

INDIVIDUAL, FAMILY, SCHOOL, AND COMMUNITY PREDICTORS OF HIGH SCHOOL  
MALE SUICIDAL BEHAVIORS: AN ANALYSIS OF 2010 IOWA YOUTH SURVEY DATA

by

Cathy Beck-Cross

A dissertation submitted in partial  
fulfillment of the requirements for the degree of  
DOCTOR OF EDUCATION

Dissertation Committee:  
Robyn Cooper, Ph.D., Chair  
Randal Peters, Ed.D.  
Robert Stensrud, Ed.D.

Dean of the School of Education:  
Janet M. McMahonill, Ph.D.

Drake University

Des Moines, Iowa

2012

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## **DEDICATION**

For my husband, family, and friends who never asked why,  
and the young men who served as catalysts for desperate understanding.

## ABSTRACT

Youth suicide is a public health issue and the second leading cause of death for young Iowans ages 15 to 24 years, with young males six times more likely to die than their female peers (Iowa Department of Public Health, 2009). Suicide among adolescents is a complex issue, but there are patterns of individual, family, school, and community influences that contribute to the likelihood a young person will think about, plan, or attempt suicide. Examination of those patterns reveals that adolescent males have a different constellation of risk and protective factors impacting their likelihood of suicide (Kelly, Lynch, Donovan, & Clark, 2001) than adolescent females. Using Bronfenbrenner's (2005) bioecological model of human development, the purpose of this study was to determine the extent to which the macrosystem of race/ethnicity, and the microsystems of individual (risk behaviors of substance use and anti-social choices, and resilient behavior of self-determination), family (family engagement), school (school connectedness), and community (community support) predicted the suicide behaviors of intent or attempt in 11<sup>th</sup> grade males in the state of Iowa. Hierarchical regression analysis indicated each of the variables was predictive of either suicide intent or attempt, with substance use, anti-social choices, self-determination, family engagement, and school connectedness predictive of both of the suicidal behaviors. This study provides information about predictors of suicidal behaviors among young males, which can lead to the development of targeted strategies for prevention. Recommendations for policy and practice are provided for individual, family, school, and community interventions.

## CHAPTER 1

### INTRODUCTION

*The suffering of the suicidal is private and inexpressible, leaving family members, friends, and colleagues to deal with an almost unfathomable kind of loss, as well as guilt. Suicide carries in its aftermath a level of confusion and devastation that is, for the most part, beyond description.*

– Kay Redfield Jamison (*U.S. Department of Health and Human Services, National Strategy for Suicide Prevention, 2001*)

Suicide is startling, perhaps even more so when the death is of a young person. Friends and family grieve the loss of the present relationship as well as the imagined future of the deceased. The act of suicide leaves a wake of devastation, resulting in an “incalculable impact of loss of life and the emotional trauma experienced by surviving family, friends, and communities” (Crosby, Ortega, & Melanson, 2011, p. 12). For those left behind, the ripple effects go beyond the immediate devastation, as having lost a close friend or loved one to suicide makes the survivor at greater risk for suicide (Centers for Disease Control [CDC], <http://www.cdc.gov/ViolencePrevention/suicide/statistics/rates03.html>, retrieved May 12, 2012). Survivors suffer with guilt and unanswered questions of what they might have been able to do to prevent the suicidal person’s demise; it is as if, “the person who commits suicide sentences the survivor to obsess about the reasons for the death” (Shneidman, 1965, p. 318).

The impact of the loss of life and future of a young person who has died by suicide goes well beyond the tragedy felt by friends and loved ones. Those who never had contact with the youth are indirectly impacted, because intervention and response after a suicide draws heavily on medical and social resources (Crosby et al., 2011). In 2005, among all ages of those in the United States who died by suicide, the fiscal impact of death related medical care and work expenses was over \$26.7 billion, and included in that number, costs were over four times higher for males

than females (CDC, <http://www.cdc.gov/Features/dsWISQARScost/>, retrieved July 18, 2012). The impact of suicide has worked its way into the fabric of many people's lives, considering that nationally, suicide is the third leading cause of death among young people ages 15 to 24 years (CDC, <http://www.cdc.gov/injury/wisqars/index.html>, retrieved May 12, 2012; Kochanek, Xu, Murphy, Miniño, & Kung, 2011).

In response to the concern that suicide has consistently been one of the three leading causes of death for young people since 1999 (CDC, <http://webappa.cdc.gov/cgi-bin/broker.exe>, retrieved July 25, 2012), in 2003 the President's New Freedom Commission on Mental Health (2003) identified youth suicide as a major public health concern. The following year, the Garrett Lee Smith Memorial Act (2004) was named in memory of Senator Gordon Smith's son, who died by suicide. This act provides funds to support youth suicide prevention and programming initiatives nationwide, with Iowa having been a recipient of funding to implement prevention and awareness initiatives.

### **Statement of the Problem**

The rate of youth suicide in Iowa is even more jarring, where suicide is the second leading cause of death for young people ages 15 to 24 years (Iowa Department of Public Health [IDPH], 2009). The number of young Iowans who died by suicide in 2009 was greater than the next three leading causes of death combined, and was second only to unintentional injuries. In Iowa, suicide was the cause of 24.5% of deaths among young people (IDPH, 2009). Table 1.1 provides detail on the causes of death among ages 15 to 24 years, with a comparison of the United States and Iowa.

Table 1.1

*Leading Causes of Death for Ages 15 to 24 Years<sup>a</sup>*

Rank	United States				Iowa		
	Cause	<i>n</i>	%	Cause	<i>n</i>	%	
1	Unintentional Injuries	12,458	40.9	Unintentional Injuries	91	39.7	
2	Homicide	4,862	15.9	Suicide	56	24.5	
3	Suicide	4,371	14.3	All Other Diseases	27	11.8	
4	Malignant Neoplasms	1,636	5.3	Malignant Neoplasms	16	7.0	
5	Heart Disease	1,035	3.4	Homicide <sup>b</sup>	9	3.9	
Rate of suicide deaths per 100,000 <sup>a</sup> = 10.1				Rate of suicide deaths per 100,000 <sup>a</sup> = 11.8			

<sup>a</sup>Adapted from IDPH (2009) and Kochanek et al.(2011)

<sup>b</sup>In Iowa, includes deaths caused by *Legal Intervention*

The rate of suicide attempts is even more startling. For every suicide that occurs in the United States among young people ages 15 to 24 years, it is estimated there are correspondingly between 100 and 200 attempts (Goldsmith, Pellmar, Kleinman, & Bunney, 2002). Considering the most recent national data on youth suicide, that translates to almost half to over three-quarters of a million attempts each and every year. Across the lifespan, females are two to three times more likely to attempt suicide than are males (Krug, Dalhberg, Mercy, Zwi, & Lozano, 2002). However, in adolescence, males are more likely to die from a suicide attempt than females, both nationally (U.S. Department of Health and Human Services, 2001) and in Iowa (IDPH, 2009). Table 1.2 reflects the striking difference between Iowa males and females in the rate of suicide deaths among adolescents ages 15 to 19 and 20 to 24 years.

In Iowa, young males are six times more likely to die by suicide than their female peers, with 96.5% of all deaths occurring among whites. This rate of death by suicide in young Iowa males is considerably higher than the national rate, where adolescent males are four times more likely to die than females in the same age group (CDC, <http://www.cdc.gov/ViolencePrevention/suicide/statistics/trends04.html>, retrieved August 1,

2012). Considering the estimate by Goldsmith et al. (2002) of suicide attempts, in Iowa, between 5,600 and 11,200 youth may attempt suicide each and every year.

Table 1.2

*Iowa 2009 Suicide Deaths by Race/Ethnicity, Age, and Gender, Ages 15 to 24 Years<sup>a</sup>*

	Males		Females	
	15-19	20-24	15-19	20-24
Total Population <sup>b</sup>	110,805	116,381	106,575	110,936
Race/Ethnicity				
White	17	30	3	4
African American	0	0	0	0
Asian/Pacific Islander	0	1	0	0
Hispanic	0	0	0	0
Other	0	0	1	0
Total by Age Group	17	31	4	4
Total by Gender	48		8	

<sup>a</sup>Adapted from Iowa Department of Public Health (2009)

<sup>b</sup>Iowa Data Center, <http://data.iowadatacenter.org/datatables/State/stagesingleyearbysex20002009.pdf>, retrieved July 30, 2012

While the reasons behind youth suicide are complex, there are patterns of individual, family, school, and community influences that contribute to the likelihood a young person will think about, plan, or attempt suicide. Upon examination of those patterns, adolescent males have a different constellation of risk and protective factors impacting their likelihood of suicide (Kelly et al., 2001) than adolescent females. Because of these striking differences, this study focuses on the factors that impact suicidal behaviors in young adult males. Suicide does not happen in isolation. As described by Dorais (2004),

Even though suicide is by definition a personal act, the individual who attempts it or the one who completes the attempt does not act in isolation from the contexts and motives stemming from life experiences that are social and have a history that should not be ignored. (p. 15)

Understanding the patterns and life experiences of adolescents who report suicidal behavior can assist individuals, and the families and systems where youth interact, in prevention of youth suicide.

To understand more about risk and protective factors that may predict a young person's likelihood of suicidal behavior, national and state surveys have been conducted of adolescent students. Every two years, self-reports of adolescent behaviors are examined nationally through the Youth Risk Behavior Survey [YRBS] (CDC, 2012), offered to school districts and municipalities in each of the 50 states and District of Columbia; and at a state level, investigated through the Iowa Youth Survey (Iowa Consortium for Substance Abuse Research and Evaluation [ICSARE], 2011), available for administration to youth attending public and private school districts. Through these results, data can be examined to determine predictive factors for adolescent suicide, which in turn can guide prevention initiatives.

Although factors influencing suicidal behavior in young people have been widely examined, little research has been conducted on the risk and protective factors specifically related to adolescent males. Studies that have been done focus mainly on *individual* internal factors influencing suicidal behavior. There has been little examination from the holistic perspective where the focus is on both the individual and the environments in which the young person interacts; specifically, the family, school, and community, which Bronfenbrenner (2005) calls microsystems. Exploration of these factors using Bronfenbrenner's bioecological model is fully absent. Examination of the problem of suicide intent and attempt by adolescent males using this theoretical framework will provide valuable information as to the influences of microsystems and macrosystems (discussed later in this chapter) on adolescent male suicidal behavior.

## **Purpose**

The purpose of this study was to determine the extent to which the microsystems of individual (risky and resilient behaviors), family (family cohesion), school (school connectedness), and community (community support) predict the suicide behaviors of intent or attempt in 11<sup>th</sup> grade males in the state of Iowa.

## **Research Questions**

This research was guided by the following questions:

1. What are the background characteristics of the 11<sup>th</sup> grade males in the 2010 Iowa Youth Survey data set?
2. To what extent do race/ethnicity, individual risky and resilient behaviors, family cohesion, school connectedness, and community support predict an 11<sup>th</sup> grade male's likelihood of suicide intent?
3. To what extent do race/ethnicity, individual risky and resilient behaviors, family cohesion, school connectedness, and community support predict an 11<sup>th</sup> grade male's likelihood of suicide attempt?

## **Theoretical Framework**

Bronfenbrenner's (2005) bioecological model states that across the lifespan, an individual's life course is a reflection of reciprocal interactions between the person and his or her environment. Bronfenbrenner notes that individuals and families must be viewed in the context of their relationships and the environments in which they live, play, and work. Each person impacts and is impacted by the environment, via interpretations that rely on objective (phenomenological) and experiential (subjective) ways of understanding and integrating life experiences. The interplay of these experiences impacts the person's ability to successfully

navigate life experiences, as, “particular environmental conditions have been shown to produce different developmental consequences depending on the personal characteristics of the individuals living in that environment” (Bronfenbrenner, 2005, p. 109).

These developmental consequences are a key aspect of Bronfenbrenner’s (2005) work and demarcate the difference between the bioecological model and that of Lewin (1935), whose seminal work on the “psychological forces of the environment” (p. 70) examined behavior as a function of the person and environment only, without taking into consideration the impact on individual development. Lewin purported that an individual’s behavior ( $B$ ) is impacted by an interplay between the person ( $P$ ) and the environment ( $E$ ), resulting in the formulaic representation  $B = f(PE)$ . The resulting model emphasized that “all aspects of the [individual’s] behavior...are codetermined by the existing environment” (Lewin, 1935, p. 66).

Bronfenbrenner (2005) took Lewin’s (1935) theory one step further by asserting that the impact of individuals and their environment goes beyond behavior by influencing a person’s ability to successfully navigate life’s stages of development ( $D$ ), which resulted in a revised formula of  $D = f(PE)$ . These exchanges between the person and environment are different at each point in time and result in a distinct interpretation of life that is as unique as a fingerprint. As Bronfenbrenner (2005) explains, this pattern of exchanges is impacted by the individual and her or his contact with other individuals and the environment on five levels – the microsystem, mesosystem, exosystem, macrosystem, and chronosystem.

**Microsystem.** The microsystem consists of “activities, roles, and relations in which a person engages,” (Bronfenbrenner, 2005, p. 57) and becomes the foundation of the system’s components. Each of these components are interpreted by the young person both objectively and subjectively, and “include reference to social, physical, and symbolic aspects of the immediate

setting that invite, permit, or inhibit engagement in sustained, progressively more complex interaction with and activity in the immediate environment” (Bronfenbrenner, p. 100). *Activities* for an adolescent might include choices such as participation in sports, music, drama, or faith groups, while *roles* for a young person are that of son or daughter, sibling, friend, and student. *Relations* typical of a high school student would include the youth as a family member, student at school, or member of a specific team, club, church, or community service group. The microsystems examined for this study that may impact adolescent male suicidal behaviors are the *individual* (measured through factor analyses of risky and resilient behaviors), *family* (measured through a factor analysis of family cohesiveness), *school* (measured through a factor analysis of school connectedness), and *community* (measured through a factor analysis of community support).

**Mesosystem.** Each of the young person’s microsystems is nested within the mesosystem, and reflects interaction between activities, roles, and relations. Mesosystems are the accumulation and interaction of all life experiences, and consist of “the linkages and processes taking place between two or more settings containing the developing person (e.g., the relations between home and school, school and workplace)” (Bronfenbrenner, 2005, p. 80). Like a metaphorical mobile, a change in how the young person engages in one microsystem impacts involvement in other activities, and subsequently the balance of the mesosystem. For example, the pattern and quality of family interaction changes when an adolescent who had previously participated in many and varied family activities begins to spend more time with friends or in organized activities away from home.

**Exosystem.** The exosystem consists of “linkages and processes taking place between two or more settings, at least one of which does *not* ordinarily contain the developing person”

(Bronfenbrenner, 2005, p. 80), yet still impact the adolescent's development. Examples related to the issues explored in this study include when state or federal governments pass legislature impacting funding for suicide prevention or access to services at local mental health agencies. Closer to home, exosystem influences might consist of the exchange of interaction between the youth's family and the local school board that approves suicide prevention curriculum, or between the family and the insurance company that authorizes payment for mental health and pharmacy services. In each of these examples, a young person with suicidal behaviors is not directly involved in the discussion or decisions, but certainly may be impacted by the implications of the organizational systems.

**Macrosystem.** Tying together all the systems is the macrosystem, which “comprises the pattern of micro-, meso-, and exosystems... [and] may be thought of as a societal blueprint for a particular culture or subculture” (Bronfenbrenner, 2005, p. 81). The macrosystem represents the beliefs and organizational patterns of all that impacts the young person, and consists of broad influences related to the individual such as gender, race, ethnicity, or sexual orientation. Other factors influencing the young person may include region of residence within the nation; whether the adolescent lives in an urban or rural community, with parents or in other arrangements where the parents are not present; or in a primarily professional versus working class neighborhood.

In this study, the macrosystem of race/ethnicity is explored as a factor affecting suicide intent and/or attempt in adolescent males. While future research may want to consider the impact of gender on adolescent suicidal behaviors, this study holds gender as a constant, examining the suicidal behaviors of males only; therefore, the macrosystem of gender is not measured.

**Chronosystem.** Bronfenbrenner (2005) recognized the element of *time* as a major gap in the model developed by Lewin (1935). The element of time is important not just as it applies to

the individual, but also as it relates to the various environments in which the young person interacts. According to Bronfenbrenner, individuals progress through life stages that emanate from internal or external events and influences, and serve to propel the individual toward personal growth. These life stages “alter the existing relations between person and environment, thus creating a dynamic that may instigate developmental change” (Bronfenbrenner, p. 119). The scope of this study prohibits the examination of the chronosystem upon the variables under examination, as the investigation uses a cross section research design of individual responses at one point in time as opposed to a longitudinal analysis.

