying available and accessible help and support. Some social support researchers (Hupcey, 1998) argue that 'perceptions' are inaccurate and don't reflect the actual support that's available, that gives more credibility to the global *availability of support* rating used in this study. Yet, *availability of support* exhibited moderating effects, reducing the influence of adolescent emotional distress on young adult depression and suicide risk outcomes.

Consistent with other studies, gender and race/ethnicity in this study sample were found to be associated with adolescent depression and suicide risk. In particular, females reported significantly higher levels of depression than males (Gore et al., 1993; Cash et al., 2009). Gender was not significantly associated with suicide risk or perceived social support in adolescence. Given the sample diversity, the role of race/ethnicity was explored. While there were some between-group differences in the levels of depression and suicide risk, ethnicity did not influence the relationship of the key predictor variables on the outcomes examined in this research.

Limitations

In interpreting the present results, it is important to note some limitations. First, as is the case with most adolescent mental health research, the requirement of parental consent is frequently a deterrent to research participation therefore the study sample may fail to include youth most at-risk for emotional distress and those with low perceived parental support, generating potential sample bias. That being said, given that this study initially screened adolescents for risk of school failure/dropout, the recruitment pool is known to be skewed towards youth experiencing greater emotional distress, representing an identifiable at-risk population. Additionally, the study sample included a subset of youth who were followed from adolescence into young adulthood and therefore did not include youth follow-up for those who potentially were at greatest risk of distress during this transition period. Previous research with the full adolescent dataset indicates however that attrition was relatively low for a typical longitudinal study and consistent with the instability of at-risk samples.

A second limitation is that self-reported measures are subject to both response and recall bias. Given the stipulation that everything in the interview was confidential, except any report of potential self-harm, it is possible that adolescents may have underreported suicide risk. Given the wide array of questions in the interview, however, the adolescents may have been more forthcoming in conveying other forms of emotional distress (i.e. depression) that was also an inclusion criteria for the study.

The social support measures have some limitations as well. One is the lack of an established 'gold standard' measure. The variety of different measures currently in use makes it difficult to compare results across studies. However, a primary design decision to use three indicators of social support was based on the existing complexities in the field. Both *sense of support* and *amount of support* revealed direct influences on young adult emotional distress. These support measures are captured by Likert-type

scales that are more robust measures than a single item measure. They are subjective and only capture perceived support versus what help/support individuals have available and actually receive. The third measure, *availability of support*, was the clinician's global rating that appears to have face validity and moderated the influence of emotional distress in the transition to young adulthood. Although the reliability of this single-item measure is unknown, it is objectively based on the clinician's perception of the adolescents' *availability of support*, taking into consideration both the number of resources identified by the youth and how available such resources are.

Implications

The results of this study clearly document the influence of perceived social support on mental health. Not only are low levels of social support correlated to higher levels of depression and suicide risk in adolescence, social support in adolescence independently predicted emotional distress outcomes in young adulthood. The findings support both the main-effects and buffering hypotheses, although the results varied by outcome (depression vs. suicide risk behaviors) and by type of social support measure. Although there is an overall decrease in depressive symptomology and suicide risk in young adulthood, a strong likelihood of persistence remains across time, particularly if untreated. In accordance with other research (Cash et al. 2009; Galambos et al., 2006; Fergusson et al., 2005), these findings highlight the importance of developing effective methods for identifying, managing and treating depression and suicide risk behaviors in adolescence. Given the impact of perceived social support on emotional distress in this transitional period, interventions should also be focused on increasing adolescent social support. It is clear that there could be strong benefits for providing and encouraging interventions directed towards enhancement of adolescent social support from family and peers and fostering a school

sense of community and belonging, as evidenced by the *emerging adulthood* literature. Future depression and suicide research and intervention work should include exploration of the reciprocal relationship between social support and depression and clarification of how different sources/domains of support (family, peer and school) are associated with emotional distress, and whether one high-support domain can compensate for another low-support domain in moderating emotional distress.

REFERENCES

Adam, E., Chyu, L., Hoyt, L., Doane, L., Boisjoly, J., Duncan, G., Chase-Lansdale, P., & McDade, T. (2011). Adverse adolescent relationship histories and young adult health: cumulative effects of loneliness, low parental support, relationship instability, intimate partner violence, and loss. *Journal of Adolescent Health*, 49: 278-286.

