DISSERTATION

FRIENDSHIP PROBLEMS AND SUICIDALITY IN MEXICAN-AMERICAN AND EUROPEAN-AMERICAN ADOLESCENTS: A LONGITUDINAL ANALYSIS

Submitted by

Erin Winterrowd

Department of Psychology

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY ERIN WINTERROWD ENTITLED FRIENDSHIP PROBLEMS AND SUICIDALITY IN MEXICAN-AMERICAN AND EUROPEAN-AMERICAN ADOLESCENTS: A LONGITUDINAL ANALYSIS BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Committee on Graduate Work

_____
Jennifer Harman

_____
Nathalie Kees

_____
Ernest L. Chavez

_____
Advisor: Silvia Sara Canetto

_____
Department Head: Ernest L. Chavez

ABSTRACT OF DISSERTATION

FRIENDSHIP PROBLEMS AND SUICIDALITY IN MEXICAN-AMERICAN AND EUROPEAN-AMERICAN ADOLESCENTS: A LONGITUDINAL ANALYSIS

The influence of friends increases dramatically during adolescence, with different patterns by gender and ethnicity. Yet friendship factors in adolescent suicidality are understudied and not well-understood. Research has found a direct, long-term relationship between friendship problems and suicidality. Specifically, it has documented that factors such as social isolation, more negative friendships, poor quality friendship, and friendship intransitivity predict later suicidal ideation and nonfatal suicidality, with some relationships between friendship factors and suicidality being stronger than depression. However, it is unclear how these findings may apply to ethnic minority youth, particularly those with high rates of suicidality. This study explored the impact of friendship factors in the early teen years on suicidality in the late teen years, and among Mexican-American and European-American girls and boys. Participants included youth in good academic standing and youth at risk of dropping out as well as youth who had dropped out of school. Data collection occurred in two waves from 1989 to 2001, with the second wave beginning about three years after the start of the first wave. The sample consisted of 295 (59% Mexican-American; 41% European-American) adolescents ages 14-20 (M = 16.5) at Time 1, and ages 18-23 years (M = 19.5) at Time 2. The friendship

factors measured in this study were having friendship problems such as social isolation (lack of friends) and poor quality friendship as well as having problematic friends such as friends' school disconnectedness and friends' delinquency. These friendship factors were chosen because of their established relationship with adolescent suicidality, in the case of friendship problems such as social isolation and poor quality friendship, as well as their association with other adolescent problem behaviors, as in the case of problematic friends such as friends' school disconnectedness and friends' delinquency. Logistic regression was used to predict suicidality at Time 2 as a function of friendship factors at Time 1 (controlling for suicidal ideation at Time 1). Logistic regression was also used to examine whether depression mediated the relationship between friendship factors and suicidality.

This study confirms the role of friendship factors in youth suicidality, with variability by ethnicity and sex, and with an important role for depression as a mediating factor. For European-American youth, depression fully mediated the positive relationship between having friends who were disconnected from school and suicidal ideation. In contrast, having friends who were disconnected from school was negatively associated with suicidal behavior for Mexican-American youth, particularly Mexican-American boys, after controlling for depression. At the same time, for Mexican-American youth, having delinquent friends predicted higher rates of suicidal ideation above and beyond the contribution of depression and initial suicidal ideation. In this study, social isolation and poor quality friendship were not predictors of suicidal thoughts or behavior. Compared to other longitudinal studies of friendship factors and suicidality, the current study found that the relationship varies by ethnicity with different friendship factors predicting suicidality for Mexican- and European-American youth. Additionally,

problematic friends were a better predictor of suicidality than having friendship problems. This study begins to articulate what may be ethnic-specific risk factors in adolescent suicidality. If confirmed, the findings have implications for the design of culturally-grounded models of suicide prevention.

Erin Winterrowd
Department of Psychology
Colorado State University
Fort Collins, CO 80523
Summer 2010

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CHAPTER 1

Introduction

Developmental theory and research indicate that the influence of friendships increases dramatically during adolescence (e.g., DiFilippo & Overholser, 2000; Kidd, Henrich, Brookmeyer, King, & Shahar, 2006; Hartup, 1996; Prinstein, 2007; Prinstein, Boergers, & Spirito, 2001; Windle, 1994). Furthermore, the influence of adolescent friendships extends into late adolescence and early adulthood (e.g., Dishion & Owen, 2002; Hartup, 1996; Haynie, South, & Bose, 2006; Johnson, Cohen, Gould, Kasen, Brown, & Brook, 2002; Rosario, Schrimshaw, & Hunter, 2005). The influence of friends may be particularly strong for girls. Girls place greater importance on friendships, report closer friendships, and also report more stress from friendship problems than boys (e.g., Bradley, Flannagan, & Fuhrman, 2001; Colarossi, 2001; DiFilippo & Overholser, 2000; Kerr, Preuss, & King, 2006; Kobus & Reyes, 2000; Prinstein, Boergers, Spirito, Little, & Grapentine, 2000; Way, Cowal, Gingold, Pahl, & Bissessar, 2001). Cultural factors also affect the role of friends in adolescent well-being. For example, Latina/o youth report stronger friendship bonds and describe their friends as more reliable than African-American and Asian-American adolescents' friends (Way et al., 2001; Way & Greene, 2006) but equally supportive as European-American adolescents' friends (Bradley et al., 2001).

Despite the importance of friends during adolescence, friendships are a relatively understudied topic in youth suicidal behavior research (Bearman & Moody, 2004; King

& Merchant, 2008). Friendships are relevant to adolescent suicidality. Close, positive friendships enhance well-being and support constructive behavior, therefore protecting against the precursors of suicidality (e.g., Prinstein et al., 2000). By contrast, not having friends, or having bad friends (that is friends who are either unsupportive or who are engaging is dysfunctional behavior themselves), reduces well-being and may even contribute to destructive behavior (Hartup, 1996; Haynie et al., 2006; Kerr et al., 2006; Kushner & Sterk, 2005). This study aimed to explore the impact of friendship problems during mid adolescence on suicidal ideation and nonfatal suicidal behavior during early adulthood for girls and boys across two ethnic groups. Given the established relationship between friendship problems and depression (e.g., Difilippo & Overholser, 2000; Hartup, 1996; Kerr, et al., 2006; Prinstein, 2007; Way, et al., 2001) and between depression and suicidality (e.g., Beautrais, 2003; Prinstein et al., 2000; Watt & Sharp, 2000) this study also explored the role of depression as a mediator in the relationship between friendship problems and adolescent suicidality.

Friendship Problems and Adolescent Suicidality

Most studies of the role of friendship in youth suicidality have focused on social isolation, that is the absence of friends. The research on social isolation and youth suicidality has been mixed. Some studies have found an association between social isolation and adolescent suicidality after controlling for depression (e.g., Hacker, Suglia, Fried, Rappaport, & Cabral, 2006) whereas other studies have reported that the association is mediated by depression or disappears completely after controlling for depression (e.g., De Man, Leduc, & Labréche-Gauthier, 1992; Prinstein et al., 2000). Still other studies have not found an association between social isolation and adolescent

suicidality at all (e.g., Queralt, 1993; Shagle & Barber, 1995). The mixed findings likely reflect the complexity of adolescent friendships. According to Prinstein (2003), using social isolation to measure the impact of friendship on suicidality erroneously assumes that any friendship is better than none. Several studies have shown that bad friends (e.g., unsupportive, delinquent) may in fact be worse for adolescent well-being than having no friends at all (e.g., Güroğlu, Van Lieshout, Haselager, & Scholte, 2007; Prinstein et al., 2001). To understand the possible role of friendship problems on youth suicidality, studies of friendship and suicidality should include, in addition to isolation, information about the quality of friendships and the characteristics of adolescent friends. Based on past findings (e.g., De Man et al., 1992; Hacker et al., 2006; Prinstein et al, 2000), the potentially mediating role of depression also warrants further exploration.

Friendship Quality and Adolescent Suicidality. Emotional support is an important protective factor in mental health. According to the "stress-buffer" theory (Cohen & Wills, 1985), having friends who care about you and whom you care about can lessen the impact of negative events and increase resilience to adversity. In his review of the literature on adolescent friendships, Hartup (1996) reported that friendship support is positively associated with school involvement and achievement, self-esteem, and psychosocial adjustment over time. In contrast, a lack of emotional support (such as through poor quality friendships) is associated with depression and academic and behavioral school-based problems. Furthermore, poor quality friendships are more predictive of negative outcomes over time than positive support is predictive of positive outcomes (Hartup, 1996).

Several cross-sectional studies have examined the role of poor quality friendships in youth suicidality. In a study of mostly European-American (76%) adolescent inpatients, DiFilippo and Overholser (2000) found that attachment to friends (i.e., trusting friends, being able to count on friends when things go wrong) was negatively associated with suicidal ideation for both girls and boys. This relationship disappeared, however, after controlling for depression. Similarly, De Man and colleagues (1992) found that Canadian high school students who reported suicidal ideation had fewer people they felt they could rely on and were less satisfied with the social support they did receive. In this study, the relationship also disappeared after controlling for depression. In a sample of mostly European-American (95%) high school students in the U.S., adolescents at high risk of suicide reported poorer quality friendships than adolescents at low risk of suicide (Cole & Protinsky, 1992). The role of depression was not explored in this study. In summary, poor friendship quality is theoretically important and related to adolescent suicidality. It is less clear, however, whether lack of friendship support is directly or indirectly, through depression, related to suicidality. There is also literature on the characteristics of friends and how these characteristics impact adolescent well-being.

Friends' Characteristics and Adolescent Suicidality. Adolescent friends are more similar to each other than adolescents are with non-friends (Hartup, 1996). A combination of sociodemographic conditions (e.g., neighborhood, school, socioeconomic status), selection effects (i.e., choosing friends who have similar values and engage in similar behaviors), and socialization/modeling cause adolescent friends to be similar to each other on a number of variables (e.g., Hartup, 1996; Newcomb, 1953; Oetting & Beauvais, 1986). Although adolescents and their friends are similar in interests, abilities,

and outlook on life, research suggests that adolescent friends are most similar in two areas: school-related behaviors and delinquent behaviors (Hartup, 1996).

In regard to school-related similarities, friends who are disengaged from school can lead adolescents to disengage in school themselves. For example, adolescent friends influence how much time youth spend on homework, their attitudes about school, and classroom behavior (Steinberg, Dornbusch, & Brown, 1992). Having friends who are disconnected from school is also related to adolescents' problematic behavior beyond their own school disconnection. In one cross-sectional study of Mexican- and European-American adolescents, friends of youth who had dropped out of school or were at risk of dropping out were more likely to engage in delinquent behaviors than friends of youth in good academic standing (Chavez, Oetting, & Swaim, 1994).

In regard to delinquency-related similarities, youth whose friends engage in deviant behaviors (e.g., substance use, physical fighting, carrying a weapon) are subsequently more likely to engage in those behaviors themselves (e.g., Oetting & Beauvais, 1986; Prinstein et al., 2001; Tani, Chavez, & Deffenbacher, 2001). For example, Dishion and Owen (2002) found that young adult's delinquent behavior (i.e., substance abuse) was linked to associations with delinquent friends in early adolescence. Similar to school disconnection, having friends who engage in delinquent behaviors is also related to adolescents' problematic behavior beyond their own delinquency. For example, Kaplan, Peck, and Kaplan (1997) found that association with deviant peers is related to low motivation for school and perceived rejection from students in school.

Being disconnected from school and engaging in delinquent behaviors are also directly related to adolescent suicidality. Using data from the school-based National

Longitudinal Study of Adolescent Health (Add Health), Borowsky, Ireland, and Resnick (2001) found that being connected to school (i.e., seeing teachers as fair, feeling close to people at school, and feeling part of the school) was negatively associated with nonfatal suicidal behavior one year later for Latina/o and European-American girls and boys. Additionally, these investigators found that skipping school, repeating a grade, school problems (i.e., trouble paying attention and getting homework done), and low Grade Point Average (GPA) were positively associated with youth suicidal behavior one year later. Other studies have also found adolescents' own school connectedness (e.g., feeling close to people at school and a part of school) to be a protective factor and school disconnectedness (e.g., truancy, dropping out, poor classroom behavior) a risk factor for adolescent suicidality concurrently and across time (e.g., Beautrais, 2003; Bjarnason & Thorlindsson, 1994; Haynie et al., 2006; Shagle & Barber, 1995). None of the studies, however, have investigated the role of depression in the relationship between school connectedness and adolescent suicidality.