### **Significance of the Study**

Youth who die by suicide leave an average of six close friends and loved ones to grieve the loss (IDPH, 2005), and previous suicide attempts are a key predictor of future attempts (Friedman, 2006). Adolescent males have different risk and protective factors for suicidal behavior than females (Gould et al., 2004; Shaffer et al., 1996). Identifying potential predictors of suicidal behavior among young males can lead to the development of targeted strategies for prevention. At the individual level, understanding how to recognize and prevent feelings of suicidal thoughts or behaviors can help young men better cope with the inevitable challenges faced throughout their lifetime. This study provides information as to how specific behaviors within the family, school, and community promote protective factors and address risk factors related to adolescent male suicidal behavior. The results may help parents, teachers, school guidance counselors, and interested community members understand the key roles they play in prevention, thereby preserving young lives and decreasing the risk of suicide upon survivors.

### **Definitions of Key Terms and Acronyms**

Adolescents – youth ages 14 to 18. This population is also referred to as “young people” or “youth,” and the terms are used interchangeably.

CDC – Centers for Disease Control.

High school – students in grades 9 through 12.

IDPH – Iowa Department of Public Health.

ISCARE – Iowa Consortium for Substance Abuse Research and Evaluation.

IYS – Iowa Youth Survey

Suicidal behavior – includes any combination of suicide intent (planning, ideation) or attempt.

Suicide attempt – having made a specific gesture of suicide which may or may not have resulted in the need for medical care.

Suicide ideation – thoughts of suicide, including considering a method or other details, without a specific attempt.

Suicide intent – combination of behaviors that reflect suicide ideation or suicide plan.

Suicide plan – having considered a specific method of suicide, including thoughts of how to avoid detection or secure the means to carry out the act.

YRBS – Youth Risk Behavior Survey.

### **Summary**

The goal of this study was to inform human service practitioners, policy makers, school administrators, parents, and students by identifying the extent to which individual risky and resilient behaviors, family cohesiveness, school connectedness, and community support are predictors of adolescent male suicide behavior. Specifically, this study examined variables related to individual risky and resilient behaviors, as well as variables related to the role of

family that impact cohesion, communication, and support; variables related to school such as staff relationships and youth connectedness to school; and variables related to community support such as youth's perception of whether adults in the community care about young people or provide help when needed, on 11<sup>th</sup> grade male behaviors of suicide intent and attempt.

Chapter 2 describes a summary of the literature that provides the theoretical framework for this study. Sections within the chapter include national and state context, resiliency and youth suicide, assessment of the extent of youth suicidal behavior, and the macro- and microsystems identified in chapter 1 as impacting adolescent male suicidal behavior.

Chapter 3 reviews the quantitative methodology used for this study by addressing the methodological approach, survey instrument with sample and participants, and description of independent and dependent variables. Also included is an explanation of the descriptive and inferential statistical analyses conducted for this research.

Chapter 4 provides the results of the analyses used to inform this study, including discussion of the methods used to screen the data and establish assumptions of normality. The chapter reviews the results of frequencies and descriptive statistics, correlations for each of the independent and dependent variables, and results of the regression analyses. The chapter concludes with answers to the three research questions examined in this study.

Chapter 5 reviews the research and includes discussion and conclusions informed by the results from chapter 4 as they pertain to the macrosystem and microsystems hypothesized to predict the suicidal behavior of intent and attempt. Discussion is provided on implications for policy and practice on each of the macro- and microsystems examined in the study, and the chapter closes with final thoughts.

## CHAPTER 2

### LITERATURE REVIEW

*It was a tragedy that rocked the whole town. An 18-year-old high-school senior, by all accounts widely loved and admired, was dead by his own hand. He had been treated for depression, but it hadn't been enough. He had left a note assuring his mother and father that they were good parents, that this was not their fault.*

– Carol Gorman, visiting author to a Midwestern school district on the day of the funeral for the local football team captain, who died by suicide (personal communication, April 2008)

Youth suicide has been researched extensively in the past decade, but has not always been a topic of intense scrutiny. Although Shneidman (1965), in his seminal work, *Some Reflections on Death and Suicide*, was a pioneer in the field of suicidology, as recently as two decades ago investigation of youth suicide was a “largely unexplored area of research” (Kandel, Raveis, & Davies, 1991). Previous research has chiefly focused on *individual* risk and protective factors related to adolescent suicidal behaviors. Less examination has been conducted on school and family influences, and there is a dearth of research that focuses on the collective impact of the environments of family, school, and community, as well as influences related specifically to adolescent males.

This chapter provides a literature review on youth suicide, starting with an overview of the national and state context of the problem, as well as a review of the bioecological systems (Bronfenbrenner, 2005) impacting adolescent suicidal behaviors. The following sections review individual, family, school, and community factors impacting suicidal behaviors in adolescents, followed by dynamics specific to adolescent males. An overview is also provided of national and state youth survey results which address the microsystems examined in this study.

## National Context

Depending on the source, suicide is described as the 10<sup>th</sup> (Murphy, Xu, & Kochanek, 2012) or the 11<sup>th</sup> (CDC, 2010) leading cause of death among people of all ages in the United States, with estimates of over 34,000 deaths annually (CDC, 2010). Suicide is the cause of 10.5% of all deaths by young people ages 15 to 24 years (Murphy et al., 2012). Each person who dies impacts the lives of those left behind, as having been exposed to the suicide of another increases the survivor's likelihood of suicidal behavior including plan, ideation, and attempt (Crosby & Sacks, 2002). Estimates vary as to the number of survivors left to deal with the aftershock of the suicide death, with numbers ranging from six (Shneidman, 1973), perhaps considering only members of a child's immediate family, to 60, in the case of the death of a spouse or partner (Berman, 2011). The cumulative effect of loss means hundreds of thousands of survivors are impacted by suicide annually. Among the youngest citizens (15 to 24 years), suicide is the third leading cause of death (Murphy et al., 2012; Substance Abuse and Mental Health Services Administration, 2008), leaving behind loved ones and friends to grieve 45,390 young people between 1999 and 2009 (CDC, <http://webappa.cdc.gov/cgi-bin/broker.exe>, retrieved May 23, 2012).

At all ages, males and females have disparate patterns in suicide attempt and death. Females across the lifespan attempt suicide between two and three times more often than males, yet the number of deaths across all ages of males is nearly four times greater (CDC, 2012). The rate of death by suicide among young females is also strikingly different than that of their male peers. Among young females (ages 10 to 24 years), the rate of suicide increased significantly between 1991 (.42 per 100,000) and 2009 (1.4 per 100,000) (CDC, 2012). Although the rate among males ages 10 to 24 years decreased slightly between 1991 (15.43 per 100,000) and 2009

(11.45 per 100,000) (CDC, 2012), their likelihood of death by suicide is four times their female peers (CDC, <http://www.cdc.gov/ViolencePrevention/suicide/statistics/trends04.html>, retrieved August 1, 2012).

As noted in chapter 1, in 2003, the President's New Freedom Commission on Mental Health and the Children's Mental Health Screening and Prevention Act (2003) identified youth suicide as a major public health concern. The next year, the Garrett Lee Smith (GLS) Memorial Act (2004), named after the son of Senator Gordon Smith, who died by suicide, was enacted with the goal of supporting youth suicide prevention and intervention programs. Since then, states across the nation have tapped into the GLS Memorial Act for funding to implement programming in an effort to stem the tide of youth suicide.

### **State Context**

While the rate of youth suicide is tragically high nationwide, Iowans are even more at risk. In 2009, suicide was the 12<sup>th</sup> leading cause of death for all ages in Iowa, and at 24.5 deaths per 100,000, was the second leading cause of death among ages 15 to 24 years (IDPH, 2009). In Iowa, suicide takes more lives among the state's young people than any other cause except accidents. From 1999 to 2003 alone, 1,553 young people died by their own hand (IDPH, 2005). Iowa males of all ages died by suicide at a rate four times that of females, and among ages 15 to 24 years, males died at a rate six times greater than their female peers (IDPH, 2009). In Iowa, 2,656 young people ages 10 to 24 years attempted suicide between the span of 2002 to 2007 (IDPH, 2005), an average of approximately 521 attempts each year for this age group.

Considering that Iowa has 351 school districts (Iowa Department of Education, 2011), each and every school district has the potential to have between one and two of its students attempt suicide each year.

Following in the footsteps of the nation, Iowa too identified suicide as a statewide public health concern, and developed the *Iowa Plan for Suicide Prevention 2005-2009* (IDPH, 2005). This effort has resulted in a multi-pronged approach to suicide prevention, using a public health model that includes developing a clear understanding and definition of the issue, with risk and protective factors, then identifying, implementing, and evaluating the effectiveness of interventions (IDPH, 2005). This plan was updated for the years 2011 to 2014 (IDPH, 2011) and includes revised statewide goals and objectives.

### **Resiliency and Youth Suicide**

In the decade of 1999 to 2009, suicide was the cause of death for 588 Iowans age 19 and younger (IDPH, 2009). The causes of youth suicide are complex and intertwined, as “suicide is rarely, if ever, the outcome of a single antecedent event” (Mościcki, 2001, p. 315). A constellation of individual, family, school, and community dynamics called *risk factors* contribute to the likelihood youth will exhibit suicidal behaviors, and patterns of influences from those environments called *protective factors* mitigate against suicidal tendencies. Overlaying the collection of risk or protective factors a young person has integrated into his or her experiences is the notion of *resiliency*, which impacts the youth’s ability to respond in a constructive manner when life becomes difficult. Resiliency impacts a young person’s macro- and microsystems and the likelihood of exhibiting suicidal behavior.

Arguably, young people who choose suicide see no other way of responding to difficulties they experienced prior to their death. The quandary is why some youth see suicide as their best option and other distressed adolescents do not. Mościcki (2001) says,

It is important to note that many individuals may have one or more risk factors and not be suicidal. Risk, and protective, factors are not static entities, but rather dynamic processes

that change over time and which, in certain lethal combinations, can lead to suicide. (p. 315)

Adolescents who are able to rebound from their challenges – to resist lethal solutions to problems – are more *resilient*. They survive and even thrive, despite dealing with occasional or even chronic and severe struggles. Having resiliency helps young people respond in constructive rather than devastating ways when addressing inevitable challenges. Although there are multiple definitions of resiliency, they collectively reflect the ability to react to difficult life situations with constructive responses (Bowen, Lee, & Weller, 2007; Brooks, 2006; Bryan, 2005; Judge, 2005; Masten & Coatsworth, 1998; McCubbin & McCubbin, 1988; Patterson, 2002; Richardson, 2002; Sameroff & Rosenblum, 2006; Walsh, 2003; Woolley & Bowen, 2007). The very notion of resiliency is framed using the strengths perspective, where “the common thread is that people have been able to lead more successful lives than expected despite being at greater risk than average for serious problems” (Brooks, 2006, p. 69). Resiliency develops through interplay between the individual and environments such as family, schools, neighborhoods, and communities (Benzies & Mychasiuk, 2009; Bowen, Rose, Powers, & Glennie, 2008; Bowen et al., 2007; Brooks, 2006; Bryan, 2005; Masten & Coatsworth, 1998; Simon et al., 2005; Walsh, 2003; Woolley & Bowen, 2007; Woolley & Grogan-Kaylor, 2006).

There is debate as to whether resiliency can be developed by all people, or just those who experience chronic or acute stressors. Some researchers believe resiliency can only be gained through navigation of severe and extended stressful situations such as a mental health diagnosis or loss of a parent in childhood (Bennett, Elliott, & Peters, 2005; Masten & Coatsworth, 1998). From this perspective, “everyone would not have sufficient risk exposure to be considered resilient. Everyone theoretically could be competent, but only those exposed to significant risk

could be called ‘resilient’” (Patterson, 2002, p. 237). In contrast, other researchers believe life itself is sufficiently stressful to allow ample opportunities for developing resiliency (Cicchetti & Garmezy, 1993, as cited in Simon et al., 2005; McCubbin & McCubbin, 1988), and that “resilience is a process, one that is found in all of us in varying degrees at various times in our lives” (Wilkes, 2002, p. 232), including the developmental stage of adolescence. Regardless of the source of resiliency, the trait is supported by the development of protective factors and hindered by the addition of risk factors.

### **Protective Factors**

Certain innate and external influences contribute to the ability of young people to successfully navigate life’s difficulties during typical stressors as well as when the situation is more complex (Walsh, 2003). The trials of life are not always detrimental; successful management of struggles helps young people mature developmentally (Woolley & Grogan-Kaylor, 2006). Protective factors help to counteract risk factors (Fraser, 1997) and can be the converse of risk factors (Benzies & Mychasiuk, 2009; Bowen et al., 2007; Masten & Coatsworth, 1998). For example, a risk factor such as availability of firearms in the home becomes a protective factor when the household is free of accessible lethal weapons. Protective factors benefit everyone, from young people with “ordinary lives” (Walsh, 2003, p. 212) to those with significant life difficulties. Identification of protective factors may be more important than determining risk factors, as, “high levels of protective factors are predicted to have stronger buffering effects” (Sharaf, Thompson, & Walsh, 2009) to bolster youth against life struggles.

### **Risk Factors**

Young people who demonstrate resiliency do so in spite of risk factors known to predict negative outcomes. Risk factors are “circumstances that increase the probability of poor

outcomes” (Benzies & Mychasiuk, 2009, p. 14), and can emerge through an individual’s micro- or macrosystem (Bronfenbrenner, 2005). Having certain risk factors does not guarantee a person will have difficulty adapting to difficult life situations, rather, they predict an increased likelihood of problematic behaviors that can decrease the individual’s level of resiliency (Carbonell, Reinherz, & Giaconia, 1998). Risk factors can be additive (Judge, 2005; Masten & Coatsworth, 1998), or occur in clusters (Fraser, 1997; Judge, 2005), resulting in a cumulative effect on the young person and in turn increasing the likelihood of poor outcomes, as “the number of risk factors matters more than the nature of the specific risks encountered” (Bowen et al., 2007, p. 231).

### **Assessment of the Extent of Youth Suicidal Behavior**

The risk and protective factors young people experience have been assessed for decades at both the national and state level. Surveys administered to youth provide data that guide the development of prevention efforts against youth suicide by offering information on young people’s self-reported thoughts and behaviors. From those results, initiatives can be developed that move youth to healthier outcomes. The best way to understand what youth are thinking and doing is to ask them directly. The CDC developed the national YRBS to query youth on their attitudes and actions related to risky and preventive behaviors (CDC, 2012). The YRBS is administered in conjunction with individual states, territories, and tribal nations to a representative sample of students in grades 9 through 12.

In addition, many states across the nation develop and administer their own youth surveys on a yearly (Florida, Kansas, Ohio, Oregon), biennial (Arizona, Illinois, Louisiana, Maine, Massachusetts, New Jersey, New York, Pennsylvania, Texas, Washington), or triennial (Minnesota) basis. Typically, these surveys are administered beginning in middle school or

junior high and continue through high school, although the questionnaire may be offered to every grade, or selected grades (such as every other or every third grade), depending on state practice. Iowa administers its own survey every two years to public and private school students in grades 6, 8, and 11.

### **Youth Risk Behavior Survey**

The YRBS is offered to youth in grades 9 through 12 and administered by states and local entities. The rationale for the YRBS is, “Priority health-risk behaviors, which are behaviors that contribute to the leading causes of morbidity and mortality among youth and adults, often are established during childhood and adolescence, extend into adulthood, and are interrelated and preventable” (CDC, 2012, p. 1). In 2011, the survey was offered to the 50 states and District of Columbia, with ultimately 15,425 questionnaires obtained from 41 states and 21 large urban areas (CDC, 2012). School districts in Iowa participated as well, but statewide response rates were less than 60%. As such, the survey results were considered representative of participating schools only and not students statewide, therefore Iowa’s responses were not included in the overall results (D. Eaton, personal communication, May 29, 2012).

Questions are included on the YRBS that specifically tie to suicidal intent or attempt, such as whether youth had “seriously considered” (CDC, 2012, p. 70) suicide, made a plan about how they would do so, or made an attempt that resulted in the need for medical treatment. Additional questions reflect known risk factors for suicide, such as asking if the youth felt so sad or hopeless, nearly each day for at least two weeks in a row, that they discontinued typical activities (CDC, 2012).