Ahmed, W., Minnaert, A., Vander Werf, G., & Kuyper, H. (2010). Perceived social support and early adolescents' achievement: the meditational roles of motivational beliefs and emotions. *Journal of Youth & Adolescence*, 39(1): 36-46.

Antonucci, T. (1985). Social support: theoretical advances, recent findings and pressing issues. In *Social Support: Theory, Research and Application* (Sarason I.G. & Sarason B.R. eds), Nijhoff, Boston, 21-37.

Arnett, J. (2000). Emerging adulthood: a theory of development from the late teens through the twenties. *The American Psychologist,* 55(5): 469-480.

Arria, A., O'Grady, K., Caldeira, K., Vincent, K., Wilcox, H., & Wish, E. (2009). Suicide ideation among college students: a multivariate analysis. *Archives of Suicide Research,* 13(3): 230-246.

Aseltine, R., Gore, S., & Colten, M. (1994). Depression and the social developmental context of adolescence. *Journal of Personality and Social Psychology*, 67: 252-263.

Auerbach, R., Biada-Peyton, J., Eberhart, N., Webb, C., & Ho, M. (2010). Conceptualizing the prospective relationship between social support, stress, and depressive symptoms among adolescents. *Journal of Abnormal Child Psychology (online).*

Barrera, M., & Garrison-Jones, C. (1992). Family and peer social support as specific correlates of adolescent depressive symptoms. *Journal of Abnormal Child Psychology,* 20(1): 1-16.

Beautrais, A. (2001). Risk factors for suicide and attempted suicide among young people. *Australian and New Zealand Journal of Psychiatry,* 34(3): 420-436.

Bell, S., & Lee, C. (2008). Transitions in emerging adulthood and stress among young Australian women. *International Journal of Behavioral Medicine,* 15(4): 280-8.

Berry, D. (2004). The relationship between depression and emerging adulthood: theory generation. *Advances in Nursing Science,* 27(1): 53-69.

Bokhorst, C., Sumter, S., & Westenberg, M. (2010). Social support from parents, friends, classmates, and teachers in children and adolescents from aged 9 to 18 years: who is perceived as most supportive? *Social Development,* 19(2): 417-426.

Callaghan, P., & Morrissey, J. (1993). Social support and health: a review. *Journal of Advanced Nursing,* 18: 203-210.

Carbonell, D., Reinherz, H., & Beardslee, W. (2005). Adaptation and coping in childhood and adolescence for those at risk for depression in emerging adulthood. *Child & Adolescent Social Work Journal,* 22(5/6): 395-416.

Carbonell, D., Reinherz, H., Giaconia, R., Stashwick, C., Paradis, A., & Beardslee, W. (2002). Adolescent protective factors promoting resilience in young adults at risk for depression. *Child & Adolescent Social Work Journal,* 19(5): 393-412.

Cash, S., & Bridge, J. (2009). Epidemiology of youth suicide and suicidal behavior. *Current Opinion in Pediatrics,* 21: 613-619.

Centers for Disease Control and Prevention. (2007). Suicide trends among youths and young adults aged 10-24 years- United States, 1990-2004. *MMWR,* 56(35): 905-908.

Centers for Disease Control and Prevention. (2009). 10 leading causes of death by age group US – 2009. Retrieved from: http://www.cdc.gov/injury/wisqars/pdf/10LCD-Age-Grp-US-2009-a.pdf.

Centers for Disease Control and Prevention. (2011). Youth Risk Behavior Surveillance—United States, 2011. *MMWR,* 61(5): 1-162.

Chen, H., Cohen, P., Johnson, J., & Kasen, S. (2009). Psychiatric disorders during adolescence and relationships with peers from age 17 to age 27. *Social Psychiatry & Psychiatric Epidemiology,* 44(3): 223-30.

Ciarrochi, J., & Heaven, P. (2008). Learned social hopelessness: the role of explanatory style in predicting social support during adolescence. *Child Psychology & Psychiatry,* 49(12): 1279-1286.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine,* 38: 300-314.