Participating in delinquent behaviors also increases adolescents' risk of suicide. For example, Vega, Gil, Zimmerman, and Warheit (1993) found that deviance (i.e., non-normative and delinquent behaviors) was related to nonfatal suicidal behavior in their cross-sectional study of junior high boys (70% Cuban, Nicaraguan, and "other" Latina/o). Similarly, Locke and Newcomb (2005) found that being law abiding protected against suicidal ideation in their cross-sectional community-based sample of Latino adolescent boys. Other studies have also found antisocial and delinquent behaviors to increase risk of adolescent suicidality (e.g., Beautrais, 2003; Haynie et al., 2006) though none explored the role of depression in their findings.

In summary, both cross-sectional and longitudinal research suggests that adolescents model their friends' negative behavior, particularly when related to school disconnection and delinquency. Specifically, research shows that having friends who are not connected to school or who are engaging in delinquent behaviors is associated with adolescents engaging in their own problematic behaviors. Finally, youth's own disconnection from school and delinquency are directly associated with suicidality, though the mediating role of depression in these associations is unclear. Based on these findings, adolescents whose friends are disconnected from school or who engage in delinquent behaviors are likely disconnected from school or engaging in delinquent behaviors themselves, thereby increasing their risk for suicidality.

Taken altogether, research on friendship and adolescent suicidality indicates that evaluations of the quality of friendships and characteristics of friends (specifically, friends' school disconnectedness and friends' delinquency) are essential in understanding the influence of friends. Exploring the mediating role of depression in the relationship between friendship and suicidality is also crucial. Finally, research suggests that the impact of adolescent friendship problems may extend several years into the individual's future. While no studies so far have examined these specific friendship factors together, some studies have looked at the relationship between friendship problems and adolescent suicidality using other measures of friendship.

In a cross-sectional hospital-based study of inpatient, predominantly (73%) European-American suicidal adolescents, several peer factors (lack of friendship support, low perceived peer acceptance, high perceived peer rejection, and affiliation with deviant peers) were found to be directly associated with suicidal ideation and indirectly through

depression (Prinstein et al., 2000). Based on data from Add Health, Haynie and colleagues (2006) also found social isolation and friends' delinquency (skipping school, drinking alcohol, and smoking cigarettes) to be associated with girls' nonfatal suicidal behavior one year later. The investigators did not find peer factors to be associated with boys' nonfatal suicidal behavior and the role of depression was not explored. Windle (1994) reported two friendship difficulties (insufficient reciprocal support and covert hostility) to be associated with concurrent nonfatal suicidal behavior for both girls and boys after controlling for depression. In this longitudinal study of (98%) European-American high school students, friendship difficulties did not predict suicidal behavior one year later however (Windle, 1994). Using a sample of mostly (91%) European-American youth, Johnson and colleagues (2002) found similar interpersonal difficulties (e.g., social isolation and poor quality friendships) in mid adolescence (age 16) to predict nonfatal suicidal behavior in early adulthood (six years later around age 22) after controlling for mental health symptoms, including depression.

The most comprehensive study of friendship problems and adolescent suicidality is Bearman and Moody's (2004). Using a longitudinal national sample (Add Health) of 13,465 adolescents in grades 7 thought 12, these investigators explored the relationship between adolescent suicidality and social isolation, transitivity of friendships (the extent to which adolescents' friends are friends with each other), and density of social networks (tightness of school community) across a one year period. They found that social isolation and intransitive friendships (relationships in which friends are not friends with each other) were each associated with suicidal ideation in girls but not boys one year later. The relationship between social isolation, intransitive friendships, and suicidality

was stronger in girls than other known correlates (e.g., depression), suggesting that friendships may be particularly influential for girls' suicidality. Finally, they also found that dense school-based social networks (a strong focal point for adolescent relationships within the school) decreased the risk of suicidal ideation for girls but not boys one year later (Bearman & Moody, 2004).

In summary, these findings suggest that a relationship between friendship problems and adolescent suicidality likely exists. Additionally, friendship problems appear to be able to impact adolescent psychological well-being one to six years later. Based on the mixed findings, it is less clear what role depression, if any, plays in the relationship between friendship problems and adolescent suicidality. It is also unclear whether the relationship varies by sex or extends across ethnicities. The majority of studies have not examined the role of gender and ethnicity in the impact of friendship problems on adolescent suicidality.

The Role of Gender and Ethnicity in Friendship and Adolescent Suicidality

Sex- and ethnicity-based differences in the impact of friendship problems on adolescent suicidality would make sense given the differing meanings of friendship and suicidality for girls and boys across ethnicities. For example, research suggests that girls place greater importance on friendships, report closer friendships, and also report more stress from friendship problems than boys (Bradley et al., 2001; DiFilippo & Overholser, 2000; Hartup, 1996; Kobus & Reyes, 2000; Prinstein et al., 2000; Way et al., 2001). In a study of mostly European-American adolescents in school, Colarossi (2001) found that girls reported more friends, more support from those friends, and more satisfaction with the friend support than boys. Similarly, Kerr and colleagues (2006) found that girls

perceived more friendship support (i.e., receiving help from friends, giving help to friends, and feeling close to friends) than boys in their sample of mostly European-American (83%) inpatient suicidal adolescents.

Researchers have also found variability in the meaning and relevance of friendship problems across ethnicities. Some studies have found Latina/o youth to report stronger friendship bonds, at least among girls, those who are older, and those who are less acculturated. For example, in two recent studies, urban Latina/o youth (age 15 on average) from educationally and economically disadvantaged backgrounds rated their friendships as more affectionate, reliable, and intimate and their friendship quality higher than similar-background African-American and Asian-American adolescents (Way et al., 2001; Way & Greene, 2006). By contrast, another study found that acculturated, working and middle class Mexican-American youth (age 10 on average) did not differ from European-American peers with regard to various friendship characteristics (perceived friendship support, common activities, emotional attachment, and conflict) (Bradley et al., 2001). At the same time, Bradley and colleagues noted greater gender difference between girls' and boys' emotional attachment in Mexican-American adolescents compared to European-American youth (girls in both groups reporting more emotional attachment).

Rates of suicidality also vary significantly across sex and ethnicity with girls and Latinas/os reporting significantly more suicidal ideation and nonfatal suicidal behavior than boys and non-Latina/o youth (Centers for Disease Control and Prevention [CDC], 2008; Locke & Newcomb, 2005; Tortolero & Roberts, 2001 but see Roberts, Roberts, & Xing, 2007, for an exception). Latina adolescents are at particularly high suicidality risk.

They report more suicidal ideation and nonfatal suicidal behavior (21% and 14%, respectively) than White, non-Latina girls (18% and 8%, respectively), Latino boys (11% and 6%, respectively) and White, non-Latino boys (10% and 3%, respectively) (CDC, 2008).

Based on the literature, it would be anticipated that the influence of adolescent friendship on suicidality would vary in girls and boys. Studies are mixed, however. Kerr and colleagues (2006) found that friendship influence differed for girls and boys. Specifically, perceived friend support was negatively related to suicidal ideation for boys and unrelated to suicidal ideation for girls. In contrast, Windle (1994) and DiFilippo and Overholser (2000) did not find gender differences in the relationship between their studies' friendship problems and adolescent suicidality. As described earlier, Bearman and Moody (2004) and Haynie et al. (2006) did find differing patterns of suicidality and friendship by sex with girls' suicidality seemingly more impacted by friendship problems than boys' suicidality. Despite the differing meanings of friendship and suicidality in girls and boys, other studies of adolescent suicidality and friendship problems have not examined the relationship by sex.

Similarly, most studies of adolescent suicidality and friendship have not examined the relationship by ethnicity. Those studies that have included ethnic minorities have found mixed results. One study of an ethnically diverse (37% Latina/o; 35% Black; 22% White) sample of urban, sexual minority youth recruited via sexual minority organizations found that less social support and more negative social relationships (e.g., being treated poorly, being ignored, and being manipulated by others) were related to nonfatal suicidal behavior (Rosario et al., 2005). Furthermore, in their sample of (60%

Latina/o) high school adolescents, Prinstein and colleagues (2001) found that suicidality (ideation and behavior) was significantly predicted by a peer behavior model which included peer deviance, peer substance use, peer pro-social behaviors, and peer suicidality. In contrast, Zayas and Pilat (2008) argued that friendship problems may be less influential in Latina suicidal behavior than in the suicidal behavior of girls from other ethnic groups. Similarly, Kobus and Reyes (2000) found that Mexican-American girls and boys list family stressors more frequently and describe them as more difficult than friend stressors. These investigators also found that Mexican-American adolescents were more likely to report utilizing family social support than friend support to manage their stress.

In summary, understanding the influence of friendship problems on adolescent suicidality requires measuring the complexity of friendships including the presence of friends (social isolation), the quality of those friendships, and the characteristics of the friends (specifically, friends' school disconnectedness and friends' delinquency). There appears to be a link between some friendship problems and suicidality in European-American youth. However, it is unclear whether such a link varies by gender and holds across ethnicities, including among Latina/o youth. It is also unclear whether the relationship between friendship problems and suicidality in mediated by depression as well as whether the impact of adolescent friendship problems extends into early adulthood.

Current Study

Based on the findings and questions raised by past studies, this study explored the impact of friendship problems around age 17 on suicidality three years later, and among

female and male Mexican-American and European-American adolescents, the former being at high risk of suicidal ideation and nonfatal suicidal behavior. Data were collected from 1989 to 2001 with two waves of data collection. The friendship problems of interest in this study included those explored in past suicidality studies (e.g., social isolation and poor quality friendship) as well as friendship problems found to be relevant in other adolescent problem behaviors (e.g., Beautrais, 2003; Chavez et al., 1994; Hartup, 1996; Kaplan et al., 1997; King & Merchant, 2008) including having friends who are disconnected from school and having deviant friends.

Previous studies of friendship and suicidality in young adults have focused exclusively or primarily on European-American samples. Those longitudinal studies that surveyed ethnic minorities (e.g., Bearman & Moody, 2004; Haynie et al., 2006; Rosario et al., 2005) did not examine trends for girls and boys by ethnicity. Developing culturally responsive prevention and intervention strategies requires being aware of cross-cutting as well as ethnic- and gender-specific risk and protective factors. Additionally, the meanings of friendship and suicidality vary by gender and ethnicity. Therefore, patterns of friendship problems and suicidality in this study were modeled separately for girls and boys by ethnicity.

Another limitation of past studies of adolescent suicidality and friendship problems is their reliance on school or clinical samples (e.g., Bearman & Moody, 2004; Haynie et al., 2006; Prinstein et al., 2000). School and clinical samples exclude adolescents who have not been hospitalized but whom, being out of school, may be at an increased risk for dysfunctional behavior such as suicidality (Canino & Roberts, 2001). Compared to youth who do not drop out of school, dropouts report lower motivation,

association with deviant peers, and feelings of alienation from school (Worrell & Hale, 2001). Additionally, limited educational achievement is a risk factor, whereas positive school experiences are a protective factor for adolescent suicidality (Beautrais, 2003; Bjarnason & Thorlindsson, 1994; Borowsky et al., 2001; Shagle & Barber, 1995). Only 53% of Latina/o youth graduate from high school compared to 75% of non-Latina/o White students; Mexican-American youth have the highest dropout rate of any group, including other Latina/o youth (National Center for Education Statistics, 2003; Swanson, 2001). For these reasons, clinical or school samples limit range and generalizability of findings, particularly among Latina/o adolescents. To avoid the limitation of school and clinical samples, this study focused on a community sample of adolescents with one third of the sample being youth who had dropped out of school, another third being at-risk of dropping out, and the last third being in good academic standing.

Finally, many past studies of suicidality and friendship in adolescents have relied on cross-sectional data (e.g., Bjarnason & Thorlindsson, 1994; Colarossi, 2001; Cole & Protinsky, 1992; De Man et al., 1992; DiFilippo & Overholser, 2000; Hacker, et al., 2006; Kerr et al., 2006; Locke & Newcomb, 2005; Prinstein et al., 2000; Queralt, 1993; Shagle & Barber, 1995; Vega et al., 1993). A cross-sectional research design does not allow the chronological order of suicidal behavior and its correlates to be established. Furthermore, few past studies have tested mediating models (Prinstein et al., 2000). It is therefore unknown whether suicidality came before or after friendship problems and whether variables such as depression mediated the relationship between friendship problems and suicidality. Friendship problems are related to depression in adolescence (e.g., Difilippo & Overholser, 2000; Hartup, 1996; Kerr, et al., 2006; Prinstein, 2007;

Way, et al., 2001) and depression is a significant correlate of adolescent suicidality (e.g., Beautrais, 2003; Prinstein et al., 2000; Watt & Sharp, 2000). It is therefore possible that the association between friendship problems and suicidality is mediated by depression. To address this issue, the current study investigated the role of friendship problems in adolescent suicidality using a longitudinal design. The interval chosen was three years in order to assess the impact of friendship problems on adolescent suicidality over time but before adolescents reached adulthood. The role of depression as a mediator in the relationship between friendship problems and suicidality was also explored.