Nationally, 15.8% of youth surveyed in 2011 reported seriously thinking about suicide (CDC, 2012), an increase from 13.8% in 2009. This rate reflected a significant increase for both

genders, with the percentage of young women increasing from 17.4% to 19.3%, and young men from 10.5% to 12.5%. At 17.1%, ninth grade students were more likely than older high school-age peers to report considering suicide, a rate that diminished with each passing grade (CDC, 2012). While the proportion of youth who indicated thinking seriously about suicide is startling, it is a marked decrease from responses just over two decades ago, when 29% of youth replied affirmatively. Despite this, the number of young people nationally who report having seriously considered suicide, made a plan, attempted at least once, or needed medical care after an attempt has increased over the course of the last three surveys (CDC, [http://www.cdc.gov/healthyouth/yrbs/pdf/us\\_suicide\\_trend\\_yrbs.pdf](http://www.cdc.gov/healthyouth/yrbs/pdf/us_suicide_trend_yrbs.pdf), retrieved May 26, 2012).

### **Iowa Youth Survey**

The Iowa Youth Survey (ICSARE, 2011) is offered every two years statewide to students in grades 6, 8, and 11. In 2010, responses from 78,382 students, from both public and private schools, were considered in the analysis of the statewide data. The purpose of the survey is to provide current and trend data related to youth behaviors, in order to allow planners at the state, county, local, and school district level with information to guide prevention and intervention efforts for young people (ICSCARE, 2011).

The survey consists of 220 questions that ask youth to self-report on behaviors, attitudes, and beliefs, as well as a variety of factors related to peers, family, school, and community. Some of the questions reflect factors known to be protective for youth, for example, “On average during the school year, how many hours per week do you spend volunteering either by helping others or helping improve your school or community?” (ICSARE, 2011, p. 17) while others reflect known risk factors, such as, “How old were you (if ever) when you first tried marijuana (pot, grass, hash, bud, weed)?” (p. 25).

Many of the same types of questions offered by the YRBS are represented in the Iowa Youth Survey, and five questions related specifically to suicidal behaviors – thinking about suicide, developing a plan, making an attempt, needing medical care after an attempt, and a key symptom of depression – are worded exactly the same as in the YRBS. See Table 2.1, below, for a comparison of YRBS and Iowa Youth Survey results on the five questions related specifically to suicidal behaviors. When considering total responses (males and females combined), less than a 10% variance existed between the national and state responses of youth on these five questions.

Table 2.1

*Comparison of 2011 YRBS and 2010 IYS on Selected Questions Related to Suicide*

Question	Female		Male		Total	
	%		%		%	
	YRBS <sup>a</sup>	IYS <sup>b</sup>	YRBS <sup>a</sup>	IYS <sup>b</sup>	YRBS <sup>a</sup>	IYS <sup>b</sup>
During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities? (% = Yes)	32.7%	32%	19.3%	18%	25.8%	25%
During the past 12 months, did you ever seriously consider attempting suicide? (% = Yes)	17.4%	17%	11.7%	11%	14.6%	14%
During the past 12 months, did you make a plan about how you would attempt suicide? (% = Yes)	13.8%	11%	10.1%	9%	12.3%	10%
During the past 12 months, how many times did you actually attempt suicide? (% = $\geq 1$ time)	9.8%	7%	5.8%	4%	7.8%	6%
If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse? (% = Yes)	2.9%	3%	1.9%	2%	2.4%	2%

<sup>a</sup>n = 15,425 respondents nationwide, all grades combined (9-12)

<sup>b</sup>n = 23,657 respondents; questions asked of 11<sup>th</sup> grade only

(Adapted from CDC, 2012; ICSARE, 2011)

### **Macrosystems Impacting Adolescent Suicidal Behavior**

All individuals have a collection of protective and risk factors accumulated through lifetime experiences. Elements affecting a young person's likelihood of suicidal behavior are impacted by individual influences, family dynamics, and experiences at school and within the community. In the following sections, each of these macro- and microsystem environments are explored, with identification of specific risk and protective factors, some of which are amenable to intervention and others that are intrinsic in nature.

The presence of risk and protective factors impacts personal resiliency (Benzies & Mychasiuk, 2009; Judge, 2005; Masten & Coatsworth, 1998; Walsh, 2003, Woolley & Grogan-Kaylor, 2006), and those factors are influenced by a constellation of family (Reinherz, Giaconia, Paradis, Novero, & Kerrigan, 2008), school (Kandel et al., 1991; King, 2001; Nickerson & Slater, 2009), and community (Scales & Gibbons, 1996; Rishel, Sales, & Koeske, 2005) environmental influences. The literature is rife with research on risk and protective factors that contribute to a young person considering suicide. These include factors within the person's macrosystem, such as gender and race/ethnicity. The influences that serve to propel a young person to suicidal behavior are important to examine, because even as a leading cause of death for young people, clearly not every adolescent who has risk factors experiences early death due to suicide. However, even one attempt increases the likelihood of subsequent suicide (Friedman, 2006), perhaps by 10 to 60 times (Brent et al., 1999).

Macrosystems such as gender and race/ethnicity have a distinct impact on the likelihood of suicidal behavior. Although females have higher rates of suicide attempt, males are more likely to die by suicide (Kandel et al., 1991; Moskos, Achilles, & Gray, 2004; U.S. Department of Health and Human Services, 2001). Hispanic adolescents have a higher incidence of all

suicidal behavior (ideation, plan, or attempt), black youth have the lowest rate of suicide ideation or plan, and white youth have the lowest rate of attempts (CDC, 2010). In addition to these characteristics are microsystems that may protect the young person against suicidal behavior, and thus should be developed and supported, as well as risk factors that can be identified and potentially ameliorated.

### **Microsystems Impacting Adolescent Suicidal Behavior**

A great deal of research has been conducted on factors that impact youth suicidal behavior. Most research focuses on risk – circumstances (such as mental health) or actions (such as substance use) that contribute to the likelihood of engaging in suicidal behavior. However, there is some research on the role of protective factors that mitigate against youth suicide.

#### **Individual Characteristics**

Internal beliefs about oneself, intrinsic characteristics, and external behaviors make up a young person's microsystem (Bronfenbrenner, 2005). More research has been conducted on risk factors impacting adolescent suicide than on the protective factors that prevent suicidal behaviors. Each of these factors reflect both personal traits of the young person, behavioral choices, and effects of other microsystems on the adolescent.

**Protective factors.** Intrinsic characteristics that prevent adolescent suicide can be identified as protective factors which serve to support the youth becoming resilient, and consequently decrease the likelihood of suicidal behaviors. Youth who identify themselves as having positive self-esteem (Sharaf, Thompson, & Walsh, 2009) and a sense of purpose (Leffert et al., 1998), as well as problem-solving skills, self-confidence, and self-efficacy (Beautrais, 2003) are less likely to demonstrate behaviors related to suicide ideation or attempt. A positive self-esteem appears to do more than mitigate the likelihood of suicidal behaviors, as,

Appraisal of one's self as competent and worthy creates a sense of self-acceptance, self-respect, and satisfaction with one's self and life. These qualities enhance one's ability to overcome defeating thoughts about self and one's future in challenging and stressful events. Self-esteem may act as a prophylaxis against suicidal behaviors.... (Sharaf, Thompson, & Walsh, 2009, p. 165)

Thus, youth with a sense of self-efficacy and confidence in their ability to manage life challenges demonstrate resiliency through avoidance of self-destructive means of addressing problems.

**Risk factors.** Contributors to suicidal behavior can stem from intrinsic characteristics or the circumstances a young person encounters. For example, an inherent difficulty in regulating mood or responding to stressful situations contributes to a young person being more likely to act on suicidal thoughts (Mann, 2003). One of the strongest predictors of developing a suicidal plan (Borges, Angst, Nock, Ruscio, & Kessler, 2007) and carrying out an attempt is a previous history of such behaviors (National Institutes of Mental Health [NIMH], <http://www.nimh.nih.gov/health/publications/suicide-in-the-us-statistics-and-prevention/index.shtml>, retrieved May 12, 2012), and easy access to a lethal weapon in the home increases a youth's likelihood of death by suicide (Resnick et al., 1997). Even when the young person has not personally exhibited suicidal behaviors, adolescents exposed to someone who has attempted or died by suicide are at increased risk of ideation or attempt (Gutierrez, Muehlenkamp, Konick, & Osman, 2005; CDC, [http://www.cdc.gov/ViolencePrevention/pub/youth\\_suicide.html](http://www.cdc.gov/ViolencePrevention/pub/youth_suicide.html), retrieved May 12, 2012; NIMH, <http://www.nimh.nih.gov/health/publications/suicide-in-the-us-statistics-and-prevention/index.shtml>, retrieved May 26, 2012), especially when the person was a friend or

family member (Bearman & Moody, 2004), and appear more strongly impacted than even slightly older (e.g., college age) young people (Gutierrez et al., 2005).

***Mental health.*** The vast majority of youth who die by suicide have symptoms of a mental health diagnosis evident in life or through postmortem psychological autopsies (Mościcki, 2001). Research shows 90% of youth who die by suicide could have been identified as having mental illness (Brent et al., 1993; Shaffer et al., 1996). Depression (Bearman & Moody, 2004; Gutierrez et al., 2005; Kandel et al., 1991) and other mood disorders (Beautrais, 2003; Brent et al., 1999; Deas & Thomas, 2002; Friedman, 2006; Gould, Fisher, Parides, Flory, & Shaffer, 1996; Reinherz et al., 1995; Shaffer et al., 1996; Vitiello & Pearson, 2008; Simons & Murphy, 1985) as well as untreated mental health concerns (Friedman, 2006; Gould, Greenberg, Velting, & Shaffer, 2003; Gould et al., 2005; Horowitz, Ballard, & Pao, 2009; Husky, McGuire, Flynn, Chrostowski, & Olfson, 2009; Peña & Caine, 2006; Scott et al., 2010; Shaffer et al., 2004) increase the likelihood a young person will demonstrate suicidal behavior. Having a diagnosis of a mood disorder exacerbates other risk factors (King et al., 2001), and having more than one psychiatric diagnosis raises the odds of a suicide attempt at some point in the young person's lifespan from 7 to 24 times (Reinherz et al., 2008). Converse to intuition, a history of suicide ideation in the absence of either development of a plan or a subsequent attempt "is *negatively* related to subsequent risk of suicide plan and attempt....In other words, a history of not acting on suicide ideation is a significant predictor of continuing not to do so" (Borges et al., 2007, p. 310).

***Substance use.*** The use of alcohol, tobacco, or other substances impacts the likelihood of youth suicide (Aseltine, Schilling, James, Glanovsky, & Jacobs, 2009; Bae, Ye, Chen, Rivers, & Singh, 2005; Flisher et al., 2000; Friedman, 2006; Gould et al., 2003; King et al., 2001; Vitiello & Pearson, 2008), especially when combined with a mental health diagnosis (Brent et al., 1999).

Youth who regularly get drunk or high (Aseltine et al., 2009; Bearman & Moody, 2004; King et al., 2001) have higher rates of ideation, and those who smoke cigarettes daily, or use inhalants, are at increased risk of attempt (Bae et al., 2005). Youth who report smoking cigarettes daily have 6.6 greater odds of suicidal behavior (Flisher et al., 2000), and marijuana use is related to increased ideation and/or attempt (Flisher et al., 2000).

**Risky behaviors.** Additional factors that impact the likelihood an adolescent will express suicidal behaviors include chronic self-destructive behavior (Lester & Gatto, 1989), fighting and physical aggression (Flisher et al., 2000; King et al., 2001), carrying a weapon (Gardner et al., 2010; Vitiello & Pearson, 2008), and being “more volatile and troubled than those of other youths” (Reinherz et al., 1995, p. 607). Involvement in sexual activity (whether heterosexual or homosexual) is correlated with suicidal behaviors in young people (Flisher et al., 2000; King et al., 2001), and correspondingly, the break-up of a romantic relationship is also a risk factor (Shaffer et al., 1996).

### **Family Influences**

Compared to a plethora of investigations conducted on the impact of various individual characteristics on youth suicidal behaviors, there is considerably less research on the role family plays in impacting youth suicide. Family dynamics can serve as both protective and risk factors for young people against suicidal behavior, although more research has been done on the impact of family deficits as opposed to the benefit of family strengths.

**Protective factors.** The few studies that have been conducted focusing on family influences show strong and positive family relationships are keys to protecting young people from suicidal behavior. Adolescents who report having a positive and emotionally nurturing relationship with at least one family member (Beautrais, 2003), feeling valued and receiving

guidance from family members (Reinherz et al., 2008), and connected (Gould et al., 2003) or close (Kandel et al., 1991) to parents show evidence of decreased likelihood of suicidal behavior. Family cohesion, described as mutual involvement, shared interests, and emotional support, contributed to the adolescents being 3.5 to 5.5 times less likely to demonstrate suicidal behavior (Rubenstein, Halton, Kasten, Rubin, & Stechler, 1998).

**Risk factors.** Conversely, a few studies have shown many of the circumstances that increase a young person's likelihood of suicidal tendencies relate to a diminished level of involvement an adolescent has with parents or family members. For example, young people who report distant relationships (Kandel et al., 1991) or poor communication (Gould et al., 1996) with their parents tend to exhibit increased suicidal behavior. Absence of parental support (Simons & Murphy, 1985), as evidenced by youth whose whereabouts are not monitored (King et al., 2001) or who are less involved in activities with their parents (Bearman & Moody, 2004), has been shown to increase suicidal behavior in adolescents.

The family milieu also impacts the likelihood a young person will demonstrate suicidal behaviors. Dysfunctional family environments result in increased suicide ideation or attempt, although marital problems between parents are not seen as a significant contributor to suicidal behavior (King et al., 2001). Some researchers have found having a non-intact family (only one parent figure in the household) significantly increases the likelihood a young person will exhibit suicidal behavior (Gould et al., 1996; Rubenstein et al., 1998), while others have not found the circumstance to have an effect (King et al., 2001; Reinherz et al., 1995). Living in a household where a firearm is available increases the likelihood a young person will die by suicide (Brent et al., 1999; CDC, <http://www.cdc.gov/ViolencePrevention/pub/youthsuicide.html>, retrieved May

12, 2012; NIMH, <http://www.nimh.nih.gov/health/publications/suicide-in-the-us-statistics-and-prevention/index.shtml>, retrieved May 26, 2012).

**Familial psychopathology.** Having a parent with a psychiatric or substance use disorder contributes to the exhibition of suicidal behaviors in adolescents (Brent et al., 1999; Flisher et al., 2000; King et al., 2001). Particularly strong risk of suicide in adolescents occurs when other family members have exhibited suicidal behavior (Gould et al., 1996), especially if the youth's mother died by suicide (Kuramoto et al., 2010). Some researchers have evidence that suicidal behavior is a genetically transmitted characteristic independent of family members' psychiatric diagnoses (Brent & Mann, 2005), suggesting that "suicidal behavior that begins before 25 years of age is highly familial, and having a greater number of affected family members is associated with an earlier age at appearance of suicidal acts" (Brent & Mann, 2006, p. 2720).

### **School Influences**

In comparison to the amount of research conducted on the influence of family on youth suicide, investigation of the role of the school environment on adolescent suicidal behavior is even scarcer. The impact of relationships and behaviors with educational staff and fellow students has a significant role in adolescents' lives, especially considering high school students spend at least a third, and sometimes up to half, of their waking hours in school or participating in school-sponsored activities (Bureau of Labor Statistics American Time Use Survey, <http://www.bls.gov/tus/charts/chart8.pdf>, retrieved June 10, 2012). Because of the high percentage of a young person's day where school personnel interact with the youth, school staff "can understand the stressful situations students encounter, and can respond to direct or subtle cries for help" (Ward, 1995, p. 92). However, adolescents who are most at risk – those who have had suicide attempts – may not reach out to school personnel or see school adults as appropriate

people to seek out when in crisis (Wyman et al., 2008). School factors that affect youth suicidal behavior include how a student is treated at school by peers and staff, as well as behavioral choices of the young person while on school grounds.

**Protective factors.** Youth who indicate feeling connected to school (Beautrais, 2003; King, 2001) are less likely to report suicidal behavior. Youth who have a teacher perceived as someone who understands and takes an interest in the teen (Simons & Murphy, 1985), or is seen as being fair and caring about the young person (McNeely & Falci, 2004), are less likely to exhibit suicidal attempts. In a longitudinal survey of adolescents, Resnick et al. (1997) discovered a high level of connectedness to school was one of the primary protective factors against adolescent suicidal behavior. Other researchers have found an indirect link between youth's relationship with school and suicidal behavior. Kidger, Araya, Donovan, and Gunnell (2012) conducted an analysis of the impact of school interventions on adolescent mental health, and found students who reported feeling more connected to school in turn had better mental health, which is in turn a prime protective factor against suicidal behavior.