Cohen, P., Kasen, S., Chen, H., Hartmark, C., & Gordon, K. (2003). Variations in patterns of developmental transitions in the emerging adulthood period. *Developmental Psychology,* 39(4): 657-669.

Cohen, S., & Wills, T. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin,* 98(2): 310-357.

Cohen, S. (2004). Social relationships and health. *American Psychologist,* 59: 676-684.

Davidson, LM., Demaray, M., Malecki, C., Ellonen, N., & Korkiamaki, R. (2008). United States and Finnish adolescents' perceptions of social support: a cross-cultural analysis. *School Psychology International,* 29(3): 363-375.

Demaray, M., Malecki, C., Rueger, S., Brown, S., & Summers, K. (2009). The role of youth's ratings of the importance of socially supportive behaviors in the relationship between social support and self-concept. *Journal of Youth & Adolescence,* 38(1): 13-28.

Denney, J. (2010). Family and household formations and suicide in the United States. *Journal of Marriage and Family,* 72(2): 202-213.

Dumont, M., & Provost, M. (1999). Resilience in adolescents: protective roles of social support, coping strategies, self-esteem, and social activities on experiences of stress and depression. *Journal of Youth & Adolescence,* 28(3): 343-363.

Durkheim, E. (1951) [1897]. *Suicide: a study in sociology*. New York: Free Press.

Eggert, L., Thompson, E., & Herting, J. (1994). A measure of adolescent potential for suicide (MAPS): developmental and preliminary findings. *Suicide & Life-Threatening Behavior,* 24: 359-381.

Eggert, L., Herting, J., & Thompson, E. (1995). The High School Questionnaire: Profile of Experiences. Seattle, WA: University of Washington.

Faulkner, G., Adlaf, E., Irving, H., Allison, K., & Dwyer, J. (2009). School disconnectedness: identifying adolescents at risk in Ontario, Canada. *Journal of School Health,* 79(7): 312-319.

Fergusson, D., Horwood, L., Ridder, E., & Beautrais, A. (2005). Suicidal behavior in adolescence and subsequent mental health outcomes in young adulthood. *Psychological Medicine,* 35: 983-993.

Fergusson, D., Boden, J., & Horwood, L. (2007). Recurrence of major depression in adolescence and early adulthood, and later mental health, educational and economic outcomes. *British Journal of Psychiatry,* 191: 335-342.

Galaif, E., Sussman, S., Chou, C., & Wills, T. (2003). Longitudinal relations among depression, stress, and coping in high risk youth. *Journal of Youth and Adolescence,* 32(4): 243-258.

Galambos, N., Barker, E., & Krahn, H. (2006). Depression, self-esteem, and anger in emerging adulthood: seven-year trajectories. *Developmental Psychology,* 42(2): 350-365.

Galambos, N., Howard, A., & Krahn, H. (2010). Paths to success in young adulthood from mental health and life transitions in emerging adulthood. *International Journal of Behavioral Development,* 34(6): 538-546.

Galambos, N., Leadbeater, B., & Barker, E. (2004). Gender differences in and risk factors for depression in adolescence: a 4-year longitudinal study. *Journal of Behavioral Development,* 28(1): 16-25.

Gladstone, G., Parker, G., Malhi, G., & Wilhelm, K. (2007). Feeling unsupported? An investigation of depressed patients' perceptions. *Journal of Affective Disorders,* 103: 147-154.

Gore, S., & Aseltine, H. (1995). Protective processes in adolescence: matching stressors with social resources. *American Journal of Community Psychology,* 23: 301-327.

Gould, M., Greenberg, T., Velting, D., & Shaffer, D. (2003). Youth suicide risk and preventive interventions: a review of the past 10 years. *Journal of American Academy of Child Adolescent Psychiatry,* 42(4): 386-405.

Haber, M., Karpur, A., Deschenes, N., & Clark, H. (2008). Predicting improvement of transitioning young people in the partnerships for youth transition initiative: findings from a multisite demonstration. *Journal of Behavioral Health Services Research,* 35(4): 488-513.