Based on previous studies (e.g., Beautrais, 2003; Borowsky et al., 2001; CDC, 2008; Kessler, Berglund, Borges, Nock, & Way, 2005; SAMHSA, 2009; Worrell & Hale, 2001) it was expected that all adolescents in the sample would report high rates of suicidal ideation and behavior, especially girls and those with school problems, with Mexican-American girls reporting the highest rates. Furthermore, it was anticipated that rates of suicidality would decrease over time with Mexican- and European-American adolescents reporting more suicidal ideation and behavior than participants in early adulthood.

Some studies suggest that friendship problems are influential in suicidal behavior across ethnicities (e.g., Bearman & Moody, 2004; Haynie et al., 2006; Rosario et al., 2005). Based on these findings, it is expected that friendship problems would be predictive of both Mexican- and European-American suicidality. However, findings from other research suggest that friends may be less influential in the suicidality of Mexican-American youth (e.g., Kobus & Reyes, 2000; Zayas & Pilat, 2008). Based on these findings, we would expect that friendship problems would be predictive of suicidal

ideation and nonfatal suicidal behavior in European-American adolescents but not in Mexican-American youth. Similarly, the research is inconclusive on the role of gender in the relationship between friendship problems and adolescent suicidality. Some studies have found differences by gender (e.g., Bearman & Moody, 2004; Haynie et al., 2006; Kerr et al., 2006) while other studies have not (e.g., DiFilippo & Overholser, 2000; Windle, 1994). This study attempts to tease apart the mixed data by examining the impact of friendship problems on suicidal ideation and behavior in a sample of female and male Mexican-American and European-American youth.

Based on the literature (e.g., Cole & Protinsky, 1992; De Man et al., 1992; DiFilippo & Overholser, 2000; Prinstein et al., 2000; Rosario et al., 2005; Windle, 1994), it is hypothesized that poor friendship quality around age 17 will be associated with suicidality for Mexican- and European-American girls and boys three years later. Poor friendship quality has been found to impact adolescent suicidality more than six years later in other studies (Johnson et al., 2002). It is also hypothesized that friends' school disconnectedness will be related to suicidality for girls and boys. Specifically, having friends who are less connected to school will be associated with higher rates of suicidality (e.g., Bjarnason & Thorlindsson, 1994; Borowsky et al., 2001; Chavez et al., 1994; Haynie et al., 2006; Shagle & Barber, 1995; Steinberg et al., 1992). Given the association between friends' delinquency and other problematic behavior in Mexican-American youth (e.g., Lock & Newcomb, 2005; Vega et al., 1993), it is hypothesized that friends' delinquency will be associated with Mexican-American adolescent suicidality.

CHAPTER II

Method

This study used data from a longitudinal study conducted by the Tri-Ethnic Center for Prevention Research at Colorado State University from 1989 to 2001. The first wave of data was collected from 1989 to 1996. The second wave of data collection began four years after initial assessment and was collected from 1994 to 2001. The current study focuses on the 295 respondents who answered questions about suicidality (which were optional questions) at both Time 1 and Time 2.

Youth who answered suicidality questions were similar to youth who did not answer suicidality questions. When significant differences were found between the two groups (e.g., by sex, ethnicity), the effect sizes were small (Phi < .14). Girls were significantly more likely to answer questions about suicidality than boys. This was true at both Time 1 ($\chi 2$ (1), n = 3214) = 17.08, p < .01) and Time 2 ($\chi 2$ (1), n = 3214) = 37.43, p < .01) though the effect sizes were small (Phi = .07 and Phi = .11, respectively). Likelihood of answering questions about suicidality also differed by ethnicity. At Time 1, European-American youth were more likely to answer suicidality questions than Mexican-American youth ($\chi 2$ (1), n = 3224) = 61.71, p < .01) though the effect size was small (Phi = .14). At Time 2, the reverse was true. Mexican-American adolescents were more likely to answer the suicidality questions than European-American adolescents ($\chi 2$ (1), n = 3224) = 12.92, p < .01) though again the effect size was small (Phi = .06). Participants who answered suicidality questions were not significantly different by age or

academic status at Time 1 compared to non-respondents. At follow up, youth in good academic standing were more likely to answer suicidality questions than academically at-risk youth or youth who had dropped out of school ($\chi 2$ (2), n = 3219) = 33.19, $p < .01$) though the effect size was small (Phi = .10). Younger adolescents were more likely to answer suicidality questions than older adolescents at Time 2 (t (3218) = 3.69, $p < .01$) but the effect size was again small (d = .13). A description of the youth who answered suicidality questions at Time 1 but not at Time 2 as well as specific data collection methods are provided in the participant and procedure sections.

Participants

One-hundred seventy-four (63% female) Mexican-American and 121 (56% female) European-American adolescents were included in this study. The 295 participants were from two Southwestern communities; a mid-sized community of 90,000 and an urban community of 350,000. Participants at Time 1 ranged in age from 14-20 with an average age of 16.5 years (SD = 1.15). Participants at Time 2 ranged in age from 18-23 with an average age of 19.5 years (SD = 1.14). The majority of participants (96%) were born in the United States with the remaining 4% being born in Mexico (seven adolescents), South America (one adolescent), and some "other" country (three adolescents). Ethnicity-experts recommend that researchers identify Latina/o subgroups rather than treating Latina/o participants as if they were a homogeneous group (Duarte-Velez & Bernal, 2007). The vast majority of Latina/o adolescents living in the Southwestern U.S. communities sampled for this study were Mexican-American (Gibson & Jung, 2002; United States Census Bureau, 2002). Therefore, this study's participants are referred to as Mexican-American rather than Hispanic or Latina/o.

At Time 1, most participants (65%) described their parents' income as "average" with 10% describing their parents' income as "low" or "very low" and 26% as "high" or "very high." Similarly, at Time 2 most participants (59%) described their parents' income as "average" with 11% describing their parents' income as "low" or "very low," and 30% as "high" or "very high." Mexican-American youth reported significantly lower parental income than European-American youth at both Time 1 (χ^2 (2, n = 288) = 19.90, p < .01) and Time 2 (χ^2 (2, n = 289) = 18.51, p < .01). Fifty-nine percent of adolescents reported their mother's education as either less than 12 years (24%) or high-school level (35%), with 41% of participants describing their mother's education as more than 12 years. Most of the mothers of Mexican-American adolescents were reported as having less than 12 years of education (35%) or high-school level of education (38%). Mexican-American youth reported significantly lower maternal education than European-American youth (χ^2 (2, n = 287) = 38.79, p < .01).

Adolescents varied by academic status with about a third (34%) having dropped out of school at the beginning of the study, another third (29%) at-risk of dropping out of school, and the final third (37%) in good academic standing. About half of the adolescents (49%) reported that they were still in school (either part-time or full-time) three years after the initial data collection. Forty-one percent of Mexican-American adolescents (45% of Mexican-American girls and 37% of Mexican-American boys) reported that they were still in school at follow up. Fifty-nine percent of European-American adolescents (67% of European-American girls and 49% of European-American boys) reported that they were still in school at follow up. Of the adolescents still in school, 17 adolescents (6% of all adolescents) were still in high school. Three years after

initial data collection, 66% of Mexican-American youth had graduated high school or earned a GED (67% of girls and 64% of boys). For European-American youth, 81% had graduated high school or earned a GED three years after initial data collection (88% of boys and 75% of girls).

Forty-six percent of the initial sample participated in the second data collection. The longitudinal sample was similar in age to youth who did not participate in the second data collection (i.e., did not continue in the study). The two groups also scored similarly on the Time 1 variables of interest (i.e., depression, poor friendship quality, friends' school disconnectedness, friends' delinquency, suicidal ideation, and nonfatal suicidal behavior). Girls were significantly more likely to participate in the second data collection than boys (χ^2 (1, n = 648) = 11.42, $p < .01$) with 51.6% of girls participating compared to 38.4% of boys. Mexican-American adolescents were significantly more likely to participate in the second data collection than European-American adolescents (χ^2 (1, n = 648) = 9.63, $p < .01$) with 51.2% of Mexican-American adolescents participating in Time 2 compared to 39.0% of European-American adolescents. The longitudinal sample also differed by academic status with a smaller percentage of drop-outs (40.6%) and youth at risk of dropping out (43.7%) participating in the second data collection compared to youth in good academic standing (52.7%) (χ^2 (2, n = 648) = 6.91, $p < .05$).

Measures

Friendship Problems. Friendship problems were assessed via questions developed by Oetting and collaborators based on Peer Cluster Theory (Oetting & Beauvais, 1986) and Primary Socialization Theory (Oetting & Donnermeyer, 1998). Questions assessing friendship problems in this study were similar to questions used in other studies of

friendship (e.g., Bradley et al., 2001; Haynie et al., 2006; Prinstein et al., 2001; Way, et al., 2001). In this study, friendship problems addressed social isolation, poor quality friendships, and characteristics of adolescents' friends (friends' school disconnectedness and friends' delinquency). Alpha reliabilities for each of the friendship scales are presented below.

To assess social isolation, the question "I do not have a group of friends that I spend time with" was used. Adolescents who endorsed the above statement did not complete the remaining friendship questions. The remaining friendship questions assessed poor friendship quality (six items) and characteristics of friends, that is friends' school disconnection (seven items) and friends' delinquency (nine items) (see Table 1 for a complete list of friendship questions).

The Poor Friendship Quality scale included items assessing the amount of support given to and provided by respondents' friends (e.g., Do you care about your friends?" and "Do your friends really try to help you?"). A total Poor Friendship Quality score was calculated by summing the responses. Higher scores indicate poorer friendship quality. In this sample, reliability of the Poor Friendship Quality scale was high (α = .88 at Time 1, and α = .91 at Time 2). The Friends' School Disconnectedness scale included items that assessed the extent to which respondents' friends were disconnected from school (e.g., "Do your friends like school?" and "Do your friends like their teachers?"). A total Friends' School Disconnectedness score was calculated by summing responses. Higher scores indicate more school disconnectedness. Within this sample, reliability of the Friends' School Disconnectedness scale was also high (α = .83 at Time 1, and α = .85 at Time 2). The Friends' Delinquency scale included nine yes/no items such as "Have any

of your close friends ever had their driver's license taken away?" and "Have any of your close friends ever been sent to jail or a juvenile home?" A total Friends' Delinquency score was calculated by summing positive responses. Higher scores indicate more delinquent behaviors among the respondents' friends. Within this sample, the reliability of the Friends' Delinquency scale was high (α = .86 at Time 1, and α = .87 at Time 2). Scores on the friendship subscales across the two time periods were stable (Table 2) suggesting that adolescents' answered friendship questions similarly across time.

A principle components analysis was conducted on items assessing poor friendship quality and friends' school disconnection. Items assessing friends' delinquency were not included because of the dichotomous nature of the questions. Varimax rotation was selected and factors with an Eigenvalue greater than one were retained. Additionally, in order to have a consistent scale across time, items were only retained if they factored into the same component at both Time 1, and Time 2. Based on these criteria, two factors were extracted at each time period. These two factors accounted for 55.52% of the variation among the items at Time 1, and 58.04% of the variation among the items at Time 2. Factor one (Poor Friendship Quality) accounted for 37.79% of variance (Eigenvalue = 4.54) at Time 1, and 41.73% of variance (Eigenvalue = 5.01) at Time 2. Factor two (Friends' School Disconnectedness) accounted for 17.73% of variance (Eigenvalue = 2.13) at Time 1, and 16.31% of variance (Eigenvalue = 1.96) at Time 2. Correlations between the three friendship subscales ranged from r = .12 to r = .32 at Time 1, and r = .22 to r = .43 at Time 2, suggesting that each of the subscales measured a distinct, but related, facet of friendship. The pattern matrix with scale items and associated factor loadings is in Table 1.

Suicidality. Adolescent suicidality was assessed using a four point Semantic Differential scale (1 - a lot, 2 - some, 3 - not much, 4 - not at all) and the following questions: “In the last 12 months, have you thought about suicide?” and “In the last 12 months, have you attempted suicide?” (Oetting & Beauvais, 1984). This study’s items assessing suicidality are similar to the suicidal ideation and nonfatal suicidal behavior questions in the Centers for Disease Control Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention [CDC], 2004). Scores of three or lower were considered to reflect presence of suicidality on both questions. Responses to questions about suicidal ideation and nonfatal suicidal behavior were dichotomized to increase statistical power, with participants who endorsed any suicidal ideation or nonfatal suicidal behavior being classified as suicidal.