**Risk factors.** Adolescents who demonstrate suicide ideation report having more general problems in school (Gould et al., 1996), and tend to show less interest in their school work in addition to diminished grades (Kandel et al., 1991), although other researchers have not found a relationship between suicidal behaviors and decreased grades in school (King et al., 2001). Youth who scored higher on a scale to assess whether they had been treated poorly by fellow students were in turn more likely to report suicide ideation (Simons & Murphy, 1985). High school students who reported having been threatened or injured at school or having peers steal or damage personal belongings were more likely to report suicide ideation (Nickerson & Slater, 2009). Participation in certain risky behaviors while on school grounds is correlated with suicidal

behaviors. Actions such as carrying a weapon (Bae et al., 2005) or having been in a fight at school (Nickerson & Slater, 2009) are strong predictors of suicidal behaviors in adolescents.

### **Community Influences**

The role of community in preventing or contributing to adolescent suicidal behavior has received very little attention. The research that does exist focuses on the role of positive relationships with community members, and the subsequent effect of those relationships on the ability to support young people in their various microsystems. For example, research exists related to the impact of the neighborhood (community) on school success (Woolley & Grogan-Kaylor, 2006). Within communities, a sense of “social disorganization” (Bowen et al., 2002, as cited in Woolley & Grogan-Kaylor, 2006, p. 94) contributes to youth being less successful in school. Social organization is a reflection of the characteristics of a neighborhood (e.g., crime, transiency, economic resources), and impacts the quality of relationships community members have with each other (Hipp, 2009). Thus, the strength of community and neighborhood relationships impacts a youth’s likelihood of school success, which is in turn a protective factor against suicidal behavior.

One means of community influence on adolescents and their likelihood of suicidal behavior is the development of positive relationships with people outside the realm of family. Scales and Gibbons (1996) indicate “a relationship with at least one caring adult, not necessarily a parent, is perhaps the single most important element in protecting young people who have multiple risks in their lives” (p. 366). Thus, a positive relationship with non-parental adults is a protective factor that in turn supports positive development in adolescents (Rishel, Sales, & Koeske, 2005). This perspective is echoed by Bronfenbrenner (2006), who writes, “in order to develop normally, a child needs the enduring, irrational involvement of one or more adults in

care of and in joint activity with that child. In short, *somebody has to be crazy about that kid*" (p. 262).

Positive, supportive relationships with community members impact the adolescent in additional ways. Strong and supportive relationships with non-parental adults are associated with positive mental health in youth (Scales & Gibbons, 1996), and decreased behavior problems (Rishel, Sales, & Koeske, 2005). In short, "non-parental adults may act to protect youth from a variety of poor outcomes" (Rishel, Sales, & Koeske, 2005, p. 20). Thus, it appears the role of community in adolescent suicide prevention is an indirect path. Youth who develop a positive relationship with a community adult may be more comfortable reaching out to the adult during difficult times.

### **Assessing Risk and Protective Factors**

Many of the microsystem risk and protective factors identified as impacting adolescent suicidal behavior are reflected in the questions included in the Iowa Youth Survey. Assessment of these factors contributes to a better understanding of the impact of various environments upon the young person's potential for suicide. See Table 2.2 for highlighted Iowa Youth Survey questions and the risk or protective factors reflected in those questions that specifically address microsystem influences contributing to or mitigating against adolescent suicide.

Table 2.2

*Selected Risk and Protective Factors Reflected in Iowa Youth Survey*

Type of Factor	Iowa Youth Survey Question
<b>Risk</b>	
Self-esteem	I feel I do not have much to be proud of.
Risk-taking tendency	Even if it is dangerous, I like to do exciting things.
Mood disorder	During the past 12 months, did you ever feel so sad or hopeless almost every day for 2 weeks or more in a row that you stopped doing some usual activities?
Alcohol use	In the past 30 days, on how many days have you had at least one drink of alcohol?
Marijuana use	In the past 30 days, on how many days have you used marijuana?
Physical fighting	In the past 12 months, how often have you beaten up on or fought someone because they made you angry?
Family discord	There are people living in my home who have a serious alcohol or drug problem.
<b>Protective</b>	
Self-efficacy	I believe that working hard now will make my life successful in the future.
Risk-avoidance tendency	I can say “no” when someone wants me to do things I know are wrong or dangerous.
Problem-solving	When I have problems, I am good at finding a way to fix them.
Parental connectedness	I feel very close to at least one of my parents/guardians.
Home structure	In my home there are clear rules about what I can and cannot do.
Parental oversight	A parent/guardian knows where I am and who I am with, especially in the evening and on weekends.
Parental communication	I can talk about the things that bother me or I don’t understand with someone in my home.
Parental involvement	At least one of my parents/guardians goes to school activities that I am involved in.
Parental involvement	At least one of my parents/guardians goes to school activities that I am involved in.
School connectedness	I care about my school.
School staff relationships	There is at least one adult at school that I could go to for help with a problem.
Community Support	Adults in my community care about people my age.

(ICSARE, 2011)

## **Microsystems Impacting Adolescent Male Suicidal Behavior**

Adolescent males die by suicide at a rate greater than their female peers (Murphy et al., 2012), and have a different constellation of risk and protective factors impacting the likelihood of suicidal behavior than females in the same age range (Bearman & Moody, 2004; Gould et al., 2004; Shaffer et al., 1996; Simons & Murphy, 1985). Young men ages 15 to 19 years are almost four times more likely to die by suicide than similarly-aged females (CDC, 2006a), and are more likely to see suicide as an option for managing problems (Gould et al., 2004). However, the influences to suicidal behavior specific to young males have had little exploration beyond *individual* predictors.

It is not enough to examine only the individual predictors – the environments that impact the adolescent male must be studied as well. These microsystems, described by Bronfenbrenner (2005) as “structures and processes taking place in an immediate setting containing the developing person (e.g., home, classroom, playground)” (p. 80) play a significant role in the young males’ development. Minimal research has been done to identify protective factors specific to adolescent males, and some of these studies are quite dated. The microsystems addressed in this study – the role of individual, family, school, and community influences on adolescent male suicidal behaviors – are specifically examined in the following sections.

### **Individual Characteristics**

Certain intra- and interpersonal dynamics impact the likelihood of suicidal behavior in adolescent males. High school males who report having a sense of purpose for their lives, negative self-esteem, and lack of hope are more at risk of suicidal behavior (Simons & Murphy, 1985). Difficult romantic relationships, such as having been physically abused by a boyfriend or girlfriend, place adolescent males at greater risk of attempting suicide (Bae et al., 2005), and

stressful life events (Kandel et al., 1991) as well as chronic stress (Kelly et al., 2001) contribute to increased suicide ideation. Suicidal ideation among younger adolescent males (12 to 14 years) is a predictor of attempt therefore that age group is at even greater risk of completed suicide (Wolitzky-Taylor et al., 2010).

**Mental health.** In adolescent males, a diagnosed phobia (simple or social) by age 14 increases the odds of suicidal ideation 2.5 to 3 times, while the presence of three or more diagnoses contributes to 24 times higher odds of ideation (Reinherz et al., 1995). Young males who indicated a key symptom of depression, as delineated by the American Psychiatric Association (2000), of feeling sad or hopeless daily for two or more weeks, had increased odds of attempt (Bae et al., 2005) and ideation (Kandel et al., 1991). Additional diagnoses that significantly increase the odds of an adolescent male attempting suicide include mood disorder, conduct disorder, and anxiety disorders (Brent et al., 1999; Shaffer et al., 1996). Greater than any other risk factor, however, is a history of prior suicide attempt in male adolescents, which increases the odds 30-fold a young man will die by suicide (Shaffer et al., 1996).

**Substance use.** The use of substances increases the probability a young male will exhibit suicidal behavior, with the substances varying from those that influence similar behavior in female peers. Adolescent boys that report smoking daily, having ever drunk alcohol, and using inhalants or hallucinogens are more likely to report suicidal attempts (Bae et al., 2005). When chemical use escalates to the point of the young man being diagnosed with a substance use disorder (alcohol or drugs), the corresponding risk of suicide attempt increases significantly, ranging from over 7 (Shaffer et al., 1996) to nearly 12 times greater odds (Brent et al., 1999). Substance use has an additive effect on mental health; adolescent males who use drugs of any kind are more likely to have “depressive mood” (Kandel et al., 1991, p. 296).

As if the risk factor of having psychopathology is not enough, adolescent males are more likely to think they should manage their own mental health concerns, and thus are less likely to reach out to someone who could help. Young males are also more likely to think they should keep emotional problems to themselves. And finally, adolescent males are more likely to turn to substances to cope with a depressed mood (Gould et al., 2004).

**Risky behaviors.** A collection of behavior choices also impacts the likelihood a young male will exhibit suicidal behavior. Personally carrying a weapon of any kind (knife, gun, etc.) increases the probability of attempt in males (Bae et al., 2005), as does access to a firearm within their household (Bearman & Moody, 2004). In a study of older high school youth, Lester and Gatto (1989) found that depression, while a contributor to suicidal ideation, was less of a correlate for adolescent males than self-destructive behavior such as enjoying dangerous activities, getting into fights, and excessive drinking.

### **Family Influences**

Bronfenbrenner (2005) extensively examined the role of family on young people and their future capabilities, and believed,

The family provides the most important developmental conditions: the love and care that a child needs to thrive. A healthy child and future adult is one who has such devoted people actively engaged in its life – those who love it, spend time with it, challenge it, and are interested in what it does and wants to do, in what it accomplishes from day to day. Other settings, such as school, church, or day care, are important to a child's development, but none can replace this basic unit of our social system: *the family is the most humane, most powerful, and by far the most economical system known for making and keeping human beings human.* (p. 262)

Indeed, other research supports this perspective as well. The level of parental involvement in a young person's life supports the likelihood of success in school and beyond and mitigates risk factors. For example, Simons and Murphy (1985) found in adolescent males, the level of parental support impacted the extent of emotional problems in their sons, which in turn impacted the teen's likelihood of suicidal ideation. How family members treat each other also impacts young males' likelihood of suicidal behavior. Adolescent males in households with "serious family discord" (Reinherz et al., 1995, p. 603) are over 3.5 times more likely to demonstrate suicidal ideation. This study includes an examination of constructs related to the role of family relationships on the likelihood of suicidal behavior in male high school students. The influences included in the family construct relate to family cohesion, communication, and support.

### **School Influences**

The school setting is an important contributor to a young person's circle of influence. During the months class is in session, young people arguably may spend more time with school personnel and fellow students than with parents or other family members. While these relationships may seem perfunctory, they can become strong protective factors. In Bronfenbrenner's (2005) description of the impact of the microsystem, he specifically mentions the importance of the role of school upon the developing young person.

Researchers have noted the impact of the school environment on the likelihood of adolescent male suicidal behavior, but have primarily done so from the perspective of positive and negative peer relationships. For example, Bearman and Moody (2004) found adolescent males who have a denser network of friendships at school are at decreased risk of suicide. The quality of peer relationships on school grounds can have a negative impact on a young male's likelihood of exhibiting suicidal behavior. Having been threatened or hurt by peers at school,

having fought with someone at school, and having had personal items damaged or stolen at school are all predictors of suicidal behavior in young men (Nickerson & Slater, 2009). A young male's behavior choices while at school are also linked to tendencies toward suicidal behavior. Nickerson and Slater (2009) found carrying a weapon to school is correlated with suicidal behavior in adolescent males.

While the role of positive relationships with school staff has been researched (Beautrais, 2003; Gould et al., 1996; Simons & Murphy, 1985), there is scarce research on the impact of those relationships specific to prevention of suicidal behavior in adolescent males. This study includes an examination of a construct related to the role of school on the likelihood of suicidal behavior in male high school students. The influences included in the school construct relate to connectedness to school and relationships with school staff.

### **Community Influences**

In the course of the literature review for this study, no research was located on the presence or quality of relationships between adolescent males and community members as they relate to suicidal behavior. As discussed in the section on the role of community on teens of either gender, positive relationships with adults can be a protective factor in adolescent development (Scales & Gibbons, 1996). It is often expected positive relationships will exist with family members, and support from family members is a strong protective factor against depression in adolescents (Reinherz et al., 2008), which is in turn a key predictor of suicide (Beautrais, 2003).

However, if adolescents do not feel comfortable approaching parents, regardless of the family members' intent, youth are not able to take advantage of the protection those relationships can offer. In a study by De Wilde, Kienhorst, Diekstra, and Wolters (1994), youth who had

attempted suicide reached out more to non-parental adults than to parents, as if “due to the turmoil in their families, [they] relied more on persons outside their families for support and understanding” (p. 57). Thus, positive relationships with adults other than parents may be even more important when young people feel they cannot turn to their own family members during psychological distress.

### **Summary**

The relationship between individual factors, both intrapersonal and interpersonal, and adolescent suicidal behavior has been researched extensively. Far less research has been conducted on the role of family, school, and community on suicidal behavior among adolescents, and even less conducted specific to the impact of those microsystems on young males. This study seeks to address that gap by examining individual risky and resilient behaviors, as well as the environments of family, school, and community, that contribute to adolescent male suicidal behavior, including intent and attempt.

## CHAPTER 3

### METHODOLOGY

*Most people are uncomfortable with the topic of suicide. Too often, victims are blamed, and their families and friends are left stigmatized. As a result, people do not communicate openly about suicide. Thus an important public health problem is left shrouded in secrecy, which limits the amount of information available to those working to prevent suicide.*

– *Centers for Disease Control, [http://www.cdc.gov/ViolencePrevention/pub/youth\\_suicide.html](http://www.cdc.gov/ViolencePrevention/pub/youth_suicide.html), retrieved May 12, 2012*

The purpose of this study was to examine factors associated with suicidal behavior in adolescent male 11<sup>th</sup> grade students, through an analysis of statewide data from the 2010 Iowa Youth Survey. The research design was guided by using Bronfenbrenner's (2005) bioecological model of human development as a conceptual framework, which interprets human behavior as a function of the person's environment. Understanding the factors that contribute to the likelihood an adolescent male will consider suicidal behavior can aid in prevention strategies specific to such behaviors in young men. This chapter provides a detailed explanation of the research design including description of the research questions considered, methodological approach, discussion of the data set used for the study, and examination of the variables and data analysis. The final sections of the chapter include the limitations and delimitations of the study.

#### **Research Design**

This study was informed using an objectivistic epistemology and postpositivistic theoretical perspective, and conducted using survey research through a quantitative approach. Statement of the philosophical orientation of this study allows the reader to have confidence in the research conducted, and provides a means of delineating why the process and results are trusted (Crotty, 1998a). The identification of philosophical perspective plays a reciprocal role as, “theory provides context without which the research could not be meaningful and research

generates and tests theory without which the theory would not have meaning” (Camp, 2001, p. 12).

The epistemology of this study operates from an objectivist paradigm, which Creswell (2009) notes originates from the belief there is but “one reality; knowable within a specified level of probability” (p. 13). Objectivism allows the researcher and reader to operate from the framework that knowledge exists “independently of consciousness and experience,” (Crotty, 1998a, p. 5) and can be eminently knowable, reportable, and quantifiably analyzed. As a paradigm, objectivism reflects the tenets of scientific research, guided by the following principles:

1. Use of a *solid research design*.
2. The *researcher must be competent* to conduct the research.
3. *Consequences of the research must be identified*.
4. *The sample selection must be appropriate* for the purposes of the study, representative of the population to benefit from the study, and sufficient in number.
5. The participants must agree to participate in the study through *voluntary informed consent*.
6. The researcher must inform the participants *whether harm will be compensated*.

(Creswell, 2009, p. 14)

Interpretation of data through a postpositivist perspective secures the researcher’s role in analysis, as the framework “offers assurance of unambiguous and accurate knowledge of the world” (Crotty, 1998b, p. 18). Grounding the theoretical framework in the postpositivist perspective provides evidence the research is *posited*, that is, based on sound scientific method,

not on value-laden presumptions (Creswell, 2009). The result is scientific research conducted on observable and measurable variables, with guidelines that allow for assurance of the results.

### **Methodological Approach**

A common methodology used in postpositivist research is the use of surveys to obtain data. Survey research is appropriate when the goal is to explore the relationships between responses (Fraenkel & Wallen, 2009). Results of the statewide 2010 Iowa Youth Survey were used to examine the relationships between the independent and dependent variables discussed later in this chapter. Detailed information about the Iowa Youth Survey is located in the Survey Instrument section of this chapter. Through completion of a consent process with the Iowa Department of Education, raw data from the 2010 Iowa Youth Survey were released for the purposes of this study. Because data from the Iowa Youth Survey are considered a secondary data set, the Drake University Institutional Review Board determined the study was eligible for exempt status and approved the research application effective March 29, 2012.