Hale, C., Hannum, J., & Espelage, D. (2005). Social support and physical health: the importance of belonging. *Journal of American College Health,* 53(6): 276-284.

Heponiemi, T., Elovainio, M., Kivimaki, M., Bulkki, L., Puttonen, S., & Keltikangas-Jarvinen, L. (2006). The longitudinal effects of social support and hostility on depressive tendencies. *Social Science & Medicine,* 63: 1374-1382.

Herrenkohl, T., Kosterman, R., Hawkins, J., & Mason, W. (2009). Effects of growth in family conflict in adolescence on adult depressive symptoms: mediating and moderating effects of stress and school bonding. *Journal of Adolescent Health,* 44(2): 146-152.

Hughes, C. (2001). Transition to adulthood: supporting young adults to access social, employment and civic pursuits. *Mental Retardation and Developmental Disabilities Research Review,* 7(2): 84-90.

Hupcey, J. (1998). Clarifying the social support theory-research linkage. *Journal of Advanced Nursing,* 27: 1231-1241.

Katainen, S., Raikkonen, K., & Keltikangas-Jarvinen, L. (1999). Adolescent temperament, perceived social support, and depressive tendencies as predictors of depressive tendencies in young adulthood. *European Journal of Personality*, 13: 183-207.

Keenan-Miller, D., Constance, H., & Brenan, P. (2007). Health outcomes related to early adolescent depression. *Journal of Adolescent Health*, 41: 256-262.

Lakey, B., & Cohen, S. (2000). Social support theory and measurement. *Social support measurement and interventions: a guide for health and social scientists.* NY: Oxford.

Lakey, B., Orehek, E., Hain, K., & Van Vleet, M. (2010). Enacted support's links to negative affect and perceived support are more consistent with theory when social influences are isolated from trait influences. *Personality and Social Psychology Bulletin*, 36(1): 132-142.

Lazarus, R., & Folkman, S. (1984). *Stress, appraisal and coping.* NY, NY: Springer Publishing.

Lenz, B. (2001). The transition from adolescence to young adulthood: a theoretical perspective. *Journal of School Nursing*, 17(6): 300-6.

Lewinsohn, P., Rohde, P., & Seeley, J. (1993). Psychosocial characteristics of adolescents with a history of suicide attempt. *Journal of the American Academy of Child & Adolescent Psychiatry*, 32: 60-68.

Lewinsohn, P., Rohde, P., Seeley, J., & Baldwin, C. (2001). Gender differences in suicide attempts from adolescence to young adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40(4): 427-434.

Maimon, D., & Kuhl, D. (2008). Social control and youth suicidality: situating Durkheim's ideas in a multilevel framework. *American Sociological Review*, 73(6): 921-943.

Mazza, J., Fleming, C., Abbott, R., Haggerty, K., & Catalano, R. (2010). Identifying trajectories of adolescents' depressive phenomena: an examination of early risk factors. *Journal of Youth & Adolescence*, 39(6): 579-593.

Meadows, S., Brown, J., & Elder, G. (2006). Depressive symptoms, stress, and support: gendered trajectories from adolescence to young adulthood. *Journal of Youth & Adolescence*, 35(1): 89-99.

Messersmith, E., & Schulenberg, J. (2010). Goal attainment, goal striving, and well-being during the transition to adulthood: a ten-year U.S. national longitudinal study. *New Directions of Child and Adolescent Development*, 2010(130): 27-40.

Needham, B. (2008). Reciprocal relationships between symptoms of depression and parental support during the transition from adolescence to young adulthood. *Journal of Youth and Adolescence,* 37: 893-905.

Newman, B., Newman, P., Griffin, S., O'Connor, K., & Spas, J. (2007). The relationship of social support do depressive symptoms during the transition to high school. *Adolescence,* 42(167): 441-457.

Paradis, A., Reinherz, H., Giaconia, R., & Fitzmaurice, G. (2006). Major depression in the transition to adulthood: the impact of active and past depression on young adult functioning. *Journal of Nervous Mental Disorders,* 194(5): 318-23.

Pettit, J., Roberts, R., Lewinsohn, P., Seeley, J., & Yaroslavsky, I. (2011). Developmental relations between perceived social support and depressive symptoms through emerging adulthood: blood is thicker than water. *Journal of Family Psychology,* 25(1): 127-136.