Depression. Current levels of depression were measured using the Depression Subscale of the Prevention Planning Survey (PPS) developed by Oetting and Beauvais (1984). The depression scale included seven items: “I am unhappy,” “I am lonesome,” “I am depressed,” “I am lonely,” “I feel bad,” “I feel sad,” and “I feel low.” Participants responded using a four point Semantic Differential scale (1 – a lot, 2 – some, 3 – not much, 4 – not at all). Responses were reverse coded so that higher scores reflect more depression symptoms. Alpha reliability of the depression scale has ranged from .89 to .94 in previous studies with a reliability of .92 for Mexican-American adolescents and .94 for European-American adolescents (Oetting & Beauvais, 1984). Alpha reliability in this sample of Mexican-American and European-American adolescents was also high (α = .93 for both Time 1 and 2) and inter-correlations with self-esteem (r_s = -.26 to -.40), anxiety (r_s = .54 to .55), and anger (r_s = .37 to.38) have been strong (Oetting, Swaim, Edwards, & Beauvais, 1989; Swaim, Oetting, Edwards, & Beauvais,

1989). Depression scale validity is supported through findings of higher scores for girls and women as well as a relationship between drug use and depression for women only (Trimble, Bolek, & Niemcryk, 1992) both of which are consistent with literature in this area.

See Table 2 for a description of the prevalence and stability of suicidality, friendship problem measures, and depression in this sample of youth.

Procedure

The study's procedures were approved by Colorado State University's Institutional Review Board. The first wave of data collection targeted high-school age youth, approximately 16-18 years of age, from two communities in the Southwest United States (populations 90,000, and 350,000). Bilingual interviewers contacted adolescents and/or their parents about the study. Participants age 18 years or older signed consent forms themselves. Parents of adolescents under 18 years of age were contacted by phone. Consent forms were sent home with students whose parents agreed to their participation. Participation was voluntary and confidential and participation refusal rates were less than 10%. Adolescents in school were paid $10 for their participation and adolescents out of school (including dropouts) were paid $20 because of their greater difficulty in participating in the study (e.g., travel costs). Youth in school completed the questionnaires in a private room on campus whereas youth not in school completed the questionnaires in a quiet public location (e.g., public library).

The second data collection was initiated four years after the first assessment. Participants were contacted through the address originally provided. Parents, relatives, and good friends (names of which were provided by the participants) were used if this contact was unsuccessful. If the second method of contact was also unsuccessful, public records (e.g.,

phone books, motor vehicle records, etc.) were used to locate a current address of the participant. Upon contact, the participant was asked for consent and a similar procedure as described above was used. Forty-six percent of the initial sample participated in the second data collection.

Adolescents were assessed on a multitude of psychosocial variables. It took participants, on average, 1.5 hours to complete the survey. Survey questions were written in English at a fifth grade reading comprehension level. Questionnaires were available in English and Spanish and bilingual interviewers were present to answer questions. However, none of the participants chose to complete the Spanish version of the questionnaire. Interviewers did not see participants' responses, though they provided instructions and answered participants' questions. Participants' responses were separated from identifying information in front of the respondents. Depending on adolescents' preference, responses were either given to the interviewer or mailed to the research office by the adolescent themselves. About three percent of the surveys were removed from analyses because they were incomplete, randomly marked, or considered unreliable due to endorsement of a fake item. Information about sex, age, parents' income, mother's education, and birthplace were collected from participants whereas information about participants' ethnicity, grade point average, and academic status were obtained from current or previous (for drop-outs) school records.

Participants were drawn from three groups: students in good academic standing, students at risk of dropping out, and dropouts. Students in good academic standing were those defined as such by the school based on GPA. Students at-risk of dropping out were those the school defined as in poor academic standing based on GPA. Dropouts were youth who had been absent from school for over 30 days and had not enrolled or

contacted school administration elsewhere. Consistent with a yoked control design, the study initially recruited youth who had dropped out of school. Students at-risk of dropping out and students in good academic standing were matched with dropouts in terms of ethnicity, grade in school (for dropouts, GPA of their last full semester of school), and sex. Participants were then randomly sampled from the three academic groups. This study did not use stratified random sampling over a wide geographic area so findings are potentially confounded by the cultural, educational, and socioeconomic characteristics of this population. Comparisons between groups are relatively unconfounded, however, because matched participants were drawn from the same schools.

Data Analyses

Logistic regression was used to predict suicidality at Time 2 as a function of friendship problems at Time 1 (controlling for suicidal ideation at Time 1). Logistic regression was also used to examine whether depression mediated the relationship between friendship problems and suicidality. Logistic regression was chosen because it has been suggested that logistic regression is appropriate when the outcome variable is dichotomous, as in the case of suicidal ideation and nonfatal suicidal behavior. Additionally, the flexible assumptions of logistic regression are better suited for the non-normal, non-continuous distribution of variables in this study (i.e., friendship problems, depression) (Grim & Yarnold, 1995; Tabachnick & Fidell, 1996).

Chi square analyses were used to describe stability of the variables, contingency tables, and the relationship between suicidality and ethnicity, sex, and academic status. McNemar's Test of Symmetry was used to compare dependent proportions (e.g., change

in proportion of suicidality over time). To test the interaction effects of sex/ethnicity on suicidality, moderation regression analyses were utilized.

Analyses of missing data were completed. Five percent or less of the data was missing for the majority of the variables including Poor Friendship Quality at Time 1 and Time 2; Friends' Delinquency at Time 2; Friends' School Disconnectedness at Time 1 and Time 2; Social Isolation at Time 1 and Time 2, and Depression at Time 2. For those variables missing more than 5% of data (i.e., Depression at Time 1 and Friends' Delinquency at Time 1), the missing data were missing at random (MAR). These cases were imputed using the PROC MI and PROC MIANLYZE algorithms in SAS 9.1.

CHAPTER III

Results

Rates of Suicidality

Rates of suicidality were high in this community sample. At Time 1, 33.9% of adolescents (average age of 16.5 years) reported thinking about suicide in the past year and 12.9% reported acting on suicidal thoughts in the past year. At follow up, three years later, 19.3% of respondents (average age of 19.5 years) reported suicidal ideation in the past year and 8.8% reported nonfatal suicidal behavior in the past year.

Rates of suicidal ideation and nonfatal suicidal behavior decreased over time for each group except Mexican-American boys, whose rates increased. The change in proportions was only significant for Mexican-American girls' suicidal ideation, however ($p < .0001$; OR = 4.71) which decreased from 43.6% to 20.0%, and European-American girls' suicidal ideation ($p < .01$; OR = 5.67) which decreased from 38.2% to 17.6%. Mexican- and European-American girls were 4.71 times and 5.67 times (respectively) less likely to report suicidal ideation at follow up than at Time 1 (see Figure 1). Mexican-American girls' nonfatal suicidal behavior also decreased a substantial amount over time (from 20.4% to 11.1%) but the change wasn't significant at the alpha .05 level ($p = .06$; OR = 2.43) (see Figure 2). The lack of significant findings is likely due to power difficulties, particularly for European-American boys' suicidal ideation and nonfatal suicidal behavior, European-American girls' nonfatal suicidal behavior, and Mexican-

American boys' nonfatal suicidal behavior where at least one cell in the table contained less than five cases.

Suicidal ideation at Time 1 significantly predicted suicidal ideation at follow up ($\chi 2$ (1, n = 295) = 26.04, p < .001; Phi = .30). Youth who reported thoughts about suicide at Time 1 were more likely to report that they had recently thought about suicide three years later. This was true for Mexican-American youth ($\chi 2$ (1, n = 174) = 7.27, p < .01) and European-American youth ($\chi 2$ (1, n = 121) = 24.55, p < .00) and effect sizes were moderate (Phi = .20 and Phi = .45, respectively). Suicidal ideation at Time 1 also significantly predicted nonfatal suicidal behavior at follow up ($\chi 2$ (1, n = 294) = 7.87, p < .01) but the effect size was smaller (Phi = .16). When examined by ethnicity, this finding held for European-American adolescents ($\chi 2$ (1, n = 121) = 6.53, p < .05; Phi = .23) but not for Mexican-American youth ($\chi 2$ (1, n = 173) = 2.62, p > .05; Phi = .12). Mexican-American adolescents who reported thoughts of suicide at Time 1 were no more or less likely to report acting on suicidal thoughts at follow up. Given the low rates of suicidal behavior reported at follow up for European-American youth (6%), this result should be interpreted with caution.

Nonfatal suicidal behavior at Time 1 significantly predicted suicidal ideation at follow up ($\chi 2$ (1, n = 293) = 17.81, p < .001; Phi = .25). Youth who initially responded that they had acted on suicidal thoughts in the past year were more likely to report that they had recently thought about suicide three years later. This was true for Mexican-American youth ($\chi 2$ (1, n = 173) = 5.36, p < .05; Phi = .18) and European-American youth ($\chi 2$ (1, n = 120) = 17.33, p < .001; Phi = .38). Nonfatal suicidal behavior at Time 1 did not significantly predict nonfatal suicidal behavior at Time 2 for Mexican-American

youth ($\chi 2$ (1, n = 172) = 1.58, p > .05; Phi = .10) or European-American youth ($\chi 2$ (1, n = 120) = 0.35, p > .05; Phi = .05). Again, given the low rates of reported suicidal behavior at follow up for European-American youth, this result should be interpreted with caution.

Sex: At Time 1, 41.6% of girls, compared to 19.7% of boys reported thinking about suicide in the past year, and 16.3% of girls compared to 7.7% of boys reported acting on suicidal thoughts in the past year. Both of these gender differences were significant ($\chi 2$ (1, n = 295) = 15.36, p < .01; Phi = .23 for suicidal ideation and $\chi 2$ (1, n = 293) = 4.62, p < .05; Phi = .13 for nonfatal suicidal behavior). Sex of respondent was not a significant correlate of suicidal ideation or nonfatal suicidal behavior at follow up ($\chi 2$ (1, n = 295) = 0.01, p > .05; Phi = -.01 and $\chi 2$ (1, n = 294) = 0.32, p > .05; Phi = .03, respectively). Nineteen percent of girls and 19.7% of boys reported suicidal ideation at follow up; 9.6% of girls and 7.7% of boys reported nonfatal suicidal behavior at follow up.

Ethnicity: Although greater numbers of Mexican-American youth initially reported suicidal ideation than European-American youth (35.6% and 28.9%, respectively), ethnicity was not a significant correlate of suicidal ideation at Time 1 ($\chi 2$ (1, n = 295) = 1.46, p > .05; Phi = .07). Ethnicity was a significant correlate of nonfatal suicidal behavior at Time 1 ($\chi 2$ (1, n = 293) = 3.87, p = .05), with significantly more Mexican-American youth reporting nonfatal suicidal behavior than European-American youth (16.1% and 8.3%, respectively). The effect size was small (Phi = .12) however. A larger percent of Mexican-American youth compared to European-American youth reported suicidal ideation (22.4% and 14.9%, respectively) and nonfatal suicidal behavior (10.9% and 5.8%, respectively) at follow up. However, differences by ethnicity were not

significant for either suicidal ideation ($\chi 2$ (1, n = 295) = 2.60, p > .05; Phi = .09) or behavior ($\chi 2$ (1, n = 294) = 2.39, p > .05; Phi = .09). See Table 2 for a description of rates of suicidality by sex and ethnicity.

In order to examine whether ethnicity moderated the relationship between sex and suicidality, hierarchical logistic regression was used. Suicidality at Time 1 and Time 2 was regressed on sex, ethnicity, and the interaction product, with the product term being added on the second step of the regression model. The interaction between sex and ethnicity was not significant for suicidality at Time 1 or Time 2. At Time 1, the addition of the product term resulted in an R^2 change of .000 ($\chi 2$ (1, n = 295) = 0.03, p > .05) for suicidal ideation and an R^2 change of .001 ($\chi 2$ (1, n = 293) = 0.09, p > .05) for nonfatal suicidal behavior. At follow up, the addition of the product term resulted in an R^2 change of 0.01 ($\chi 2$ (1, n = 295) = 1.89, p > .05) for suicidal ideation and an R^2 change of .004 ($\chi 2$ (1, n = 294) = 0.51, p > .05) for nonfatal suicidal behavior.

Academic Status: Rates of suicidal ideation at follow up varied significantly by academic status at Time 1 ($\chi 2$ (2, n = 295) = 9.12, p < .05; Phi = .18). Youth who had dropped out of school at Time 1 were more likely to report suicidal ideation (29.0%) than educationally at-risk youth (13.8%) and adolescents in good academic standing (14.8%). Academic status was a significant predictor of Time 2 suicidal ideation even after controlling for Time 1 suicidal ideation ($\chi 2$ (2, n = 295) = 8.31, p < .05; ΔR^2 = .04). Rates of nonfatal suicidal behavior at follow up did not vary significantly by academic status at Time 1 ($\chi 2$ (2, n = 294) = 0.30, p > .05; Phi = .03).