### **Research Questions**

The following research questions are addressed in this study:

1. What are the background characteristics of the 11<sup>th</sup> grade males in the 2010 Iowa Youth Survey data set?
2. To what extent do race/ethnicity, individual risky and resilient behaviors, family cohesion, school connectedness, and community support predict an 11<sup>th</sup> grade male's likelihood of suicide intent?
3. To what extent do race/ethnicity, individual risky and resilient behaviors, family cohesion, school connectedness, and community support predict an 11<sup>th</sup> grade male's likelihood of suicide attempt?

### **Research Setting**

The analyses were conducted using data from the Iowa Youth Survey 2010 statewide results. The Iowa Youth Survey is offered every two years to public and private schools across Iowa that enroll students in grades 6, 8, and 11. Administration of the questionnaire occurred within each school district during a 90-day time period between September 27, 2010 and December 17, 2010. In the fall prior to administration, information about the survey was provided to parents, who then chose whether or not they would allow their children to participate. Parents who elected not to have their children participate were required to sign and return a refusal of consent form, and the student was provided with an alternate activity on the day of survey administration. Upon administration of the survey, youth whose parents had consented were provided the option to participate (assent) or not. Youth who elected not to participate were provided with an alternate activity during the time of the survey.

### **Sample and Participants**

A total of 78,382 validated records were obtained through administration of the 2010 Iowa Youth Survey (ICSARE, 2011). Survey responses were collected from 86% (n = 307) of Iowa's 359 public school districts, 17% (n = 31) of the state's 183 non-public school districts, and one regent's institution. Records were obtained from all 99 Iowa counties, with nearly every county having at least 200 student responses each. ICSARE conducted a variety of data cleansing strategies, including logic checks to assess for inconsistent, conflicting, or illogical responses; cross-references and matching unique identification numbers for school districts and respondents; and date and time checks.

These data cleaning methods resulted in the removal of 2,367 surveys. Ultimately, 68.1% of all Iowa students enrolled in a public or private school in grades 6, 8, or 11 at the time of

administration completed the survey. This number is lower than previous years, an effect attributed by ICSARE (2009) as due, in part, to decreased funding incentives provided to districts for participation. In 2008, statewide participation by school districts was 83.5% (97,741 validated records) (ICSARE, 2009).

Of the total responses, 11,919 were from participants who identified as male and in 11<sup>th</sup> grade. Within the raw data set provided by ICSARE, participants who identified as being in 11<sup>th</sup> grade also reported their age as between 9 and 18 years, although the published state data reflected 11<sup>th</sup> grade students as falling only within the range of 16 to 18 years. This study followed the same selection pattern, and included only youth who identified as both age 16 through 18 or older, and in the 11<sup>th</sup> grade. All other cases (e.g., participants who identified as age 9 through 15) were presumed as errors and removed from the data set, leaving 11,780 cases. As suggested by Tabachnick and Fidell (2007), cases with missing data for any of the independent or dependent variables were removed, leaving 9,910 cases for analysis. Within this final data set, the percentage of respondents in each demographic category changed only slightly as compared to the percent of cases in the original data set.

Participant age ranged from 16 years to 18 years or greater, although since the question did not allow for the youth to indicate a specific age if choosing “18+” it is not known how many were 18 years of age and how many were older than 18 years. The majority of participants were white (88.4%) and indicated living with at least one parent (95.4%). Eighty-two percent of youth indicated not having a physical, health, or learning disability, with 8.8% reporting having a disability and 9% reporting uncertainly as to whether they did or not. A frequency distribution of participant demographic statistics is provided in table 3.1.

Table 3.1

*Descriptive Statistics for Participant Demographics (n = 9,910)*

Variables	<i>n</i>	% of sample
Age		
16	6,534	65.9
17	3,281	33.1
18+	95	1.0
Race/Ethnicity		
White	8,759	88.4
African American	416	4.2
American Indian or Alaska Native	90	.9
Asian/Pacific Islander	208	2.1
Hispanic or Latino	437	4.4
Living Arrangements		
With Parent/s	9,453	95.4
With Grandparents or Other Relatives	1,790	2.3
Independent Living	48	.5
Foster Parents	38	.4
Shelter Care	26	.3
Residential Group/Home	18	.2
Other	95	1.0
Disability Status		
No Disability	8,126	82.0
Physical, Health, or Learning Disability	868	8.8
Don't Know	887	9.0

Note: Race/Ethnicity was recoded into a dichotomous variable for analysis. Details of coding are provided in the section on variables within this chapter.

### Survey Instrument

The 2010 Iowa Youth Survey was developed through a partnership between the Iowa Departments of Public Health, Education, and Human Rights, as well as the Iowa Governor's Office of Drug Control Policy. Collection of the raw data was conducted by the Iowa Consortium for Substance Abuse Research and Evaluation [ICSARE], located at the University of Iowa. The survey was first administered in 1975, and the 2010 results are from the thirteenth

in a series conducted every two or three years (ICSARE, 2011). Surveys administered before 1999 were offered to a sample of respondents selected from approximately one-third of youth from Iowa public schools only. Starting in 1999, the survey was offered to all public and private school districts across Iowa, plus students attending school in alternative settings. In 2008, administration of the Iowa Youth Survey changed from every three years to every other year. The Appendix includes the survey questions used in the analyses of this study.

The Iowa Youth Survey consisted of 220 close-ended questions that asked students to self-report on a range of prosocial and risky behaviors. Youth were also asked a variety of questions related to demographics, attitudes and beliefs, and relationships with peers, family members, school personnel, and community members (ISCARE, 2011). These questions were used to develop two constructs for individual risky behaviors, and one construct each for individual resilient behaviors, family cohesion, school connectedness, and community support. In addition to these six constructs, analysis included demographic data (race/ethnicity) and its relationship with youth responses on questions asking about behaviors related to suicide intent and attempt.

### **Variables**

This study was operationalized through integration of Bronfenbrenner's (2005) bioecological model (described in chapter 1) and the results of the 2010 Iowa Youth Survey. Survey results for Iowa were used to examine individual, family, school, and community predictors of suicidal behavior in high school males. Independent variables were identified at both the microsystem and macrosystem levels, and were tested as potential predictors of suicidal behavior. The dependent variables consisted of measures of suicidal behavior. Both independent and dependent variables are described in detail in the following sections.

## **Independent Variables**

The method of measurement for the independent variables of demographics and suicidal behavior is described below.

**Demographics.** Demographic data were measured through participant responses on the Iowa Youth Survey. Results are provided for race/ethnicity, recoded into a dichotomous variable.

**Race/ethnicity.** Race/ethnicity was measured by participant self-identification from the following options: White, African American, American Indian or Alaska Native, Asian/Pacific Islander, and Hispanic or Latino. Aside from the category of White, the number of participants in each of the race/ethnicity categories was small, so the responses for race/ethnicity were recoded into minority participants (coded = 0) and majority participants (coded = 1). The minority category consists of African American, American Indian or Alaska Native, Asian/Pacific Islander, and Hispanic or Latino. The majority category consists of all White responses.

**Parameters for analysis.** Each of the independent variables consists of constructs developed through the process of factor analysis. According to Tabachnick and Fidell (2007), factor analysis is used to determine “which variables in the set form coherent subsets that are relatively independent of one another” (p. 607). The variables are then considered correlated and result in a new variable or *factor*. The goal of factor analysis is to combine a number of variables into fewer, more concise measures (Tabachnick & Fidell, 2007), which can in turn result in constructs (Green & Salkind, 2011). Constructs reflect when “a cluster of highly intercorrelated variables results in a factor” (Vogt & Johnson, 2011, p. 137), which can be used to describe the relationships between each of the individual measures under study.

Principal components analysis with varimax rotation was used in the factor analysis, which allowed for the ability to “maximize the variance of factor loadings by making high

loadings higher and low ones lower for each factor” (Tabachnick & Fidell, 2007, p. 620), thereby making it more evident whether each variable contributed to the newly developed subset.

Tabachnick and Fidell (2007) recommend interpreting variables only if they load at .320 or higher. As a conservative approach, only factors that loaded at the .450 level or greater were included in each construct, as, “the higher the loading, the closer the association of the item with the group of items that makes up the factor” (Vogt & Johnson, 2011, p. 139). Kaiser’s measure of sampling adequacy (KMO) was evaluated for each construct. This measure reflects whether the correlations under analysis are of sizable enough to use for factor analysis, with suggested values of at least .6 (Tabachnick & Fidell, 2007).

The original measure for each of the items included factor analysis consisted of a 4-point Likert scale. Because the original data were not coded in a ranking order, responses were recoded into dichotomous variables. According to Percy (1976) the use of a dichotomous scale does not decrease the validity or reliability of the measurement. Percy describes both sides of the debate as to whether a dichotomous variable is appropriate for use in correlation coefficients, and presents data to support that the number of scale intervals in a measure (e.g., a 4-point Likert scale versus a 2-point dichotomous scale) does not ultimately impact the results of factor analysis. In following the recommendations described in this section, the parameters of .450 or higher loading of factors, .6 or higher Kaiser’s measure of sampling adequacy (KMO), and use of a recoded dichotomous variable were used in each of the six constructs reported in the sections below.

**Individual risky behaviors constructs.** The variable of *Individual Risky Behaviors* was measured by survey questions that asked participants to respond to nine statements about behaviors or personal beliefs identified through the literature review as associated with at-risk

behaviors. Each question was answered via a multi-point scale reflecting how often the respondent had participated in the activity (e.g., 0 days, 1 to 2 days, 3-5 days, etc.) such as in the question, “During the last 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is within a couple of hours?”

These nine questions asked about participant’s frequency of behavior and were recoded into the dichotomous variable of Did Not Participate in Behavior (coded = 0) or Participated in Behavior (coded = 1). Through the method of exploratory factor analysis, the nine questions were factored into two constructs that measured individual risky behaviors where higher values on the construct indicate more individual risky behaviors.

***Factor analysis for individual risky behaviors.*** An exploratory factor analysis was used to create two construct variables for individual risky behavior. Nine questions measured on the same dichotomous (0 = Absence of the behavior, 1 = Presence of the behavior) response scale were entered into the analysis for individual risky behaviors.

From the original nine questions, four items aligned to represent one factor, and five items aligned to represent a second factor accounting for 53.17% of the variance in individual risky behaviors. Kaiser’s measure of sampling adequacy (KMO) for the construct as a whole was .796. Four survey items loaded into the factored variable reflecting individual risky behaviors – *substance use* (eigenvalue = 3.38, variance explained = 37.57%). See Table 3.2 for factor structure and loadings for the individual risky behaviors construct of *substance use*.

Table 3.2

*Factor Analysis for Individual Substance Use Construct*

Item (prior 30 days)	Factor Loadings
Substance Use ( $\alpha = .786$ )	
Consumed 5 or more alcoholic drinks	.868
Had at least one drink of alcohol	.858
Used marijuana	.668
Drove a car or other motor vehicle after using any amount of alcohol or drugs	.634

Five survey items loaded into the second factored variable reflecting individual risky behaviors – *anti-social choices* (eigenvalue = 1.40, variance explained = 15.60%). The factor structure and loadings for the individual risky behaviors construct of *anti-social choices* is reported in Table 3.3.

Table 3.3

*Factor Analysis for Individual Anti-social Choices Construct*

Item (prior 12 months)	Factor Loadings
Anti-social Choices ( $\alpha = .705$ )	
Beaten up on or fought someone because they made youth angry	.718
Disciplined at school for fighting, theft, damaging property	.717
Damaged property just for fun	.677
Stole something	.646
Carried a weapon to school	.543

**Individual resilient behaviors construct.** The variable of *Individual Resilient Behaviors* was measured by survey questions that asked participants to rate their agreement with five statements regarding behaviors identified through the literature review as associated with resilient behavior. Each question had a 4-point Likert-type response scale with 1 = agree, 2 = disagree, 3 = strongly agree, and 4 = strongly disagree. Because the original data were not coded

in a ranking order, responses were recoded into the dichotomous variable of Disagree (coded = 0) or Agree (coded = 1). Through the method of exploratory factor analysis, these five questions factored into a construct that measured individual resilient behaviors, with higher scores indicating more resilient behavior.

***Factor analysis for individual resilient behaviors.*** An exploratory factor analysis was used to create a construct variable for individual resilient behavior. Five questions measured on the same dichotomous response scale were entered into the analysis. Kaiser's measure of sampling adequacy (KMO) for the construct was .753. The five items loaded into the factored variable reflecting individual resilient behaviors – *self-determination* (eigenvalue = 2.56, variance explained = 25.57%). The factor structure and loadings for the individual resilient behaviors construct of *self-determination* is reported in Table 3.4.

Table 3.4

*Factor Analysis for Individual Self-determination Construct*

Item	Factor Loadings
Self-determination ( $\alpha = .600$ )	
When I have problems, I am good at finding a way to fix them	.668
I believe that working hard now will make my life successful in the future	.652
I accept responsibility for my actions when I make a mistake or get into trouble	.644
I think things through carefully before I make a decision	.526
I can say "no" when someone wants me to do things I know are wrong or dangerous	.505

**Family cohesion construct.** The variable of *Family Cohesion* was measured by survey questions that asked participants to respond to four statements regarding personal beliefs identified through the literature review as associated with family cohesion. Each of the questions asked participants to respond to statements via a 4-point Likert-type scale of 1 = agree, 2 = disagree, 3 = strongly agree, and 4 = strongly disagree. Because the original data were not coded

in a ranking order, each of these responses was recoded into the dichotomous variable of Disagree (coded = 0) or Agree (coded = 1). Through the method of exploratory factor analysis, these four questions were factored into a construct that measured family cohesion, with higher scores indicating more family cohesion.

***Factor analysis for family cohesion.*** An exploratory factor analysis was used to create a construct variable for family cohesion. Eight questions measured on the same dichotomous response scale were entered into the analysis. Four items loaded into the factored variable reflecting family cohesion – *family engagement* (eigenvalue = 2.62, variance explained = 32.75%). Kaiser’s measure of sampling adequacy (KMO) for the construct was .744. See Table 3.5 for factor structure and loadings for the family cohesion construct of *family engagement*.

Table 3.5

*Factor Analysis for Family Engagement Construct*

Item	Factor Loadings
Family Engagement ( $\alpha = .750$ )	
I can get help and support when I need it from someone in my home	.850
I can talk about the things that bother me or I don’t understand with someone in my home	.841
I feel very close to at least one of my parents/guardians	.809
In my home there are clear rules about what I can and cannot do	.468

**School connectedness construct.** The variable of *School Connectedness* was measured by survey questions that asked participants to rate their agreement with six statements regarding behaviors identified through the literature review as associated with school connectedness. Each question could be answered via response to a 4-point Likert-type scale with 1 = agree, 2 = disagree, 3 = strongly agree, and 4 = strongly disagree. Because the original data were not coded in a ranking order, responses was recoded into the dichotomous variable of Disagree (coded = 0)

or Agree (coded = 1). Through the method of exploratory factor analysis, these six questions were factored into a single construct that measured school connectedness, with higher values indicating more connectedness to school.

**Factor analysis for school connectedness.** An exploratory factor analysis was used to create the construct variable for school connectedness. Six questions measured on the same dichotomous response scale were entered into the analysis. Each of these six items aligned under a single construct used to create the factored variable of *school connectedness* (eigenvalue = 3.02, variance explained = 50.25). Kaiser's measure of sampling adequacy (KMO) was .843. See Table 3.6 for factor structure and loadings for the construct of *school connectedness*.

Table 3.6

*Factor Analysis for School Connectedness Construct*

Item	Factor Loadings
School Connectedness ( $\alpha = .798$ )	
My teachers care about me	.798
My teachers are available to talk with students one-on-one	.751
My teachers notice when I am doing a good job and let me know about it	.712
There is at least one adult at school that I could go to for help with a problem	.694
I care about my school	.686
I try to do my best in school	.595

**Community support construct.** The variable of *Community Support* was measured by survey questions that asked participants to rate their agreement with five statements regarding behaviors identified through the literature review as associated with community support. Each question could be answered via response to a 4-point Likert-type scale with 1 = agree, 2 = disagree, 3 = strongly agree, and 4 = strongly disagree. Because the original data were not coded in a ranking order, responses were recoded into the dichotomous variable of Disagree (coded = 0) or Agree (coded = 1). Through the method of exploratory factor analysis, these four questions

were factored into a single construct that measured community support, with higher values indicating more community support.