Pinkerton, J., & Dolan, P. (2007). Family support, social capital, resilience and adolescent coping. *Child and Family Social Work,* 12: 219-228.

Poa, E. (2006). Trapped in transition: the complex young adult patient. *Bulletin Menninger Clinic,* 70(1): 29-52.

Reinherz, H., Paradis, A., Giaconia, R., Stashwick, C., & Fitzmaurice, G. (2003). Childhood and adolescent predictors of major depression in the transition to adulthood. *American Journal of Psychiatry,* 160: 2141-2147.

Reinherz, H., Giaconia, R., Hauf, A., Wasserman, M., & Silverman, A. (1999). Major depression in the transition to adulthood: risks and impairments. *Journal of Abnormal Psychology,* 108(3): 500.

Rutter, P., & Behrendt, A. (2004). Adolescent suicide risk: four psychosocial factors. *Adolescence,* 39(154): 295-302.

Sacker, A., & Cable, N. (2010). Transitions to adulthood and psychological distress in young adults born 12 years apart: constraints on and resources for development. *Psychological Medicine,* 40(2): 301-13.

Sarason, I., Sarason, R., & Pierce, G. (1994). Social support: global and relationship-based levels of analysis. *Journal of Social and Personal Relationships,* 4: 497-510.

Schulenberg, J., Bryant, A., & O'Malley, P. (2004). Taking hold of some kind of life: how developmental tasks relate to trajectories of well-being during the transition to adulthood. *Development of Psychopathology,* 16: 1119-1140.

Shanahan, M. (2000). Pathways to adulthood in changing societies: variability and mechanisms in life course perspective. *Annual Review of Sociology,* 26: 667-692.

Stack, S. (2000). Suicide: a 15-year review of the sociological literature part II: modernization and social integration perspectives. *Suicide and Life-Threatening Behavior,* 30(2): 163-177.

Staff, J., Schulenberg, J., Maslowsky, J., Bachman, J., O'Malley, P., & Maggs, J. (2010). Substance use changes and social role transitions: proximal developmental effects on ongoing trajectories from late adolescence through early adulthood. *Developmental Psychopathology,* 22(4): 917-32.

Stice, E., Ragan, J., & Randall, P. (2004). Prospective relations between social support and depression: differential direction of effects for parent and peer support? *Journal of Abnormal Psychology,* 113(1): 155-159.

Taylor, J., & Turner, R. (2001). A longitudinal study of the role and significance of mattering to others for depressive symptoms. *Journal of Health and Social Behavior,* 42(3): 310-25.

Thoits, P. (2010). Stress and health: major findings and policy implications. *Journal of Health and Social Behavior,* 51: 41-53.

Thompson, E., Eggert, L, & Herting, J. (2000). Mediating effects of an indicated prevention program for reducing youth depression and suicide risk behaviors. *Suicide and Life-Threatening Behavior,* 30(3): 252-272.

Thompson, E., Eggert, L., Randell, B., & Pike, K. (2001). Evaluation of indicated suicide risk prevention approaches for potential high school dropouts. *American Journal of Public Health,* 91(5): 742-752.

Thompson, M., Kuruwita, C., & Foster, E. (2009). Transitions in suicide risk in a nationally representative sample of adolescents. *Journal of Adolescent Health,* 44(5): 458-463.

Turner, R. (1981). Social support as a contingency in psychological well-being. *Journal of Health and Social Behavior,* 22: 357-367.

Turner, R. (1994). Social support and social structure: a descriptive epidemiology. *Journal of Health and Social Behavior,* 35: 193-212.

Ueno, K. (2004). The effects of friendship networks on adolescent depressive symptoms. *Social Science Research,* 34: 484-510.