Friendship Problems and Suicidal Ideation

The relationship of friendship problems around age 17 and suicidal ideation three years later was examined using logistic regression. Suicidal ideation at follow up was regressed on social isolation at Time 1. For those adolescents who reported that they had friends (i.e., no social isolation), suicidal ideation at follow up was regressed on the remaining friendship problems at Time 1 (i.e., poor friendship quality, friends' school disconnectedness, and friends' delinquency) controlling for suicidal ideation at Time 1. Model results are presented in Table 3.

Social isolation at Time 1 was not a significant predictor of suicidal ideation at follow up ($\chi 2$ (1, n = 295) = 0.70, $p > .05$; $R^2 = .003$). This was true for Mexican-American youth ($\chi 2$ (1, n = 174) = 0.11, $p > .05$; $R^2 = .000$) and European-American youth ($\chi 2$ (1, n = 121) = 0.60, $p > .05$; $R^2 = .006$).

For all adolescents, the friendship problem model (i.e., Poor Friendship Quality, Friends' School Disconnectedness, and Friends' Delinquency) significantly predicted suicidal ideation at follow up ($\chi 2$ (3, n = 253) = 9.16, $p < .05$), and accounted for 4.2% of the variance. Within the model, friends' delinquency at Time 1 was a significant predictor of suicidal ideation at follow-up (OR, 1.16; 95% C.I. [1.02 – 1. 32], $p < .05$). A one unit increase in friends' delinquency increased the odds of suicidal ideation by 14.7% or by a factor of 1.16. The friendship problem model was no longer significant after controlling for suicidal ideation at Time 1 ($\chi 2$ (3, n = 253) = 5.87, $p > .05$; $\Delta R^2 = .035$) though friends' delinquency continued to be a significant predictor within the model (OR, 1.14; 95% C.I. [1.01 – 1. 29], $p < .05$). The odds of reporting suicidal ideation at follow

up were 1.14 times greater for youth who reported that their friends were engaging in delinquent activity.

When examined by ethnicity, the friendship problem model was not a significant predictor of Mexican-American youth suicidal ideation ($\chi 2$ (3, n = 143) = 4.92, $p > .05$; $R^2 = .037$) though friends' delinquency was a significant predictor within the model (OR, 1.18; 95% C.I. [1.01 – 1. 38], $p < .05$). A one unit increase in friends' delinquency increased the odds of Mexican-American youth suicidal ideation by 16.6% (a factor of 1.18). Friends' delinquency did not significantly predict Mexican-American youth suicidal ideation at the alpha .05 level after controlling for suicidal ideation at Time 1 (OR, 1.17; 95% C.I. [1.00 – 1. 36], $p = .06$). When divided by sex, the friendship problem model did not significantly predict suicidal ideation for either Mexican-American girls ($\chi 2$ (3, n = 89) = 3.54, $p > .05$; $R^2 = .033$) or boys ($\chi 2$ (3, n = 54) = 3.32, $p > .05$; $R^2 = .053$).

The friendship problem model was not a significant predictor of suicidal ideation for European-American youth at the alpha .05 level ($\chi 2$ (3, n = 110) = 7.35, $p = .06$; $R^2 = .077$). Friends' school disconnectedness, however, was a significant individual predictor within the model (OR, 1.34; 95% C.I. [1.02 – 1.75], $p < .05$). A one unit increase in friends' school disconnectedness (resulting in less school connection) increased the odds of European-American youth suicidal ideation by 29.2% or by a factor of 1.34. The friendship problem model did not predict European-American suicidal ideation at follow up after controlling for suicidal ideation at Time 1 ($\chi 2$ (3, n = 110) = 7.15, $p = .07$; $\Delta R^2 = .100$). After controlling for initial suicidal ideation, friends' school disconnection continued to significantly predict suicidal ideation at follow up (OR, 1.43;

95% C.I. [1.03 – 1.98], $p < .05$). The odds of reporting suicidal ideation at follow up were 1.43 times greater (35.7%) for youth who reported friends who were less connected to school. When examined by sex, the friendship model was not a significant predictor of suicidal ideation for European-American girls ($\chi 2$ (3, $n = 62$) = 3.94, $p > .05$; $R^2 = .072$) or boys ($\chi 2$ (3, $n = 48$) = 4.65, $p > .05$; $R^2 = .111$).

Depression as Mediator. To explore the role of depression as a mediator of the significant relationships between friendship problems and adolescent suicidal ideation, mediation analyses were performed. For each mediation analysis, four regression equations were used based on a SPSS macro developed by Preacher and Hayes (2004) which allowed for dichotomous outcome variables. The Sobel Test (Sobel, 1982) was also used to test the significance of indirect effects. The Sobel Test is used to examine whether the total effect of a predictor variable on the criterion variable is significantly reduced after the addition of a mediator to the model (Preacher & Hayes, 2004).

When the ethnic groups were combined, depression partially mediated the relationship between friends' delinquency and suicidal ideation. The effect of friends' delinquency on suicidal ideation was significantly reduced by the addition of depression as measured by the Sobel Test ($z = 1.92$, $p = .05$). However, there was still a significant relationship between friends' delinquency and suicidal ideation after controlling for depression (ß = .16, $p < .05$).

For Mexican-American youth, depression did not significantly mediate the relationship between friends' delinquency and suicidal ideation. Although friends' delinquency significantly predicted suicidal ideation (ß = .17, $p < .05$) and depression significantly predicted suicidal ideation after controlling for friends' delinquency (ß = .

17, $p < .001$), friends' delinquency did not significantly predict depression (ß = .19, $p > .05$). Therefore, the criteria for mediation as outlined by Baron and Kenny (1986) were not met. Model results are presented in Figure 3.

For European-American youth, depression did significantly mediate the relationship between friends' school disconnectedness and suicidal ideation. The effect of friends' school disconnectedness on European-American adolescent suicidal ideation was no longer significant after controlling for depression (ß = .22, $p > .05$) suggesting complete mediation. Additionally, the Sobel Test was significant ($z = 2.42$, $p < .05$) demonstrating that the total effect of friends' school disconnectedness on suicidal ideation was significantly reduced upon the addition of depression to the model. Results for the mediation model are presented in Figure 4.

Friendship Problems and Nonfatal Suicidal Behavior

The relationship of friendship problems around age 17 and nonfatal suicidal behavior three years later was examined using logistic regression. Nonfatal suicidal behavior at follow up was regressed on social isolation at Time 1. For those adolescents who reported that they had friends (i.e., no social isolation), nonfatal suicidal behavior at Time 2 was regressed on the remaining friendship problems at Time 1, controlling for Time 1 suicidal ideation. Initial suicidal ideation was used as the control variable (rather than nonfatal suicidal behavior at Time 1) because of its theoretical relationship to nonfatal suicidal behavior as well as its established relationship with nonfatal suicidal behavior at follow up within this sample. Model results are presented in Table 4. Because of the low incidence of reported nonfatal suicidal behavior among European-American youth at follow up (i.e., less that 10%), separate analyses were not conducted for

European-American adolescents. Combining ethnic groups also resulted in less than 10% incidence of nonfatal suicidal behavior so analyses were not run on the combined ethnic group either.

Social isolation at Time 1 did not significantly predict nonfatal suicidal behavior for Mexican-American youth at Time 2 ($\chi 2$ (1, n = 173) = 0.15, $p > .05$; $R^2 = .001$). For Mexican-American youth, the friendship problem model did not significantly predict nonfatal suicidal behavior at the alpha .05 level ($\chi 2$ (3, n = 143) = 6.43, $p < .10$; $R^2 = .048$) but friends' school disconnectedness was a significant predictor within the model (OR, 0.70; 95% C.I. [0.52 – 0.96], $p < .05$). A one unit increase in friends' school disconnectedness (resulting in less school connection) decreased the odds of Mexican-American youth nonfatal suicidal behavior by 35.2%. Once suicidal ideation at Time 1 was controlled for, the friendship problems model did significantly predict Mexican-American nonfatal suicidal behavior at follow up ($\chi 2$ (3, n = 143) = 7.90, $p < .05$; $\Delta R^2 = .108$). Additionally, friends' school disconnectedness continued to predict Mexican-American nonfatal suicidal behavior at follow up after controlling for initial suicidal ideation (OR, 0.66; 95% C.I. [0.48 – 0.91], $p < .05$). A one unit increase in friends' school disconnectedness decreased the odds of reporting nonfatal suicidal behavior by 41.6%.

When examined by sex, the friendship problem model was a significant predictor for Mexican-American boys' nonfatal suicidal behavior at follow up ($\chi 2$ (3, n = 54) = 10.68, $p < .05$) and accounted for 21.2% of the variance. Friends' school disconnectedness was a significant predictor within the model (OR, 0.47; 95% C.I. [0.22 – 1.00], $p = .05$). A one unit increase in friends' school disconnectedness decreased the

odds of Mexican-American boys' suicidal ideation by 75.1%. This continued to be true after controlling for initial suicidal ideation with the friendship problem model significantly predicting nonfatal suicidal behavior above and beyond that which was explained by initial suicidal ideation ($\chi 2$ (3, n = 54) = 11.97, $p < .01$; $\Delta R^2 = .391$). Friends' school disconnectedness also continued to be a significant predictor within the model after controlling for initial suicidal ideation (OR, 0.42; 95% C.I. [0.18 – 0.97], $p < .05$). Reporting friends who are disconnected from school decreased the odds of reporting nonfatal suicidal behavior by 87.5%. The friendship problems model was not significant for Mexican-American girls' nonfatal suicidal behavior ($\chi 2$ (3, n = 89) = 3.56, $p = .08$; $R^2 = .028$).

Depression as a Mediator. Similar to suicidal ideation, four regression equations were used to test the potentially mediating role of depression in the association between friendship problems and nonfatal suicidal behavior (Preacher & Hayes, 2004). The Sobel Test (Sobel, 1982) was also used to test the significance of indirect effects.

For Mexican-American adolescents, the relationship between friends' school disconnectedness and nonfatal suicidal behavior was partially mediated by depression. The effect of friends' school disconnectedness on suicidal behavior was significantly reduced by the addition of depression as measured by the Sobel Test ($z = 2.33$, $p < .05$). However, there was still a significant relationship between friends' school disconnectedness and Mexican-American adolescent nonfatal suicidal behavior after controlling for depression (ß = -.50, $p < .01$). Model results are presented in Figure 5.

For Mexican-American boys, depression did not significantly mediate the relationship between friends' school connectedness and nonfatal suicidal behavior.

Depression was not significantly related to either friends' school disconnectedness (ß = .27, $p > .05$) or nonfatal suicidal behavior after controlling for friends' school disconnectedness (ß = .13, $p > .05$). Therefore, the criteria for mediation as outlined by Baron and Kenny (1986) were not met. Model results are presented in Figure 5.

CHAPTER IV

Discussion

Rates of Suicidality

Suicidal ideation and nonfatal suicidal behavior are a significant health problem for youth today (CDC, 2008). There was no exception in this study's community sample of Mexican-American and European-American youth. At Time 1, when the respondents were ages 14-20, 34% of them reported suicidal thoughts in the past year and 13% reported nonfatal suicidal behavior in the past year. These rates were higher than national rates for similar-aged adolescents (24.1% and 8.7%, respectively; Kann, Warren, Harris, Collins, Williams, Ross, et al., 1996). At follow up, when the respondents were ages 18-23, 19% of them reported suicidal thoughts in the past year and 9% reported nonfatal suicidal behavior in the past year. These rates were also elevated compared to adult respondents (3.3% and 0.6%, respectively; Kessler et al., 2005).

This study's inclusion of academically at-risk youth and youth who dropped out of school may explain the high rates of suicidality given that academically at-risk youth are at a greater risk of suicidality than those adolescents in good academic standing (e.g., Beautrais, 2003). Academic status was significantly associated with suicidal ideation in this sample of youth. Adolescents who had dropped out of school at Time 1 reported significantly more suicidal thoughts at follow up than youth who had not dropped out of school. In other words, staying connected to school even minimally was protective for this group of Mexican- and European-American adolescents. The high rates of suicidality

recorded in this study may also be due to the geographic location of the sample. Western states, including Colorado and New Mexico, have high rates of adolescent suicidality compared to other areas of the nation (CDC, 2008). Finally, the large number of Mexican-American youth in the study may be a factor in the high rates of suicidality recorded in this study. Mexican-American adolescents have higher rates of suicidal ideation and nonfatal suicidal behavior than other Latina/o and non-Latina/o youth (e.g., Canino & Roberts, 2001; Locke & Newcomb, 2005).