**Factor analysis for community support.** An exploratory factor analysis was used to create the construct variable for community support. Four questions measured on the same dichotomous response scale were entered into the analysis. Each of the four items aligned under a single construct to create the factored variable of *community support* (eigenvalue = 2.71, variance explained = 67.83). Kaiser's measure of sampling adequacy (KMO) was .807. See Table 3.7 for factor structure and loadings for the construct of *community support*.

Table 3.7

*Factor Analysis for Community Support Construct*

Item	Factor Loadings
Community Support ( $\alpha = .841$ )	
Adults in my neighborhood or community help me when I need help	.872
Adults in my neighborhood or community let me know they are proud of me when I do something well	.852
Adults in my neighborhood or community spend time talking with me	.843
Adults in my community care about people my age	.719

### Dependent Variables

Within the following sections are explanations of how the dependent variables of suicidal behaviors were measured. These questions asked participants whether they had thought about, planned, or attempted suicide.

**Suicidal behaviors.** *Suicide Intent* was measured by a combination of participant response to two questions that reflected suicide ideation and suicide plan. The first question asked participants, "During the past 12 months, did you ever seriously consider attempting suicide?" The second question asked participants, "During the past 12 months, did you make a

plan about how you would attempt suicide?” Higher values on this variable indicate increased behaviors of suicide ideation and suicide plan, measuring *suicide intent*.

*Suicide Attempt* was measured by participant self-identification to the question, “During the past 12 months, how many times did you actually attempt suicide?” Participants chose from the following options: 0 Times (coded = 1), 1 Time (coded = 2), 2 or 3 Times (coded = 3), 4 or 5 Times (coded = 4), or 6 or More Times (coded = 5). Higher values on this variable indicate increased *suicide attempts*.

### Summary of Variables and Connection to Theoretical Framework

A summary of the independent and dependent variables, their relationship as a microsystem or macrosystem variable, and method of measurement is provided in Table 3.8

Table 3.8

#### *Alignment of Theoretical Framework and Measurement Variables*

System	Variable	Type	Measurement
Macro	Gender	Constant	Not measured – held constant in this study
	Race/ethnicity	IV	Recoded to dichotomous variable: 0 = minority; 1 = majority
Micro	Individual Risky Behaviors		
	Substance Use	IV	Construct based on factor analysis
	Anti-social Choices	IV	Construct based on factor analysis
Micro	Individual Resilient Behaviors		
	Self-determination	IV	Construct based on factor analysis
Micro	Family Cohesion		
	Family Engagement	IV	Construct based on factor analysis
Micro	School Connectedness	IV	Construct based on factor analysis
Micro	Community Support	IV	Construct based on factor analysis
Micro	Suicide Intent	DV	Combination of response to items reflecting suicide ideation and plan
Micro	Suicide Attempt	DV	Number of times attempted suicide; 1 = 0 times; 2 = 1 Time; 3 = 2 or 3 Times; 4 = 4 or 5 Times; 5 = 6 or More Times

## **Data Analysis and Research Questions**

The data for this study were analyzed using descriptive and inferential analyses to address the identified research questions.

### **Descriptive Statistical Analyses**

The data were analyzed using SPSS v. 20 software, with identification of means, standard deviations, and frequencies for the independent and dependent variables presented in Table 3.8. Descriptive statistics were used to answer question 1 – What are the background characteristics of the 11<sup>th</sup> grade males in the 2010 Iowa Youth Survey data set? Statistics are provided in Table 3.1 that detail participant age, race/ethnicity, living arrangement, and disability status.

### **Inferential Statistical Analyses**

This section provides the results of the correlation and hierarchical regression analyses, which were used to answer research questions two and three.

**Correlations.** Pearson product-moment correlations, which measure the strength of the relationship between quantitative variables (Green & Salkind, 2011) were conducted on the independent variables to determine the extent to which the independent and dependent variables were linearly related (Tabachnick & Fidell, 2007). The data were screened to ensure they met the two assumptions noted by Green & Salkind as necessary to conduct correlation analysis:

“Assumption 1: The Variables Are Bivariately Normally Distributed; Assumption 2: The Cases Represent a Random Sample from the Population and the Scores on Variables for One Case Are Independent of Scores on These Variables for Other Cases” (p. 258). A correlation matrix was developed that included all of the variables entered into analysis, which allowed for visual inspection of the correlation coefficients to ensure multicollinearity was not present.

Multicollinearity results when variables are so closely related they effectively measure the same

concept, and are noted by correlations of .90 or higher (Tabachnick & Fidell, 2007). Two hierarchical regression models were used to answer research questions two and three, and are explained further in the following section.

**Hierarchical regression.** Research questions two and three were examined through hierarchical multiple regression. Multiple regression was chosen as the method of analysis because it allows for the ability to measure the impact of independent variables on the dependent variables while also assessing the impact of independent variables singly and collectively (Vogt & Johnson, 2011). Multiple regression is appropriate in a research study such as this one, as it is “especially useful to the researcher who is interested in real-world or very complicated problems that cannot be meaningfully reduced to orthogonal designs in a laboratory setting” (Tabachnick & Fidell, 2007, pp. 117-118). The equation for multiple regression reflects multiple independent variables, and is as follows:

$$Y' = A + B_1X_1 + B_2X_2 + \dots + B_kX_k$$

In the equation,  $Y'$  reflects the predicted value of the dependent variable, in this case, the two variables reflecting suicidal behaviors (suicide intent and suicide attempt). The value of  $A$  reflects “the value of  $Y$  when all the  $X$  values are zero,” (Tabachnick & Fidell, 2007, p. 118), and  $X$  represents each independent variable. In this study, the equation would continue to  $B_7X_7$ . The value of  $B$  is reflective of the regression process which results in coefficients for each of the independent variables (Tabachnick & Fidell, 2007).

In order to most effectively conduct a multiple regression, a sample size of  $N \geq 50 + 8m$  is recommended (Tabachnick & Fidell, 2007). The data used for this study fit well within the

recommended guidelines, where  $N$  = the sample size of 9,910;  $m = 7$ , the number of independent variables; and a completed formula is  $9,910 \geq 50 + 56$ . Prior to conducting the regression, exploratory factor analyses were conducted on Iowa Youth Survey questions found to reflect five key areas (individual risky behaviors, individual resilient behaviors, family cohesion, school connectedness, and community support) supported by the literature as impacting adolescent male suicidal behavior. The factors were divided into three blocks, the first of which included the macrosystem variable of race/ethnicity; with the second block adding the microsystem variables of individual risky behaviors and individual resilient behaviors; and the third block adding the microsystem variables of family cohesion, school connectedness, and community support.

### **Regression Models and Alignment with Theoretical Framework**

This section describes the research questions analyzed using a multiple regression statistical technique, including a description of each regression model. A sequential hierarchical approach was used for the regression analysis. This method is appropriate when the goal is *prediction* of the impact of the independent variables on the dependent variables, and when the sets of variables are correlated with each other (Tabachnick & Fidell, 2007). This method of analysis allowed for examination of the impact of each of the macro- and microsystems as defined by Bronfenbrenner (2005).

Independent variables were entered into three blocks for each of the two regression models (suicide intent and suicide attempt). The first block contained the macrosystem variable of race/ethnicity (white, nonwhite). The macrosystem was selected to be entered into the regression analyses first because the influence of these systems is considered the “societal blueprint” (Bronfenbrenner, 2005, p. 81) of the individual. The intent of entering the macrosystem independent variable within the first block was to determine the extent that

race/ethnicity impacted suicidal behavior (intent and attempt). Including the macrosystem variable within the first block allowed for a determination of how much variance could be attributed to the independent variable of race/ethnicity before accounting for the microsystem variables (e.g., individual, family, etc.). Exploration of the impact of this macrosystem variable would require a national systemic response strategy.

The microsystems of individual risky behaviors, individual resilient behaviors, family cohesion, school connectedness, and community support were entered into two separate blocks for steps two and three of the sequential regression. The impact of these variables on the dependent variables of suicidal behavior can be more readily addressed at the state, regional, and local level. Results from analysis of each of the blocks will guide potential interventions. For example, analyses might show individual *resilient* behaviors have greater strength in predicting a decrease in suicidal behavior, as compared to individual *risky* behaviors predicting increased suicidal behavior. Therefore, it would follow that the best use of prevention efforts would be to support development of adolescent resiliency rather than addressing youth's risky behaviors.

**Regression model for suicide intent – research question two.** To what extent do race/ethnicity, individual risky and resilient behaviors, family cohesion, school connectedness, and community support predict an 11<sup>th</sup> grade male's likelihood of suicide intent? This research question was answered by running a sequential hierarchical regression analysis on the following model where *suicide intent* = *macrosystem (race/ethnicity)* + *microsystems (individual risky behaviors + individual resilient behaviors + family cohesion + school connectedness + community support)*.

**Regression model for suicide attempt – research question three.** To what extent do race/ethnicity, individual risky and resilient behaviors, family cohesion, school connectedness,

and community support predict an 11<sup>th</sup> grade male's likelihood of suicide attempt? This research question was answered by running a sequential hierarchical regression analysis on the following model where *suicide attempt* = *macrosystem (race/ethnicity)* + *microsystems (individual risky behaviors + individual resilient behaviors + family cohesion + school connectedness + community support)*.

Figure 3.1 provides a visual depiction of the full regression models and the influence of the independent variables in each block upon the dependent variable.

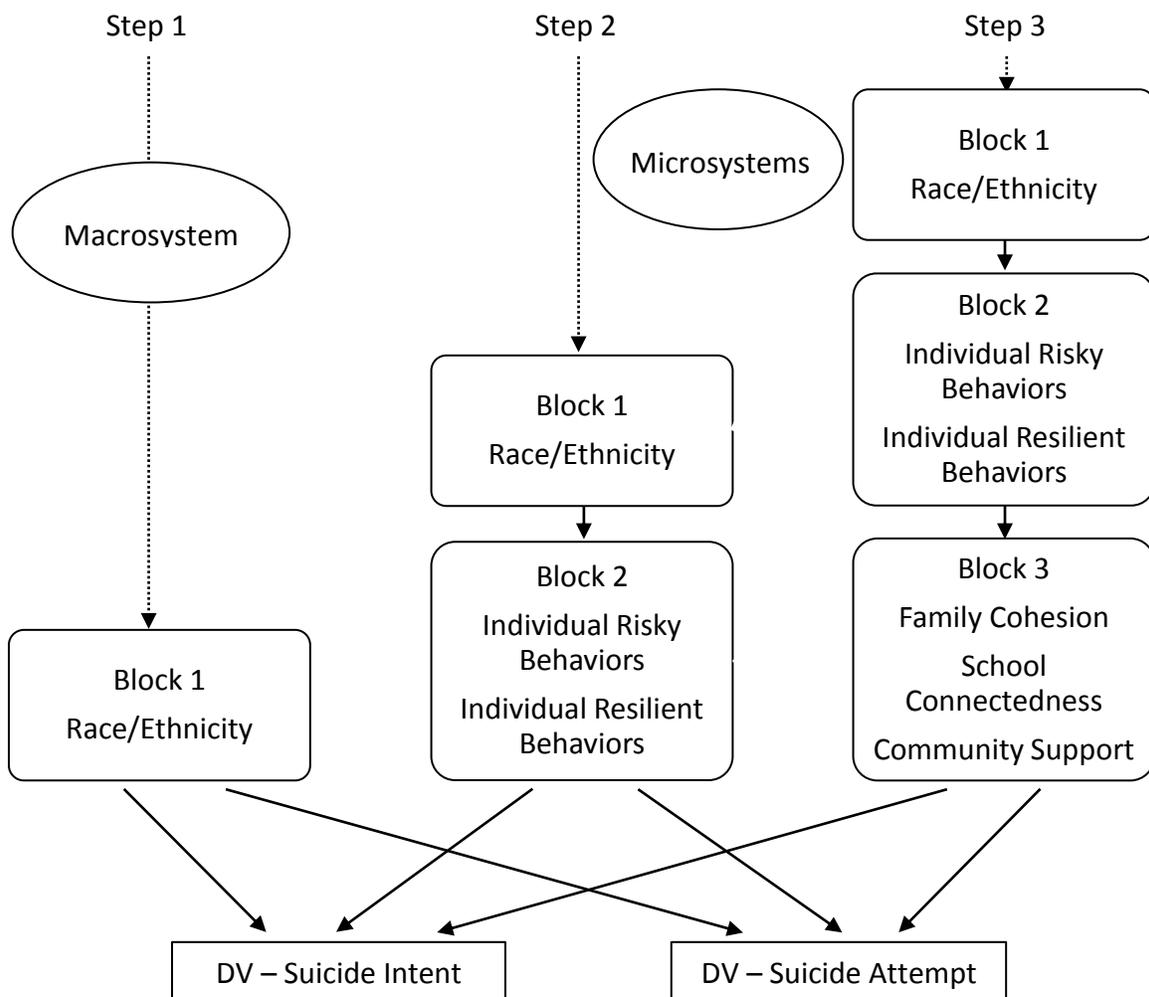


Figure 3.1. Visual Model of Sequential Hierarchical Regression Analyses

### **Delimitations**

This study is delimited to 11<sup>th</sup> grade males who were enrolled and in attendance at participating Iowa public and private schools on the day or days the 2010 Iowa Youth Survey was administered at the student's respective school. As such, the study did not examine responses by youth of either gender in grades 6 or 8 who completed the survey.

### **Limitations**

Several limitations exist to this study. Over one-third (38.3%) of 11<sup>th</sup> grade youth enrolled in participating schools did not complete the 2010 Iowa Youth Survey. The responses of these students were not included either because they were not present in school or declined to participate on the day of the survey, or because their school district elected not to participate in the project. Therefore, the responses of nonparticipating youth may have been different than answers by students who did participate. This study also examined only the data from responses by 11<sup>th</sup> grade males. As such, the results may not be generalizable to females or to males in grades other than 11<sup>th</sup> grade.

The data examined are also cross-sectional rather than a longitudinal in nature, and therefore reflect results from just one point in time and may not be generalizable to youth who were in 11<sup>th</sup> grade at the time of administration of previous Iowa Youth Surveys. In addition, the survey asks about topics of a sensitive nature. Youth may not respond truthfully due to fear their responses will not be confidential or because of psychic discomfort that may have existed as they considered how to answer sensitive questions.

The use of dichotomous variables in factor analysis has been debated (Percy, 1976). Although Percy presents research to indicate the number of points on Likert-type measurement

scale does not have a meaningful impact on the resulting correlation coefficients, use of a 2-point versus a 4-point Likert scale may be seen as a limitation.

### **Summary**

This chapter provided the proposed methodological approach for the study. Sections included a review of the survey instrument, including sample and participants. A description was provided for the macrosystem independent variable and microsystem independent variables, each of which were derived through factor analysis based on the literature review of influences impacting adolescent male suicidal behavior. The chapter also provided details on the sequential hierarchical regression models developed to address each of the three research questions, along with a discussion of delimitations and limitations. Chapter 4 will provide the results of the analyses.

## **CHAPTER 4**

### **RESULTS**

The purpose of this study was to determine the extent to which individual (risky and resilient behaviors), family (family cohesion), school (school connectedness), and community (community support) microsystems as well as the macrosystem of race/ethnicity predict suicidal behaviors of intent and attempt in 11<sup>th</sup> grade males in the state of Iowa. This study was informed using the theoretical framework of Bronfenbrenner's (2005) bioecological model of human development, which states individual responses are the result of reciprocal interaction between the person and the environment. The hypothesis for this study was that individual, family, school, and community microsystems, and the macrosystem of race/ethnicity, impact adolescent male suicidal behaviors.

This chapter provides results of the data analysis, and addresses the three previously identified research questions. The chapter is divided into five sections. The first section describes the process of data screening and methods for assumption of normality. Section two reports descriptive statistics on each of the demographic variables, which answers research question one. The third section reports the correlations between each of the independent and dependent variables, as a foundation for reporting results of the multiple regression analysis. The fourth section describes results of the sequential hierarchical regression analysis, used to answer research questions two and three. The fifth section provides summary answers to each of the research questions.

#### **Data Screening and Assumptions of Normality**

Prior to conducting analyses related to descriptive and inferential statistics, the data were screened for missing values. Cases with a missing value for any of the independent or dependent

variables were deleted from analysis. Results of data screening revealed that of the 11,780 original cases, 1,870 had a missing response on at least one of the independent or dependent variables, thus were deleted, leaving 9,910 cases. With these remaining cases, further screening was conducted to assess whether the variables met assumptions of normality, a necessary precursor to using tests of statistical significance (Tabachnick & Fidell, 2007).