Wilcox, H., Arria, A., Caldeira, K., Vincent, K., Pinchevsky, G., & O'Grady, K. (2010). Prevalence and predictors of persistent suicide ideation, plans, and attempts during college. *Journal of Affective Disorders.*

Appendix A: Regression Analysis Tables

Table 5
Regression Analysis Examining the Relationship Between Depression and Availability of Support
Dependent Variable = T2 Depression

	B	SEB	β	R^2	ΔR^2
Step 1				.13	-
Gender	.20*	.09	.10		
Race/Ethnicity	.03	.03	.04		
T1 Depression	.26***	.03	.32		
F(3,549)=26.72***					
Step 2				.13	-
Gender	.20*	.09	.10		
Race/Ethnicity	.03	.03	.04		
T1 Depression	.26***	.03	.31		
Availability of Support	-.04	.04	-.04		
F(4,548)=20.29***					
Step 3				.14	.01*
Gender	.21*	.08	.10		
Race/Ethnicity	.03	.03	.04		
T1 Depression	.50***	.11	.62		
Availability of Support	.08	.06	.08		
T1 Depression X Availability of Support	-.06*	.03	-.32		
F(5,547)=17.37***					

*p<.05; **p<.01; ***p<.001

Table 6
Regression Analysis Examining the Relationship Between Depression and Amount of Support
Dependent Variable = T2 Depression

	B	SEB	β	R^2	ΔR^2
Step 1				.13	-
Gender	.18*	.09	.09		
Race/Ethnicity	.03	.03	.04		
T1 Depression	.27***	.03	.33		
F(3,553)=27.07***					
Step 2				.14	.01*
Gender	.20*	.09	.10		
Race/Ethnicity	.03	.03	.04		
T1 Depression	.25***	.04	.30		
Amount of Support	-.03*	.02	-.09		
F(4,552)=21.39***					
Step 3				.14	-
Gender	.20*	.09	.10		
Race/Ethnicity	.03	.03	.04		
T1 Depression	.32***	.06	.39		
Amount of Support	.00	.02	-.01		
T1 Depression X Amount of Support	-.02	.01	-.11		
F(5,551)=17.61***					

*p<.05; **p<.01; ***p<.001

Table 7
Regression Analysis Examining the Relationship Between Depression and Sense of Support
Dependent Variable = T2 Depression

	B	SEB	β	R^2	ΔR^2
Step 1				.13	-
Gender	.19*	.08	.09		
Race/Ethnicity	.03	.03	.04		
T1 Depression	.26***	.03	.32		
F(3,555)=27.06***					
Step 2				.14	.01*
Gender	.18*	.08	.09		
Race/Ethnicity	.03	.03	.04		
T1 Depression	.21***	.04	.26		
Sense of Support	-.11*	.05	-.10		
F(4,554)=21.42***					
Step 3				.14	-
Gender	.18*	.08	.09		
Race/Ethnicity	.03	.03	.04		
T1 Depression	.23[a]	.12	.29		
Sense of Support	-.10	.08	-.09		
T1 Depression X Sense of Support	-.01	.03	-.02		
F(5,553)=17.11***					

*p<.05; **p<.01; ***p<.001; [a]p<.06

Table 8
Regression Analysis Examining the Relationship Between Suicide Risk and Availability of Support
Dependent Variable = T2 Suicide Risk

	B	SEB	β	R^2	ΔR^2
Step 1				.08	-
Gender	.01	.02	.02		
Race/Ethnicity	.01	.01	.06		
T1 Suicide Risk	.08***	.01	.27		
F(3,548)=15.88***					
Step 2				.09	.01[a]
Gender	.01	.02	.02		
Race/Ethnicity	.01	.01	.05		
T1 Suicide Risk	.08***	.01	.26		
Availability of Support	-.02[a]	.01	-.08		
F(4,547)=12.90***					
Step 3				.10	.01**
Gender	.01	.02	.01		
Race/Ethnicity	.01	.01	.05		
T1 Suicide Risk	.18***	.04	.59		
Availability of Support	-.01	.01	-.03		
T1 Suicide Risk X Availability of Support	-.03**	.01	-.35		
F(5,546)=11.80***					

*p<.05; **p<.01; ***p<.001; [a]p<.06

Table 9
Regression Analysis Examining the Relationship Between Suicide Risk and Amount of Support
Dependent Variable = T2 Suicide Risk