Consistent with national data (CDC, 2008; Kessler et al., 2005; Substance Abuse and Mental Health Services Administration [SAMHSA], 2009), overall rates of suicidal ideation and nonfatal suicidal behavior decreased as respondents became older, that is from average age of 16.5 to average age of 19.5. The decrease over time was particularly evident in Mexican- and European-American girls' suicidal ideation. Rates of suicidality in this study initially differed by sex and ethnicity with Mexican-American girls reporting the highest rates of suicidal ideation and nonfatal suicidal behavior. Differences in suicidality by ethnicity and sex decreased, however, as youth transitioned to adulthood. This study's findings with regard to rates of suicidality by ethnicity and gender are consistent with the literature and suggest that rates of suicidality may become more similar across sex and ethnicity as adolescents transition to adulthood. For example, the 1995 Youth Risk Behavior Surveillance Survey (ages 14-18) found significantly higher rates of suicidal ideation and nonfatal suicidal behavior by gender and ethnicity with Latinas reporting the highest rates of both (Kann et al., 1996). However, in their review of the 2001-2003 National Comorbidity Survey Replication (NCS-R), Kessler and colleagues (2005) did not find a significant difference in rates of adult suicidality (ages

18 to 54) by ethnicity. While Kessler and colleagues did find that women reported higher rates of suicidal ideation and nonfatal suicidal behavior than men, the relationship between gender and suicidality was weak. Similarly, the 2008 National Survey on Drug Use and Health (NSDUH) did not report significant gender differences in rates of suicidal ideation and nonfatal suicidal behavior for adults ages 18 and older. Rates of suicidality were not examined by ethnicity in that study (SAMHSA, 2009). These results suggest that sex and ethnicity may be less relevant to suicidal ideation and nonfatal suicidal behavior in young adults than in adolescents.

A number of explanations have been suggested for the observed gender differences in adolescent suicidality in the United States (see Canetto, 1997 for a review). Among European-Americans, acknowledging suicidal thoughts and "attempting suicide" are considered feminine behavior. In contrast, fatal suicidal behavior is often perceived as a masculine, strong behavior among European-Americans (Canetto, 1997). It is possible that gender socialization among Mexican-Americans leads to similar norms of gender and suicidal behavior (e.g., Fortuna, Perez, Canino, Sribney, & Alegría, 2007; Queralt, 1993; Zayas & Pilat, 2008). Mexican-American girls may find it more acceptable than Mexican-American boys to act on suicidal thoughts, a perceived feminine coping behavior among the dominant culture. Additionally, both Mexican- and European-American girls may be more willing to report suicidality than boys because of the critical evaluation boys receive for engaging in nonfatal suicidal behavior compared to girls (Canetto, 1997; Rich, Kirkpatrick-Smith, Bonner, & Jans, 1992). When compared to adults, adolescents may be more strongly influenced by norms of gender and suicidal behavior. It has been suggested that adolescents take social norms more seriously and

respond to cultural messages more literally than adults (Hill & Lynch, 1983). Gender differences in rates of suicidality may therefore decrease as youth transition to adulthood.

The relationship between suicidality and Latina/o culture has also been investigated to some extent. Generational status (specifically how many generations one's ancestry has been in the United States) is associated with risk for psychological disorders for Latinas/os, particularly Mexican-Americans (Alegría, Canino, Shrout, Woo, Duan, Vila, et al., 2008; Canino & Roberts, 2001). Additionally, rates of suicidality in Mexican-American adolescents are significantly higher than rates of similar aged youth in Mexico (Borges, Wilcox, Mora, Zambrano, Blanco, & Waters, 2005; World Health Organization [WHO], 2004). Therefore, although some aspects of Latina/o culture (i.e., fatalism) may increase risk of suicidality (Canino & Roberts, 2001), elevated rates among Latinas/os living in the United States, including Mexican-American youth, are likely due to additional factors. For example, some researchers have found that the process of acculturation can lead to higher rates of suicidality among Latinas/os living in the United States, particularly Mexican-Americans (Olvera, 2001). Acculturative difficulties may be especially stressful for adolescents and has been associated with adolescent suicidal behavior, particularly in the case of conflict between societal expectations and familial values (Hovey & King, 1996; Queralt, 1993; Zayas, Lester, Cabassa, & Fortuna, 2005). Therefore, ethnic differences in rates of suicidality may decrease as adolescents become adults.

Friendship Problems and Suicidality

This study confirms a directional link between friendship problems around age 17 and suicidality around age 20, with variability by ethnicity and sex and with an important

role for depression as a mediating factor. When the two ethnic groups were examined together, friends' delinquency in mid adolescence predicted young adult suicidal ideation. This continued to be true after controlling for initial suicidal ideation and depression at follow up. Consistent with previous literature (e.g., Haynie et al., 2006; Prinstein et al., 2001; Vega et al., 1993) youth who described having friends who were engaged in delinquent behavior were more likely to report thinking about suicide three years later than youth who described less delinquent friends. When the link between friendship problems and suicidal ideation was examined separately for Mexican- and European-American adolescents, it became clear that this finding was driven by Mexican-American youth. Interacting with delinquent friends has been associated with other problematic behavior in Mexican-American youth. For example, Kaplan and colleagues (1997) found that association with deviant peers (i.e., good friends who frequently break rules, use illegal substances, and generally get into trouble), was directly associated with dropping out of school for Mexican-American youth. This study extended previous literature by suggesting that the negative impact of associating with delinquent friends during adolescence can last multiple years and exists above and beyond the effect of depression. At least for Mexican-Americans, adolescents who associate with delinquent youth may become increasingly delinquent themselves (e.g., Dishion & Owen, 2002) leading to escalating problematic behavior, including risk of suicidality, over time (e.g., Locke & Newcomb, 2005; Vega et al., 1993).

For European-American youth, friends' school disconnectedness around age 17 was indirectly related to later suicidal ideation via depression. This is consistent with Prinstein and colleagues' (2000) findings that friendship problems (i.e., perceived peer

rejection, lack of perceived peer acceptance) were indirectly related to suicidal ideation through depression in their sample of predominantly European-American hospitalized adolescents, and extends Prinstein and colleagues' finding to non-hospitalized community adolescents. In the current study, European-American youth who initially described friends that were less connected to school (i.e., didn't like their teachers, didn't like school) were more likely to report suicidal ideation three years later compared to youth with friends who were more connected to school. It is possible that having friends who are connected to school is more normative for European-American youth than Mexican-American youth (e.g., National Center for Education Statistics, 2003, Steinberg et al., 1992; Swanson, 2001). Within the current sample, European-American youth did report their friends as significantly more connected to school on average than Mexican-American youth's friends. Having friends who are disconnected from school may therefore be particularly stressful for European-American adolescents and that stress may result in depression and suicidality.

In contrast to friends' school disconnectedness increasing the risk of European-American young adult suicidal ideation, friends' school disconnectedness in mid adolescence was revealed as a protective factor for Mexican-American nonfatal suicidal behavior in early adulthood. This was particularly true for Mexican-American boys and continued after controlling for suicidal ideation and depression. The odds of reporting nonfatal suicidal behavior were lower for Mexican-American youth who at age 17 described friends who were *less* connected to school. The direction of the relationship between friends' school disconnectedness and Mexican-American boys' suicidal behavior was unexpected. School connectedness has generally been considered a

protective factor for adolescent suicidality (e.g., Beautrais, 2003; Borowsky et al., 2001). However, school can also be stressful for youth (e.g., Vega, et al., 1993; Fennelly, Mulkeen, & Giusti, 1998; Steinberg et al., 1992) and this may be particularly true for ethnic minority youth and boys. In their sample of urban, junior high students, Munsch and Wampler (1993) found that African-American and Mexican-American students reported more school-related stressors (e.g., trouble getting along with a teacher, failing a test or class) than European-American students. Boys, including Mexican-American boys, also reported less emotional support, more difficulty with emotion regulation, and fewer people they could go to for school-related problems. Similarly, Sánchez, Colón, and Esparza (2005) found that Latino boys had significantly more negative academic outcomes than girls (e.g., educational aspirations and expectations, GPA). If school is experienced as stressful by Mexican-American boys, then distancing themselves from school may actually protect against, rather than increase risk for, suicidality. This is consistent with Munsch and Wampler's study which also found that students reported their own in- or out-of-school suspensions as less stressful than failing a test. The authors conclude that a suspension may actually offer a reprieve from stress for students experiencing difficulties within school. It is possible that Mexican-American boys who have friends who are disconnected from school reinforce the adolescents' own disconnection from school (e.g., Steinberg et al., 1992) thereby decreasing their stress and subsequent risk of suicidal behavior. Additionally, adolescent boys who are not connected with their teachers and classmates may feel more supported and validated by peers who are also disconnected from school.

While this explanation is possible, it is inconsistent with the finding that adolescents' own connection to school, as measured by academic status, was a protective factor for Mexican-American adolescents' suicidal ideation in this sample. It is possible that numerical problems caused a Type I error. For example, multicollinearity can result in regression coefficient estimates with wrong signs and inflated magnitudes, particularly in the case of small and moderate sample sizes (Cohen, Cohen, West, & Aiken, 2003). Friends' school disconnectedness was significantly and positively correlated to poor friendship quality and friends' delinquency among Mexican-American youth though the correlations were small (r = .26 and r = .30, respectively). Additionally, once the other two predictors (poor friendship quality and friends' delinquency) were removed from the model, friends' school disconnectedness continued to be significantly and negatively associated with nonfatal suicidal behavior. Furthermore, multicollinearity statistics (i.e., tolerance and VIF) did not support multicollinearity. Finally, there were no cells with zero counts and standard errors of the beta coefficients were all below 2.0, suggesting a lack of numerical problems. The finding could also be driven by a small number of Mexican-American boys who scored much higher than average on friends' school disconnectedness and did not report suicidality. However, there were not any identifiable outliers on the friends' school disconnectedness scale. Given that friends' school disconnectedness was positively associated with the other two friendship problems variables as well as positively associated with depression (all in the predicted direction), a more likely source of the problem may be the outcome variable, nonfatal suicidal behavior. The low incidence of nonfatal suicidal behavior reported by Mexican-American youth at follow up (i.e., 10.9%) may have led to inflated odds ratios due to the sparse data

(Cohen et al., 2003). Further exploration of the relationship between Mexican-American friends' school disconnectedness and nonfatal suicidal behavior will likely be necessary to clarify this finding.

Another unique finding was that poor friendship quality in mid adolescence was not associated with suicidality for Mexican- or European-American young adults. Social support through peers has generally been considered an important protective factor for suicidality (e.g., Beautrais, 2003; King & Merchant, 2008). However, some studies have found poor friendship quality to be unrelated to adolescent suicidality. For example, O'Donnell, O'Donnell, Wardlaw, and Stueve (2004) found peer support to be unrelated to suicidality in their sample of urban African-American and Latino middle school youth. Furthermore, in their sample of inpatient suicidal adolescents (83% European-American), Kerr and colleagues (2006) found poor peer support to be a protective factor for boys' suicidal ideation. These authors conclude that suicidal youth may be more likely to affiliate with deviant peers, which precipitates or exacerbates suicidality.

The lack of finding in the current study may similarly reflect the importance of examining characteristics of adolescent friends. Friendships that are supportive and caring may lead to psychological well-being. However, adolescent friends may be supporting each other's disconnection from school or delinquent behavior, thereby increasing their risk of psychological distress and suicidality.

This study's findings also provide evidence of the importance of examining gender- and ethnic-specific risk and protective factors of adolescent suicidality. The relationship between friendship problems around age 17 and suicidality three years later differed by sex and ethnicity as indicated regarding gender by Bearman and Moody

(2004) and regarding ethnicity by Watt and Sharp (2002). Different friendship problem factors were associated with suicidality for Mexican-American youth than European-American youth and for girls than boys. Furthermore, the same friendship problem, friends' school disconnectedness, was a risk factor for European-American youth suicidal ideation but a protective factor for Mexican-American youth nonfatal suicidal behavior.

These results also support the insight that social isolation is not a sufficient measure of friendship influence on adolescent suicidality (Prinstein, 2003). In this study, social isolation did not significantly predict suicidal ideation or nonfatal suicidal behavior for Mexican- or European-American youth. However, additional friendship problems were found to be predictive of suicidality, suggesting that information about the characteristics of adolescents' friends is essential to understanding youth suicide. Finally, this study confirmed the role of depression as a mediator of the relationship between adolescent friendship problems at age 17 and later suicidality for European-American youth (Prinstein et al., 2000). In contrast, depression seems to play a smaller role in the relationship between friendship influence and suicidality for Mexican-American youth.