Normality presumes that “dependent variable values are assumed as normally distributed at each level of the independent variable” (Vogt & Johnson, 2011, p. 257). Data normality can be measured either graphically or numerically, with one method using skewness and kurtosis values. Skewness refers to whether data are disbursed symmetrically, with the mean lying centrally within the distribution (Tabachnick & Fidell, 2007), while kurtosis represents whether data fall within a typical bell-shaped distribution (Vogt & Johnson, 2011).

Both skewness and kurtosis were evaluated for the independent and dependent variables used in this study. Although graphic and numeric displays of the data indicate skewness values typically outside the range of those identified with normal data for the dependent variable *suicide attempt*, Tabachnick and Fidell (2007) report that, “in a large sample, a variable with statistically significant skewness often does not deviate enough from normality to make a substantive difference in the analysis” (p. 80), and the protection a large data sample offers from the potential lack of normality applies to the level of kurtosis as well. Lumley, Diehr, Emerson, and Chen (2002) report in large samples (greater than 500 cases), hierarchical regression “can perform well with data that are far from Normal, at least in the large samples used in public health research” (p. 160). The results of the assessment of normality for the independent and dependent variables used in this study are reported in Table 4.1.

Table 4.1

*Assessment of Normality for Variables in the Model (n = 9,910)*

Variables	Skew	SE of Skew	Kurtosis	SE of Kurtosis
Race/Ethnicity (1 = Non-minority)	-2.396	.025	3.744	.049
Individual Risky Behaviors				
Substance Use Behaviors	1.278	.025	.310	.049
Anti-social Choices	2.332	.025	5.394	.049
Individual Resilient Behaviors				
Self-determination	-2.238	.025	5.657	.049
Family Cohesion				
Family Engagement	-1.879	.025	2.525	.049
School Connectedness	-1.451	.025	1.153	.049
Community Support	-.672	.025	-1.139	.049
Suicide Intent*	2.641	.025	5.605	.049
Suicide Attempt*	6.459	.025	43.485	.049

\*Dependent variables

### Frequencies and Descriptive Statistics

Descriptive statistics were run for each of the variables in this study as well as demographic information related to the participants. Table 4.2 reports the results of descriptive analyses for demographic data as well as each of the independent and dependent variables used in the study. Statistics include the range (minimum and maximum values), mean, and standard deviation for each variable. The mean age of participants was  $M = 16.35$ ,  $SD = .50$ .

Table 4.2

*Descriptive Statistics for Demographic Data, Independent, and Dependent Variables (n = 9,910)*

Variables	Min	Max	Mean	SD
Race/Ethnicity <sup>a</sup>	0	1	.88	.32
Individual Substance Use	0	4	.79	1.22
Individual Anti-social Choices	0	5	.54	1.04
Individual Self-determination	0	5	4.48	.93
Family Engagement	0	4	3.44	1.04
School Connectedness	0	6	4.83	1.67
Community Support	0	4	2.68	1.54
Suicide Intent	0	2	.20	.54
Suicide Attempt <sup>b</sup>	0	5	1.09	.51

<sup>a</sup>Scale: 0 = Minority, 1 = Majority

<sup>b</sup>Scale: 1 = No suicide attempt, 2 = 1 attempt, 3 = 2 or 3 attempts, 4 = 4 or 5 attempts, 5 = 6 or more attempts

### Correlations

This study examined the relationships between variables using Pearson correlation coefficients, which allows for addressing association but not cause (Salkind, 2012). Pearson correlations reflect the strength of a linear relationship between two variables (Vogt & Johnson, 2011), and are computed with results ranging from -1.0 to +1.0. A correlation coefficient is an important statistic to report when determining the merit of potential interventions, as it allows the practitioner to weigh the value of a particular strategy. Green and Salkind (2011) note while interpretation of relationships between the variables differs depending upon the profession, “correlation coefficients of .10, .30, and .50, irrespective of sign, are, by convention, interpreted as small, medium, and large coefficients, respectively” (p. 259). Correlations are computed as a part of regression analyses, whereby correlations are “the slope of the regression line *if the variables were standardized* (i.e., converted into *z* scores)” (Vogt & Johnson, 2011, p. 285).

Variables that are too highly correlated have multicollinearity, resulting in variables that in effect measure the same concept, identified by correlations of .90 or higher (Tabachnick & Fidell, 2007).

Pearson correlation coefficients were computed among each of the independent and dependent variables, resulting in 36 correlation coefficients represented in Table 4.3. Using Tabachnick and Fidell's (2007) guide, the data were examined for incidences of .90 or greater correlation with no instances of multicollinearity noted between variables. To avoid the risk of Type I error in determining statistical significance when computing multiple correlations, the Bonferroni approach was used to determine the new level for statistical significance (Vogt & Johnson, 2011). The Bonferroni approach involves dividing a generally accepted alpha level (.05) by the number of correlations (36), which results in a new alpha level (.0014). In this study, correlations required a  $p$  value of .00141 or lower to be considered significant. Using .00141 as the revised and conservative significance level, 34 of the 36 correlations were deemed significant. These 34 significant correlations are noted with an asterisk (\*) in Table 4.3.

Using the Green and Salkind (2011) interpretation of correlation coefficient size, of the 34 statistically significant correlations, nine were considered to have a medium (moderate) relationship, and 19 were considered to have a small (low) relationship. The remaining six correlations were statistically significant, but had correlation coefficients less than .10. Within the sections below, each statistically significant correlation of at least .10 is described, based on the strength of the relationship (coefficient size). In each pair of correlations, positive results reflect that as one variable increases in size, the other variable also increases, while a negative correlation reflects that as one variable increases in size, the other variable decreases (Green & Salkind, 2011).

Table 4.3

*Correlation Matrix – Race/Ethnicity, Constructs, and Dependent Variables (n = 9,910)*

	1	2	3	4	5	6	7	8	9
1 Race/Ethnicity (0 = Minority)	--								
2 Individual Substance Use	-.05*	--							
3 Individual Anti- social Choices	-.08*	.42*	--						
4 Individual Self- Determination	.05*	-.27*	-.36*	--					
5 Family Engagement	.05*	-.18*	-.25*	.34*	--				
6 School Connectedness	.03	-.27*	-.31*	.40*	.42*	--			
7 Community Support	.09*	-.15*	-.19*	.25*	.37*	.43*	--		
8 Suicide Intent	-.04	.20*	.28*	-.25*	-.25*	-.23*	-.19*	--	
9 Suicide Attempt	-.07*	.20*	.28*	-.28*	-.20*	-.21*	-.12*	-.45*	--

Note: \*  $p < .00141$  Bonferonni adjustment for multiple correlations to minimize chances of a Type 1 error.

### Moderate Correlations

Nine correlations were considered moderate based on the interpretation of the correlation coefficient as recommended by Green and Salkind (2011).

**Suicidal behaviors.** The variable of suicide intent ( $r = .45, p < .00141$ ) showed a significant correlation with the variable of suicide attempt. This indicates participants with

higher scores on the variable of suicide intent also had higher scores on the variable of suicide attempt.

**Individual behaviors.** A significant positive relationship was found between the variable of substance use and the variable of anti-social choices ( $r = .42, p < .00141$ ). This reveals as participants scored higher on the substance use variable, they also scored higher on the variable of anti-social choices. A significant negative relationship was found between the anti-social choices variable and the self-determination variable ( $r = -.36, p < .00141$ ). These results indicate as participants scored higher on one variable in the relationship, they scored lower on the second variable.

**Family cohesion.** A significant positive relationship was found between the family engagement variable and the self-determination variable ( $r = .34, p < .00141$ ). A significant positive relationship was also found between the family engagement variable and the school connectedness variable ( $r = .42, p < .00141$ ). These results reveal as participants indicated more family engagement, they also indicated more self-determination and school connectedness.

**School connectedness.** A significant positive relationship was found between the variable of school connectedness and the variable of self-determination ( $r = .40, p < .00141$ ). This reveals as participants scored higher on the school connectedness variable, they also scored higher on the variable of self-determination. A significant negative relationship was found between the variable of school connectedness and the variable of anti-social choices ( $r = -.31, p < .00141$ ). This reveals as participants scored higher on school connectedness, they scored lower on anti-social choices.

**Community support.** A significant positive relationship was found between the variable of community support and the variable of family engagement ( $r = .37, p < .00141$ ) and school

connectedness ( $r = .43, p < .00141$ ). For each of these pairs, this reveals as participants scored higher on one variable in the relationship, they also scored higher on the second variable.

### **Low Correlations**

Nineteen correlations were considered low based on Green and Salkind's (2011) recommendations for the interpretation of the correlation coefficient. Of those correlations, 12 were relationships with at least one of the two dependent variables related to the suicidal behaviors of intent and attempt. Seven additional correlations revealed relationships amongst five of the individual, family, school, and community constructs. Eight additional variables were statistically significant, but had correlation coefficients below .10. As Smart (2005) points out, "not every instance of statistical significance has important practical or policy implications" (p. 473). The correlations with coefficients above .10 are described in the following sections, with correlations related to the dependent variables (suicidal behaviors) addressed first, then the correlations between the independent variables (constructs).

**Suicidal behaviors.** Each of the 12 correlations related to suicidal behaviors are reported in the following sections. Examination of the results is broken into two segments: suicide intent and suicide attempt.

***Suicide intent.*** The variable of suicide intent correlated significantly with all six construct variables. Each of these is reported in the sections below, according to the category of construct variable.

***Individual behaviors.*** The variable of suicide intent showed a significant positive correlation with the individual risky behavior variable of substance use ( $r = .20, p < .00141$ ). The variable of suicide intent also showed a significant positive correlation with the individual risky behaviors variable of anti-social choices ( $r = .28, p < .00141$ ). For each of these pairs, this

reveals as participants scored higher on one of the risky behaviors variables in the relationship, they also scored higher on the suicidal intent variable.

The variable of suicide intent showed a significant negative correlation with the variable of self-determination ( $r = -.25, p < .00141$ ). This result indicates as participants scored higher on the suicide attempt variable, they indicated less self-determination.

*Family cohesion.* The variable of suicide intent showed a significant negative relationship with the variable of family engagement ( $r = -.25, p < .00141$ ), indicating as participants' families were more engaged, youth scored lower for suicidal intent.

*School connectedness.* The variable of suicide intent showed a significant negative relationship with the variable of school connectedness ( $r = -.23, p < .00141$ ), indicating as participants reported more school connectedness they reported lower scores on suicidal intent.

*Community support.* The variable of suicide intent showed a significant negative relationship with the variable of community support ( $r = -.19, p < .00141$ ), revealing as participants indicated more community support they reported lower scores on the variable of suicidal intent.

***Suicide attempt.*** The variable of suicide attempt correlated significantly with all six construct variables. Each of these is reported in the sections below, according to the category of construct variable.

*Individual constructs.* The variable of suicide attempt showed a significant positive correlation with the variables of substance use ( $r = .20, p < .00141$ ) and anti-social choices ( $r = .28, p < .00141$ ). For each of these pairs, this shows as participants scored higher on the variable of suicide attempt, they reported higher scores in substance use and anti-social choices.

The variable of suicide attempt showed a significant negative correlation with the variable of self-determination ( $r = -.28, p < .00141$ ), indicating those participants who scored higher on the variable of self-determination reported lower scores of suicide attempt.

*Family cohesion.* The variable of suicide attempt showed a significant negative correlation with the variable of family engagement ( $r = -.20, p < .00141$ ), demonstrating as participants indicated higher scores on the family engagement variable they also reported lower scores on the suicide attempt variable.

*School connectedness.* The variable of suicide attempt showed a significant negative relationship with the variable of school connectedness ( $r = -.21, p < .00141$ ), revealing as participants indicated increased scores on the variable of school connectedness they indicated lower suicidal attempt scores.

*Community support.* The variable of suicide attempt showed a significant negative relationship with the variable of community support ( $r = -.12, p < .00141$ ), showing that participants who scored higher on the community support variable in turn had lower scores of suicide attempt.

**Between-construct correlations.** The remaining seven statistically significant correlations revealed relationships between four of the independent variable constructs. Three of the correlations involved the community support construct variable, two of the correlations involved the family engagement construct variable, one involved the variable of school connectedness, and one involved the individual resilient behavior construct variable of self-determination. Each of these is reported in the sections below, according to the category of construct variable.

**Individual behaviors.** The individual resilient behavior variable of self-determination showed a significant negative relationship with the individual variable of substance use ( $r = -.27$ ,  $p < .00141$ ). This shows as participants scored higher on the variable of self-determination, they also indicated less substance use.

**Family cohesion.** The individual variables of substance use ( $r = -.18$ ,  $p < .00141$ ) and anti-social choices ( $r = -.25$ ,  $p < .00141$ ) showed significant negative relationships with the variable of family engagement. For each of these pairs, this reveals as youth scored higher on one variable in the relationship, they scored lower on the second variable.

**School connectedness.** The school connectedness variable showed a significant negative relationship with the individual variable of substance use ( $r = -.27$ ,  $p < .00141$ ), indicating participants with higher scores on school connectedness scored lower on substance use.

**Community support.** The community support variable showed significant negative relationships with the individual variables of substance use ( $r = -.15$ ,  $p < .00141$ ) and anti-social choices ( $r = -.19$ ,  $p < .00141$ ). For each of these pairs, this reveals as participants scored higher on one variable in the relationship, they scored lower on the second variable. The community support variable showed a significant positive relationship with the individual variable of self-determination ( $r = .25$ ,  $p < .00141$ ). Therefore, as participants showed increased scores on the community support variable, they also showed increased self-determination.

### **Multiple Regression Analyses**

The method of sequential hierarchical regression was used to determine whether the independent variables were statistically significant predictors of the dependent variables. Two sequential hierarchical regression analyses were conducted on each of three blocks. Based on the theoretical framework of Bronfenbrenner (2005), the independent variables were grouped into

blocks based on their identification as a macrosystem or microsystem. The first block included the macrosystem variable of race/ethnicity. The second block added the microsystems of individual risky behaviors and individual resilient behaviors. The third block added the microsystems of family cohesion, school connectedness, and community support. The following sections report the results of the regression analyses on each of the dependent variables.

### **Suicide Intent**

A sequential hierarchical regression analysis was conducted on the dependent variable of suicide intent. Table 4.4 provides information on the blocks in which the variables were entered into the regression analysis, the unstandardized regression coefficients ( $b$ ), the standard error for the unstandardized regression coefficient ( $SE\ b$ ), standardized regression coefficients ( $\beta$ ), and the variance ( $R^2$ ) explained for each model (block).

**Macrosystem suicide intent (block 1).** Results for the regression analysis indicated that for block 1, race/ethnicity,  $F(1, 9908) = 13.87, p < .001$ , was a significant predictor of suicide intent ( $\beta = -.037, p < .001$ ), accounting for less than 1% ( $R^2 = .001$ ) of the variance in suicide intent.

**Macrosystem and microsystems suicide intent (block 2).** The microsystem variables of individual risky behaviors and individual resilient behaviors were added to the hierarchical regression in block 2. Within block 2,  $F(3, 9905) = 409.21, p < .001$ , individual substance use ( $\beta = .076, p < .001$ ), individual anti-social choices ( $\beta = .194, p < .001$ ), and individual self-determination ( $\beta = -.162, p < .001$ ) were significant predictors of suicide intent, accounting for 11% ( $R^2 = .112$ ) of the variance in suicide intent.

**Macrosystem and microsystems suicide intent (block 3).** Adding the microsystem variables of family cohesion, school connectedness, and community support in block 3 to the

hierarchical regression analysis produced results for the full model. In the full model,  $F(3, 9902) = 107.43, p < .001$ , individual substance use ( $\beta = .058, p < .001$ ), individual anti-social choices ( $\beta = .165, p < .001$ ), individual self-determination ( $\beta = -.098, p < .001$ ), family engagement ( $\beta = -.122, p < .001$ ), school connectedness ( $\beta = -.062, p < .001$ ), and community support ( $\beta = -.053, p < .001$ ) were significant predictors of suicide intent, accounting for 14% ( $R^2 = .140$ ) of the variance in suicide intent.