	B	SEB	β	R^2	ΔR^2
Step 1				.08	-
Gender	.00	.02	.01		
Race/Ethnicity	.01	.01	.06		
T1 Suicide Risk	.09***	.01	.28		
F(3,552)=16.26***					
Step 2				.08	-
Gender	.01	.02	.01		
Race/Ethnicity	.01	.01	.05		
T1 Suicide Risk	.08***	.01	.26		
Amount of Support	-.01	.00	-.06		
F(4,551)=12.69***					
Step 3				.09	.01[a]
Gender	.00	.02	.01		
Race/Ethnicity	.01	.01	.06		
T1 Suicide Risk	.10***	.02	.34		
Amount of Support	-.00	.00	-.03		
T1 Suicide Risk X Amount of Support	-.01[a]	.00	-.11		
F(5,546)=10.88***					

*p<.05; **p<.01; ***p<.001; [a]p<.07

Table 10
Regression Analysis Examining the Relationship Between Suicide Risk and Sense of Support
Dependent Variable = T2 Suicide Risk

	B	SEB	β	R^2	ΔR^2
Step 1				.08	-
Gender	.01	.02	.02		
Race/Ethnicity	.01	.01	.06		
T1 Suicide Risk	.08***	.01	.27		
F(3,554)=16.07***					
Step 2				.09	.01*
Gender	.00	.02	.00		
Race/Ethnicity	.01	.01	.06		
T1 Suicide Risk	.08***	.01	.24		
Sense of Support	-.02*	.01	-.09		
F(4,553)=13.12***					
Step 3				.09	-
Gender	.00	.02	.01		
Race/Ethnicity	.01	.01	.06		
T1 Suicide Risk	.12*	.05	.37		
Sense of Support	-.02	.01	-.07		
T1 Suicide Risk X Sense of Support	-.01	.01	-.13		
F(5,552)=10.65***					

*p<.05; **p<.01; ***p<.001

Appendix B: Measures

Depression Scale:

0	1	2	3	4	5	6
Never		Sometimes		Usually		Always

Mean of the following six statements:

- I feel lonely
- I feel that people dislike me
- I feel depressed
- I can't shake off feeling down or blue even with help from family and friends
- I feel that nobody truly cares about me
- I feel sad

Suicide Risk Scale:

0	1	2	3	4	5	6
Never		Sometimes		Usually		Always
Not at all	Once	Twice	Three times	Four times	Five times	6+ times

Mean of at least three of the following seven questions/statements:

- Due to using alcohol and/or drugs, I have thoughts of suicide.
- I have thoughts about suicide
- I have written notes, poetry or left drawings suggestive of suicide.
- In the last month, how many times did you feel so bad that you threatened suicide?
- In the last year, how many times did you feel so bad that you threatened suicide?
- In the last month, how many times did you feel so bad that you attempted suicide?
- In the last year, how many times did you feel so bad that you attempted suicide?

Availability of Support Rating:

0	1	2	3	4	5	6
None Alone / no social support resources		Low One or two support resources		Moderate Four or five support resources		High Many support resources

Criteria for Rating

- Consider both the quality and the number of available support resources
- Number: few or no resources of support vs. multiple sources
- Degree of access to support resources – unavailable vs. available
- There is no one to turn to vs. has a true confidant/friend
- Support unacceptable vs. acceptable if connections could be made for him/her
- Rejects help from others vs. reaches out for help
- Sees self as helpless vs. sees self as primary sources of support

Amount of Support Scale:

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1	0	+1 +2 +3 +4 +5 +6 +7 +8 +9 +10
Unhelpful / Not Supportive	Neither supportive nor unsupportive	Helpful / Supportive

Mean of at least 5 of the 7 resources below:

How helpful or supportive is/are your…

- Favorite teacher?
- Classmates?
- Best friend?
- Mother / female guardian?
- Father / male guardian?
- Brother(s)?
- Sister(s)?

Sense of Support Scale:

0	1	2	3	4	5	6
Never		Sometimes		Usually		Always

Mean of at least four of the six questions:

* How often do you…

- feel that there's no on you can turn to? *
- feel part of a group of friends?
- feel that no one knows you well? *
- feel like an outsider in your family? *
- feel lonely even when with your friends? *

And,

- how often can you find people to do things with?

** Scale is reversed when computing the mean*