Strengths and Limitations

This study has a number of limitations. First, only one question each was used to assess suicidal ideation and nonfatal suicidal behavior. There were no questions about frequency, duration, severity, intent, or timing of suicidal thoughts or behaviors. Additionally, suicidality was only measured for the previous 12 months for each data collection. As a counterbalance, an inclusive definition of suicidality was used, with any admission of suicidal ideation or behavior being recorded as suicidality. Taken together, this study likely underestimated the

lifetime rates of suicidal ideation and nonfatal suicidal behavior in Mexican- and European-American adolescents.

Measurement of suicidality and other factors were based solely on written self-report. Having multi-informant data would not only reduce the potential bias stemming from shared method variance but also reduce the social desirability bias related to self-reports of problems. Additionally, a structured, written-format may be insufficient to evaluate a complex affective domain such as friendship. At the same time, it is possible that the anonymous format of our study facilitated openness. Studies indicate that at least among adolescents of European-American descent, suicidality reports are highest when obtained via anonymous approaches (Evans, Hawton, Rodham, & Deeks, 2005). Finally, adolescents' own school disconnectedness and participation in delinquent behaviors was not measured. Such information might shed light on the mechanism through which friends' characteristics impacted suicidality in this study.

This study has several strengths. One is the use of a community-based sample, which is more representative of the adolescent suicidal population than clinical or school-based samples. Clinical samples are unique for many reasons, including respondents' history of mental health treatment. School-based samples are also unrepresentative because they often exclude adolescents at potentially greater risk for suicidality (i.e., those who have been expelled, suspended, or dropped out). Including dropouts in a community sample is particularly important when investigating groups with high dropout rates, such as Mexican-American adolescents. An additional strength of this study is its large sample of Mexican-American youth, thus contributing to the literature on underserved and under-researched populations. A study such as this one that includes

both Mexican- and European-American youth also adds to our knowledge of cross-cutting and ethnic-specific risk and protective factors of adolescent suicidality. Findings from this study therefore have implications for the design of culturally-grounded models of suicide prevention.

Another strength of the present study is that it tested a mediating model with depression so as to better understand the complex relationship between friendship problems and adolescent suicidality. Furthermore, this study utilized longitudinal data which allows the chronological order of suicidal behavior and friendship problems to be established. Through use of a longitudinal design, this study demonstrated that friendship problems in mid adolescence impact psychological well-being into early adulthood.

Summary and Implications

In summary, this community based sample of Mexican-American and European-American adolescents had high rates of suicidal thoughts and behaviors, consistent with the literature. Given the self-reported nature of the survey, the rates may be underestimates of the actual rates. Also consistent with national data, rates of suicidal ideation and behavior were higher for Mexican-American youth than European-American youth and for girls than boys, suggesting that Mexican-American girls warrant particular clinical attention.

Results also indicate that there seems to be an interpersonal context of suicidality that includes friendship problems beyond whether or not youth have friends. These findings confirmed the hypothesis that social isolation is not a sufficient measure of friendship influence on adolescent suicidality. In this study, social isolation did not significantly predict suicidal ideation or nonfatal suicidal behavior for Mexican- or European-American youth. However, friends' school disconnectedness and friends' delinquency were found to be predictive of

suicidality, suggesting that information about the characteristics of adolescents' friends is essential to understanding youth suicide, particularly for Mexican-American youth.

Finally, the current study found that the impact of interpersonal difficulties around age 17 during the late high school years appears to extend to at least three years later. Research suggests that early recognition of suicidal risk factors is essential to preventing suicide (e.g., Pfeffer, 1988). Increasing clinician's awareness of the relevance of a history of friendship problems in adolescence may therefore help to prevent the development of young adult suicidal behavior.

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Table 1

Friendship Problem Measures

Factor	Reliability		Items	Component* Time 1 1	Time 1 2	Time 2 1	Time 2 2
Social Isolation [a]	n/a	n/a	I do not have a group of friends that I spend time with.	n/a	n/a	n/a	n/a
Poor Friendship Quality [b]	Time 1 α=.883	Time 2 α=.909	Do your friends care about you?	.784	.195	.842	.166
			Do you care about your friends?	.717	.215	.798	.159
			Do your friends really try to help you?	.746	.151	.754	.240
			Can you count on your friends when things go wrong?	.817	.089	.777	.176
			Do you have friends you can share joys and sorrows with?	.836	.033	.867	.154
			Do you feel you can talk about problems with your friends?	.820	.080	.824	.120
Friends' School Disconnection [b]	Time 1 α=.832	Time 2 α=.846	Do your friends like school?	.175	.847	.178	.847
			Do your friends think school is fun?	.195	.803	.160	.795
			Do your friends like their teachers?	.042	.850	.124	.875
			Do teachers like your friends?	.132	.713	.260	.728
Friends' Delinquency [c]	Time 1 α=.859	Time 1 α=.870	Have any of your close friends ever gotten a traffic ticket?	n/a	n/a	n/a	n/a
			Have any of your close friends ever had their driver's license taken away?				
			Have any of your close friends ever stolen a car?				
			Have any of your close friends ever dropped out of school?				
			Have any of your close friends ever been kicked out of school?				
			Have any of your close friends ever stolen anything fairly expensive?				
			Have any of your close friends ever been arrested?				
			Have any of your close friends ever been placed on probation for a crime.				
			Have any of your close friends ever been sent to jail?				

Note: All scales are summative except social isolation

* Extraction Method: Principal Component Analysis with Varimax Rotation

[a] Check/No Check

[b] Semantic differential: 1 – a lot, 2 – some, 3 – not much, 4 – not at all

[c] Yes/No

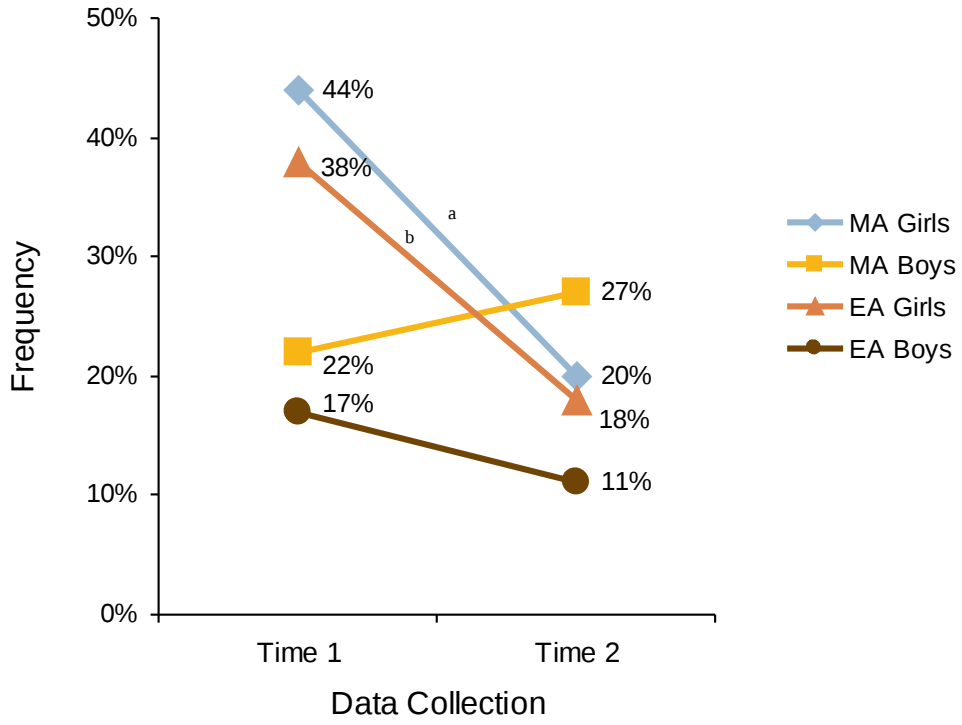
Table 2

Prevalence and Stability of Suicidality, Friendship Problems, and Depression

	Mexican-American					
	Girls (*N* = 110)			Boys (*N* = 64)		
	Time 1	Time 2	Stability	Time 1	Time 2	Stability
Variable	*n(%)*	*n(%)*	χ^2 (df=1)	*n(%)*	*n(%)*	χ^2 (df=1)
Suicidality						
Suicidal Ideation	48(43.64)	22(20.00)	6.74**	14(21.88)	17(26.56)	2.44
Suicidal Behavior	22(20.18)	12(11.01)	3.78†	6(9.38)	7(10.94)	0.81
Friendship Problems						
Social Isolation	18(16.36)	19(17.27)	3.89*	6(9.38)	13(20.31)	3.61†
	Mean(SD)	Mean(SD)	*r*	Mean(SD)	Mean(SD)	*r*
Poor Quality Friendship	9.21(3.29)	9.38(3.29)	.54**	10.59(3.27)	11.16(3.79)	.30*
Friends' School Disconnectedness	10.42(2.30)	8.90(2.11)	.30**	10.80(2.39)	10.31(2.85)	.37*
Friends' Delinquency	14.00(2.87)	13.59(2.81)	.56**	14.41(2.87)	15.35(2.69)	.48**
Other Factors						
Depression	13.88(5.47)	12.98(5.44)	.39**	11.57(4.40)	12.17(5.25)	.37**

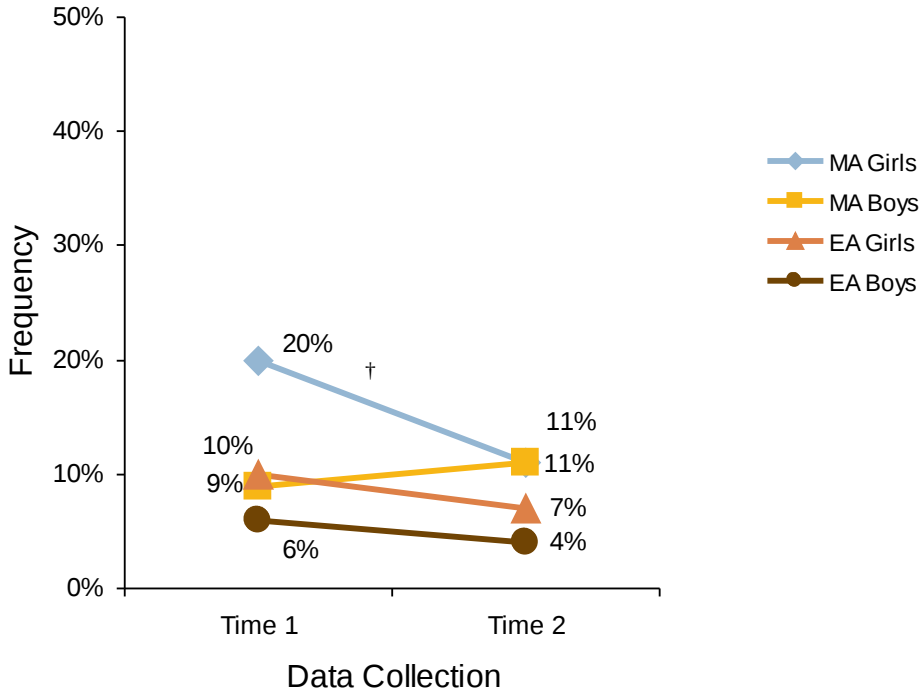
	European-American					
	Girls (*N* = 68)			Boys (*N* = 53)		
	Time 1	Time 2	Stability	Time 1	Time 2	Stability
Variable	*n(%)*	*n(%)*	χ^2 (df=1)	*n(%)*	*n(%)*	χ^2 (df=1)
Suicidality						
Suicidal Ideation	26(38.24)	12(17.65)	8.34**	9(16.98)	6(11.32)	21.13**
Suicidal Behavior	7(10.29)	5(7.35)	0.55	3(5.77)	2(3.77)	0.13
Friendship Problems						
Social Isolation	4(5.88)	8(11.76)	0.72	4(7.55)	4(7.55)	11.18**
	Mean(SD)	Mean(SD)	*r*	Mean(SD)	Mean(SD)	*r*
Poor Quality Friendship	8.31(2.59)	8.13(2.69)	.42**	10.02(3.01)	9.13(3.03)	.36*
Friends' School Disconnectedness	9.47(2.69)	8.68(2.07)	.69**	9.71(2.78)	9.17(2.04)	.52**
Friends' Delinquency	12.76(2.69)	12.87(2.59)	.48**	13.60(2.78)	14.19(3.02)	.68**
Other Factors						
Depression	13.41 (5.59)	12.60 (5.04)	.56**	11.57 (4.64)	11.68 (5.18)	.23†

** $p < .01$ * $p < .05$ $^{\dagger}p < .10$



[a] ($p < .0001$; OR = 4.71)
[b] ($p < .01$; OR = 5.67)

Figure 1. Rates of suicidal ideation at Time 1 and Time 2 for Mexican-American (MA) girls (n = 110), Mexican-American (MA) boys (n = 64), European-American (EA) girls (n = 68), and European-American (EA) boys (n = 53).



† (p = .06; OR = 2.43)

Figure 2. Rates of nonfatal suicidal behavior at Time 1 and Time 2 for Mexican-American (MA) girls (n = 110), Mexican-American (MA) boys (n = 64), European-American (EA) girls (n = 68), and European-American (EA) boys (n = 53).

** $p < .01$

Table 3

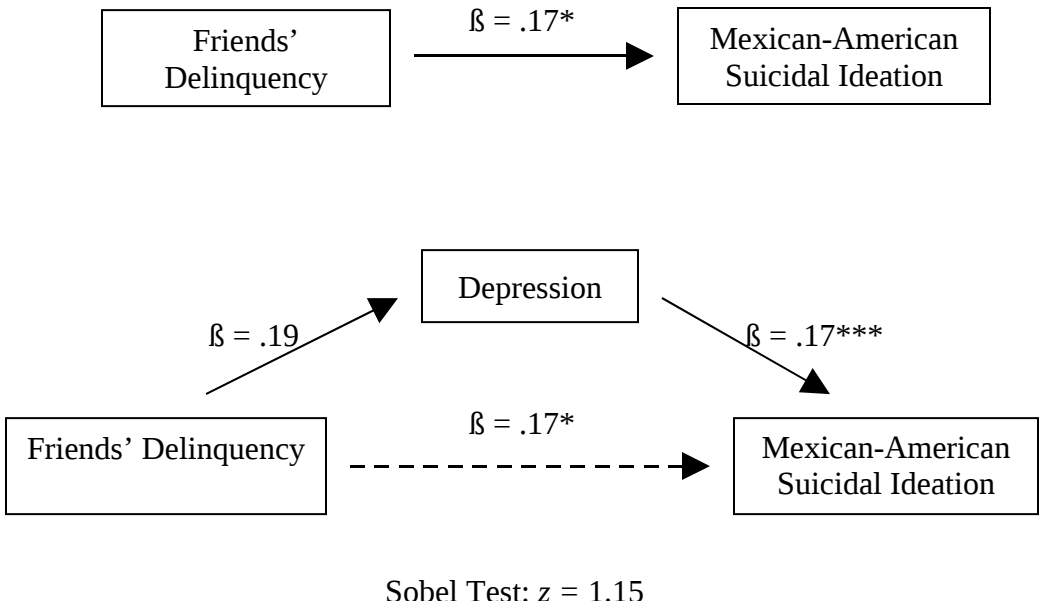
Estimated Odds Ratios (95% CI's) for Friendship Problems Predicting Suicidal Ideation in Mexican-American (MA) and European-American (EA) Adolescents

By Ethnicity	MA Adolescents (*N* = 143)	EA Adolescents (*N* = 110)
Friendship Model	$\chi 2$ (3) = 4.92 Pseudo R^2 = .04	$\chi 2$ (3) = 7.35† Pseudo R^2 = .08
Individual Predictors		
Poor Friendship Quality	1.04 (0.91 – 1.18)	1.00 (0.81 – 1.22)
Friends' School Disconnectedness	0.93 (0.77 – 1.12)	1.34 (1.02 – 1.75)*
Friends' Delinquency	1.18 (1.01 – 1.38)*	1.08 (0.86 – 1.35)

	MA Adolescents		EA Adolescents	
By Ethnicity and Sex	Girls (*N* = 89)	Boys (*N* = 54)	Girls (*N* = 62)	Boys (*N* = 48)
Friendship Model	$\chi 2(3)$ = 3.54 Pseudo R^2=.03	$\chi 2(3)$ = 3.32 Pseudo R^2=.05	$\chi 2(3)$ = 3.94 Pseudo R^2=.07	$\chi 2(3)$ = 4.65 Pseudo R^2=.11
Individual Predictors				
Poor Friendship Quality	1.10(0.93-1.31)	0.92(0.75-1.14)	1.11(0.84-1.47)	0.89(0.64-1.24)
Friends' School Disconnectedness	0.98(0.75-1.28)	0.90(0.66-1.22)	1.30(0.89-1.91)	1.45(0.96-2.17)†
Friends' Delinquency	1.14(0.92-1.42)	1.19(0.93-1.52)	1.08(0.80-1.44)	1.07(0.73-1.57)

* $p < .05$ †p < .10

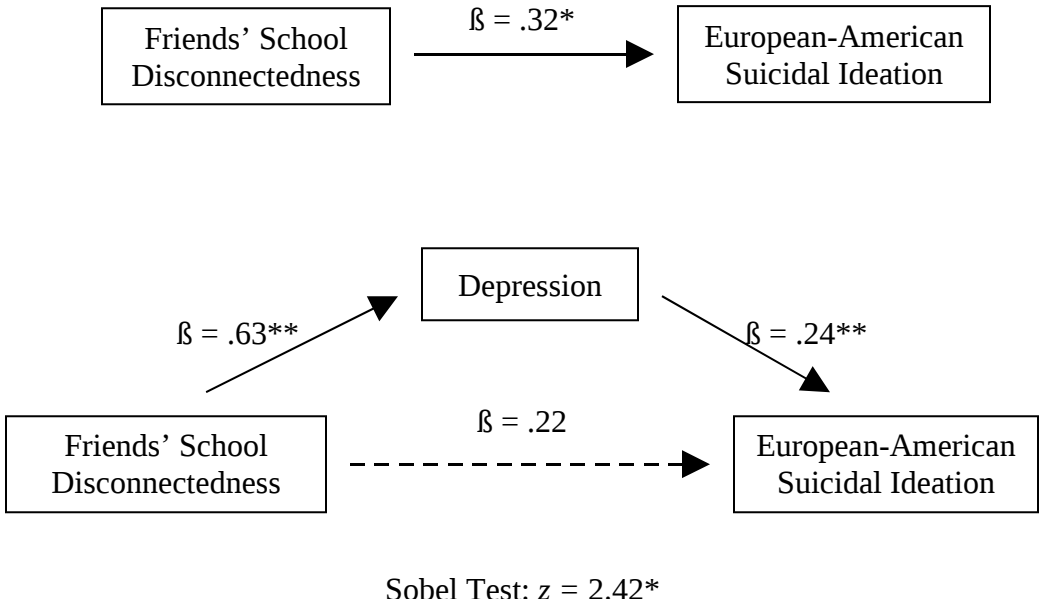
Figure 3. Path model showing the associations between friends' delinquency and Mexican-American adolescent suicidal ideation as mediated through depression.



Note: Slopes (ß coefficients) are not directly comparable given the existence of both dichotomous outcome variables (i.e., suicidal ideation) and continuous outcome variables (i.e., depression) in the regression equations.

* $p < .05$, ** $p < .01$, *** $p < .001$

Figure 4. Path model showing the associations between friends' school disconnectedness and European-American adolescent suicidal ideation as mediated through depression.



Note: Slopes (ß coefficients) are not directly comparable given the existence of both dichotomous outcome variables (i.e., suicidal ideation) and continuous outcome variables (i.e., depression) in the regression equations.

* $p < .05$, ** $p < .01$.

Table 4

Estimated Odds Ratios (95% CI's) for Friendship Problems Predicting Nonfatal Suicidal Behavior in Mexican-American Adolescents

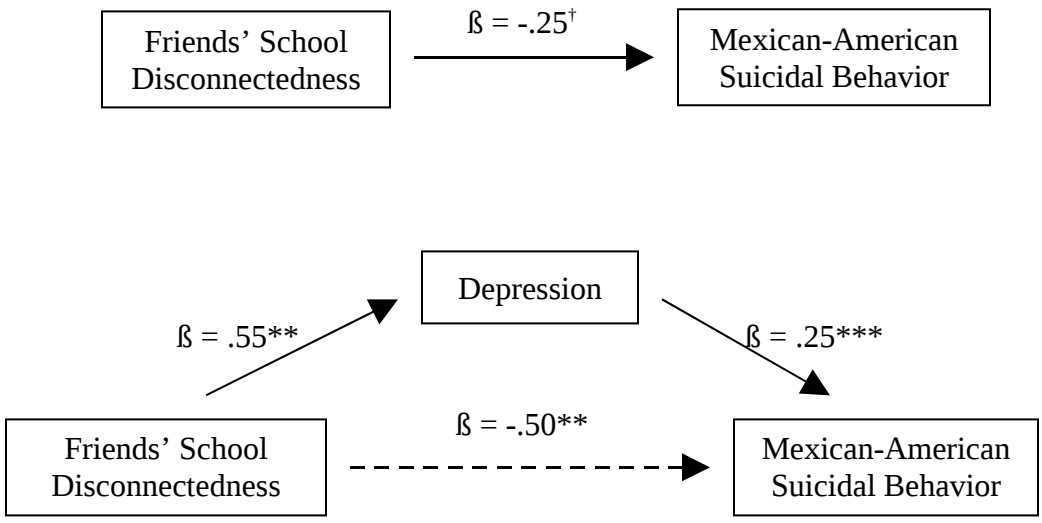
By Ethnicity	Mexican-American Adolescents (*N* = 143)
Friendship Model	$\chi 2$ (3) = 6.43†
	Pseudo R^2 = .05
Individual Predictors	
Poor Friendship Quality	1.08 (0.90 – 1.29)
Friends' School Disconnectedness	0.70 (0.52 – 0.96)*
Friends' Delinquency	1.15 (0.93 – 1.40)

	Mexican-American Adolescents	
By Ethnicity and Sex	Girls (*N* = 89)	Boys (*N* = 54)
Friendship Model	$\chi 2$ (3) = 3.56	$\chi 2$ (3) = 10.68*
	Pseudo R^2 = .03	Pseudo R^2 = .21
Individual Predictors		
Poor Friendship Quality	1.21 (0.98 – 1.50)†	0.90 (0.59 – 1.38)
Friends' School Disconnectedness	0.86 (0.60 – 1.24)	0.47 (0.22 – 1.00)†
Friends' Delinquency	1.03 (0.79 – 1.33)	1.32 (0.90 – 1.93)

Note: Analyses were not completed for European-American adolescents given their low reported incidence (i.e., < 10%) of nonfatal suicidal behavior

* $p < .05$, $^{\dagger} p < .10$

Figure 5. Path model showing the associations between friends' school disconnectedness and Mexican-American adolescent nonfatal suicidal behavior as mediated through depression.

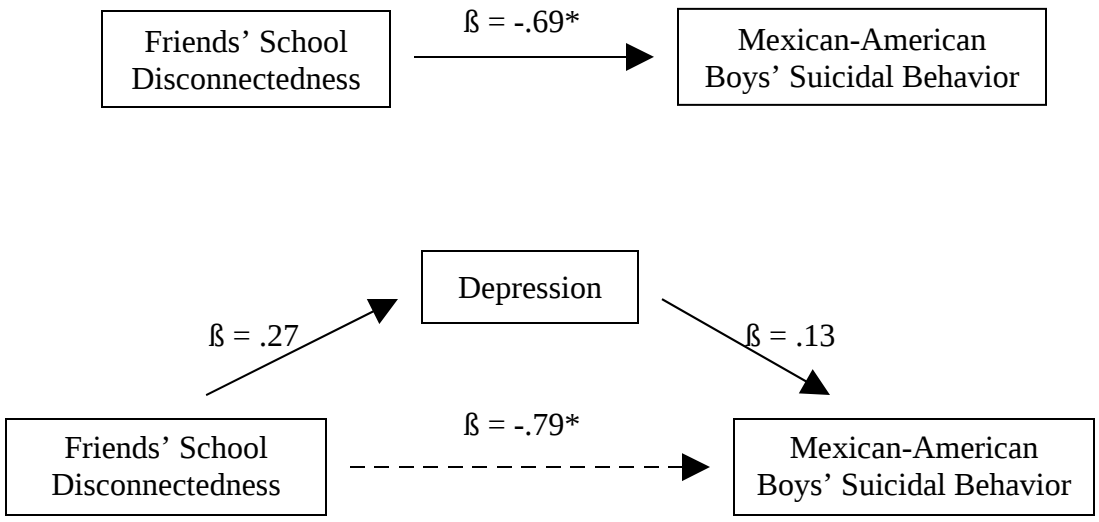


Sobel Test: $z = 2.33$*

Note: Slopes (ß coefficients) are not directly comparable given the existence of both dichotomous outcome variables (i.e., suicidal ideation) and continuous outcome variables (i.e., depression) in the regression equations.

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Figure 6. Path model showing the associations between friends' school disconnectedness and Mexican-American adolescent boys' nonfatal suicidal behavior as mediated through depression.



Sobel Test: $z = 0.66$

Note: Slopes (ß coefficients) are not directly comparable given the existence of both dichotomous outcome variables (i.e., suicidal ideation) and continuous outcome variables (i.e., depression) in the regression equations.

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$