Table 4.4

*Hierarchical Regression Coefficients for Suicide Intent (n = 9,910),  $R^2 = .140$*

	$\beta$	SE $\beta$	$\beta$
Macrosystems (block 1)			
Constant	.253	.016	
Race/Ethnicity	-.063	.017	-.037*
Macrosystems and Individual Microsystems (block 2)			
Constant	.553	.032	
Race/Ethnicity	-.020	.016	-.012
Individual Risky Behaviors			
Substance Use	.033	.005	.076*
Anti-social Choices	.100	.006	.194*
Individual Resilient Behaviors			
Self-determination	-.093	.006	-.162*
Macrosystems and Individual/ Family Microsystems (block 3 – full model)			
Constant	.757	.034	
Race/Ethnicity	-.008	.016	-.005
Individual Risky Behaviors			
Substance Use	.026	.005	.058*
Anti-social Choices	.085	.006	.165*
Individual Resilient Behaviors			
Self-determination	-.057	.006	-.098*
Family Cohesion			
Family Engagement	-.063	.006	-.122*
School Connectedness	-.020	.004	-.062*
Community Support	-.019	.004	-.053*

Note:  $R^2$  - .001 for block 1; .112 for block 2; .140 for block 3 – full model

Note: \*  $p < .001$

## Suicide Attempt

As with the dependent variable of suicide intent, a sequential hierarchical regression analysis was conducted on the dependent variable of suicide attempt, with the same block structures. Table 4.5 provides information on the blocks in which the variables were entered into the regression analysis, the unstandardized regression coefficients ( $b$ ), the standard error for the unstandardized regression coefficient ( $SE\ b$ ), standardized regression coefficients ( $\beta$ ), and the variance ( $R^2$ ) explained for each model (block).

**Macrosystem suicide attempt (block 1).** Results for the regression analysis indicated that for block 1, race/ethnicity,  $F(1, 9908) = 47.11, p < .001$ , was a significant predictor of suicide attempt ( $\beta = -.069, p < .001$ ), accounting for less than 1% ( $R^2 = .005$ ) of the variance in suicide attempt.

**Macrosystem and microsystems suicide attempt (block 2).** The microsystem variables of individual risky behaviors and individual resilient behaviors were added to the hierarchical regression in block 2. Within block 2,  $F(3, 9905) = 442.44, p < .001$ , race/ethnicity ( $\beta = -.043, p < .001$ ), as well as individual substance use ( $\beta = .076, p < .001$ ), individual anti-social choices ( $\beta = .177, p < .001$ ), and individual self-determination ( $\beta = -.193, p < .001$ ) were significant predictors of suicide attempt, accounting for 12% ( $R^2 = .122$ ) of the variance in suicide attempt.

**Macrosystem and microsystems suicide attempt (block 3).** Adding the microsystem variables of race/ethnicity, family cohesion, school connectedness, and community support in block 3 to the hierarchical regression analysis produced results for the full model. In the full model,  $F(3, 9902) = 30.78$ , race/ethnicity ( $\beta = -.042, p < .001$ ), individual substance use ( $\beta = .067, p < .001$ ), individual anti-social choices ( $\beta = .162$ ), individual self-determination ( $\beta = -.160, p < .001$ ), family engagement ( $\beta = -.079, p < .001$ ), and school connectedness ( $\beta = -.047, p <$

.001) were significant predictors of suicide attempt, accounting for 13% ( $R^2 = .130$ ) of the variance in suicide attempt.

Table 4.5

*Hierarchical Regression Coefficients for Suicide Attempt (n = 9,910),  $R^2 = .130$*

	$\beta$	SE $\beta$	$\beta$
<b>Macrosystems (block 1)</b>			
Constant	1.118	.015	
Race/Ethnicity	-.109	.016	-.069*
<b>Macrosystems and Individual Microsystems (block 2)</b>			
Constant	1.553	.030	
Race/Ethnicity	-.069	.015	-.043*
<b>Individual Risky Behaviors</b>			
Substance Use	.032	.004	.076*
Anti-social Choices	.086	.005	.177*
<b>Individual Resilient Behaviors</b>			
Self-determination	-.106	.006	-.193*
<b>Macrosystems and Individual/ Family Microsystems (block 3 – full model)</b>			
Constant	1.665	.032	
Race/Ethnicity	-.067	-.015	-.042*
<b>Individual Risky Behaviors</b>			
Substance Use	.028	.004	.067*
Anti-social Choices	.079	.005	.162*
<b>Individual Resilient Behaviors</b>			
Self-determination	-.087	.006	-.160*
<b>Family Cohesion</b>			
Family Engagement	-.038	.005	-.079*
School Connectedness	-.014	.004	-.047*
Community Support	.005	.004	.016

Note:  $R^2$  - .005 for block 1; .122 for block 2; .130 for block 3 – full model

Note: \*  $p < .001$

### Summary Answers to Research Questions

Each of the three research questions is answered in this section, using results from the data analyses presented in this chapter.

### **Research Question 1 – Background Characteristics**

*What are the background characteristics of the 11<sup>th</sup> grade males in the 2010 Iowa Youth Survey data set?*

The sample consisted of 9,910 participants, ranging in age from 16 years to 18+ years ( $M = 16.35$ ,  $SD = .50$ ), each of whom identified as male and in the 11<sup>th</sup> grade. The majority of participants identified as white (88.4%), followed by Hispanic or Latino (4.4%), African American (4.2%), Asian/Pacific Islander (2.1%), and American Indian or Alaska Native (.9%). Most participants indicated living with one or more parents (95.4%), followed by those who lived with grandparents or other relatives (2.3%), in independent living (.5%), with foster parents (.4%), in shelter care (.3%), or in a residential group setting (.2%). A small percentage of participants selected “Other” as their living arrangement (1.0%). The majority of participants reported having no disability (82%), with 8.8% indicating they had a physical, health, or learning disability, and 9% indicating they did not know if they had a disability or not.

### **Research Question 2 – Suicide Intent**

*To what extent do race/ethnicity, individual risky and resilient behaviors, family cohesion, school connectedness, and community support predict an 11<sup>th</sup> grade male’s likelihood of suicide intent?*

Results for the hierarchical regression analysis revealed the macrosystem variable of race/ethnicity was not a statistically significant predictor for suicide intent in the full model. However, all six of the microsystem variables of individual substance use, individual anti-social choices, individual self-determination, family engagement, school connectedness, and community support were statistically significant predictors for suicide intent. This suggests the more likely an adolescent male is to indicate suicide intent, the more likely he is to indicate

adherence with the four items in the substance use construct and the five items in the anti-social choices construct. This also suggests as young males report increased suicide intent, they are less likely to indicate adherence with the five items in the self-determination construct, the four items in the family engagement construct, the six items in the school connectedness construct, and the four items in the community support construct.

### **Research Question 3 – Suicide Attempt**

*To what extent do race/ethnicity, individual risky and resilient behaviors, family cohesion, school connectedness, and community support predict an 11<sup>th</sup> grade male's likelihood of suicide attempt?*

Results for the hierarchical regression analysis revealed the macrosystem variable of race/ethnicity was a statistically significant predictor for suicide attempt in the full model. This suggests participants who are more likely to indicate having had a suicide attempt were also more likely minority (non-white). Five of the microsystem variables – individual substance use, individual anti-social choices, individual self-determination, family engagement, and school connectedness – were statistically significant predictors for suicide attempt. While community support was a significant predictor for suicide intent it was not a significant predictor for suicide attempt. This suggests the more likely an adolescent male is to indicate suicide attempt, the more likely he is to indicate adherence with the four items in the substance use construct and the five items in the anti-social choices construct. This also suggests as young males report increased suicide attempt, they are less likely to indicate adherence with the five items in the self-determination construct, the four items in the family engagement construct, and the six items in the school connectedness construct.

## Summary

This chapter provided results for the data analysis methods described in chapter 3. Analysis of data indicates assumptions of normality were met. A total of 34 of the 36 correlations were statistically significant using the Bonferonni adjustment, with significant relationships described. Background characteristics for the participants were presented, and the result of each hierarchical regression was provided. Results indicate that for the dependent variable of suicide intent each of the independent variables, with the exception of race/ethnicity, was a significant predictor. Furthermore, for the dependent variable of suicide attempt, all individual variables, with the exception of community support, were significant predictors. Chapter 5 provides a discussion of the results, and recommendations for practice and future research.

## CHAPTER 5

### DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

*Suicide places a heavy burden on the nation in terms of the emotional suffering that families and communities experience as well as the economic cost associated with medical care and lost productivity. And yet suicidal behaviors often continue to be met with silence and shame. These attitudes can be formidable barriers to providing care and support to individuals in crisis and to those who have lost a loved one to suicide.*

– *U.S. Department of Health and Human Services Office of the Surgeon General and National Action Alliance for Suicide Prevention (2012)*

This chapter provides a discussion of the results presented in chapter 4, informed by the theoretical framework of the study and current literature. The chapter begins with a summary of the study, then discussion of results as they pertain to the macro- and microsystems, implications for policy and practice upon each of those systems, and final thoughts on the investigation.

#### Summary of the Study

Chapter 1 provided an overview of the problem of youth suicide and review of the complexity of the issue. Information was provided on the purpose of the study and research questions, including a discussion of Bronfenbrenner's (2005) bioecological model of human development, which served as the theoretical framework for the investigation. Chapter 1 concluded with the significance of the study and definitions of key terms and acronyms.

In chapter 2, an overview was provided of the context of youth suicide as a public health issue, both nationally and in Iowa. A discussion was provided on the interplay between resiliency and youth suicide, including review of risk and protective factors. Information was included on national and state assessments of youth behavior, including the 2010 Iowa Youth Survey, the source of the data used in this study. Through expansion of Bronfenbrenner's (2005) biological model of human development, information was provided on macrosystems and microsystems impacting adolescent suicidal behavior for youth in general and specific to adolescent males.

Included in chapter 3 was a review of the methodology of the study, including discussion of the research design and methodological approach informing the investigation, with review of the research setting, sample and participants, and survey instrument. Each of the independent and dependent variables was discussed, with results provided from factor analysis. The chapter concluded with review of the connection of the variables to the theoretical framework, the plan for conducting correlational and hierarchical regression analyses, and delimitations and limitations of the study.

Chapter 4 provided results of the analyses conducted, including review of methods for screening the data and establishment of assumptions of normality. Frequencies and descriptive statistics were provided, as well as presentation of the results of significant correlations for each of the independent and dependent variables and of the regression analyses. The chapter concluded with answers to the three research questions hypothesized by this study.

The following sections of this chapter (chapter 5) discuss the results as they relate to the dependent and independent variables. The implications on policy and practice are provided for each of the macro- and microsystems, and the chapter concludes with final thoughts on this investigation.

### **Discussion of the Results**

Youth suicide is preventable. Unlike catastrophic illness or congenital maladies, which can take the lives of young people abruptly, suicide takes an intentional action of self-harm and at least some degree of contemplation even when carried out impulsively. A first step in decreasing the incidence of this devastating social condition is an understanding of the predictors of youth suicide. From that information, practitioners, as well as individuals, families, schools,

and communities, must determine how to integrate prevention and intervention into the settings where young people live, play, and learn.

As simple as it sounds, preventing youth suicide starts with helping young people see there are options to problems besides the permanent solution of death. One of the primary risk factors for death by suicide in a young person is the presence of prior attempts (Friedman, 2006), and suicide intent, which must precede an attempt, is “surprisingly common in the general adolescent population” (Gutierrez et al., 2005, p. 177). Teens are more likely than adults to exhibit the suicidal behaviors of intent and attempt, and more likely to die by suicide than are adults (Ash, 2006, as cited in Ash, 2008). As a result, prevention strategies for youth must look different than those used for adults.

The goal of this study was to determine predictors of adolescent male suicidal behaviors, through examination of individual, family, school, and community risk and protective factors. The results show of seven independent macro- and microsystem variables, each of the variables of *race/ethnicity, individual substance use, individual anti-social choices, individual self-determination, family engagement, school connectedness, and community support* were significant predictors for at least one of the suicidal behaviors of intent or attempt. In the sections below, each of these independent variables is discussed in detail.

### **Macrosystem**

One macrosystem variable, race/ethnicity, was examined for this study.

**Race/Ethnicity.** The macrosystem of race/ethnicity was a statistically significant predictor of suicide attempt, indicating youth who reported having an attempt were more likely to also report being nonwhite. However, the practical significance of this result may be small, as “variables in regression studies with beta weights of 0.05 or less, regardless of their level of

statistical significance, have little substantive meaning in terms of practice and policy” (Pedhazur, 1982, as cited in Smart, 2005, p. 473). The results are similar to those reported by the CDC (2012), which indicate whites are less likely to report having developed a suicide *plan* or carrying out a suicide *attempt* than either Black or Hispanic males (although whites are more likely to report suicidal *ideation*).

Nationally, when considering youth who have suicide *intent* (ideation or plan), the rate among white males is more closely aligned with that of Hispanic males and each are greater than for black males (CDC, 2012). In examination of reports of suicide *attempt*, adolescent white males trail Hispanic and black youth (CDC, 2012). However, in the Iowa Youth Survey sample of adolescent males, which was analyzed comparing whites versus nonwhites, only the variable of suicide *attempt* was significantly more likely to occur in youth who reported being nonwhite. A comparison of the national rate of suicide ideation, plan, and attempt with race/ethnicity is provided in Table 5.1

Table 5.1

*National Adolescent Male Suicidal Behaviors by Race/Ethnicity*

Race/ Ethnicity	Ideation	Plan	Attempt
White	12.8%	10.6%	4.6%
Black	9%	8.4%	7.7%
Hispanic	12.6%	11.1%	6.9%

<sup>a</sup>Adapted from CDC (2012)

The results from this study may have been influenced by the relatively low rate of Iowa youth who reported being nonwhite (11.6%), as compared to the national YRBS results, where 43.1% of the respondents reported being nonwhite (CDC, 2012). Thus, while race/ethnicity may not have been a statistically significant predictor of suicide intent, this may change as the

race/ethnic composition of Iowa changes, and should be considered as both a topic of future research and examination of culturally respectful interventions.

### **Microsystems**

Four microsystems of individual, family, school, and community were hypothesized to predict suicide intent and attempt. Each microsystem is reviewed in the following subsections.

**Individual behaviors.** Results of this study indicated that individual behaviors, both those aligned with *risk* and those aligned with *resilience*, were statistically significant predictors of at least one of the suicidal behaviors of intent or attempt. Participants were asked to rate their agreement with 14 items that described personal experience with risky and resilient behaviors. Those 14 items loaded on three constructs – two for risky behaviors (*substance use* and *anti-social choices*) and one for resilient behaviors (*self-determination*). The risky behavior constructs of substance use and anti-social choices, and the resilient behavior construct of self-determination, were each significant predictors of suicide intent and suicide attempt. Each of these constructs and their relationship with the dependent variables of suicidal intent and attempt are described in the following sections. For a detailed review of the factor analysis results, please refer to chapter 3.

**Individual risky behaviors.** Individual substance use and anti-social choices were predictors for suicide intent and suicide attempt. Based on a review of the literature, nine items were selected from the Iowa Youth Survey data set that reflected risky behaviors. These nine items loaded into two constructs, related to substance use and anti-social choices. Because both of these constructs were significant predictors of each of the suicidal behaviors of intent and attempt, a review of the items that loaded into the constructs is provided. The items included in

the risky behaviors construct of substance use asked whether youth had participated in the following during the previous 30 days:

- Had 5 or more drinks of alcohol in a row, that is, within a couple of hours
- Had at least one drink of alcohol
- Driven a car or other motor vehicle after using any amount of alcohol or other drugs
- Used marijuana

The items that loaded into the risky behaviors construct of anti-social choices asked whether the youth had experienced the following during the previous 12 months:

- Disciplined at school for fighting, theft, or damaging property
- Beaten up on or fought someone because they made the youth angry
- Damaged property just for fun (like breaking windows, scratching a car, etc.)
- Stolen something
- Carried a gun, knife, club, or other weapon to school

Risk-related actions such as substance use and anti-social choices in young males increase the likelihood of a variety of other defeating behaviors (Benzies & Mychasiuk, 2009), including suicidal ideation, planning, or attempt. Thus, changing a young male's propensity for a variety of anti-social choices can have a significant impact on the corresponding likelihood of suicidal behavior. Substance use among adolescent males is a leading predictor of suicidal behaviors (Shaffer et al., 1996), and the use of alcohol or drugs has been shown in young males to contribute to 12 times greater odds of attempting suicide (Brent et al., 1999).

Risk appears to beget risk, with evidence that young males who engage in self-destructive behavioral choices such as regular drinking (Aseltine et al., 2009), carrying a weapon and getting in to physical fights (Lester & Gatto, 1989), or displaying aggression in response to frustration

(Brent & Mann, 2006) exhibit key correlates of suicidal behaviors. The anti-social choices construct was statistically significant when examining prediction of each of the two suicidal behaviors examined, pointing to the need to understand more about how to steer young men away from negative behaviors. The substance use variable was also predictive of each of the suicidal behaviors of intent and attempt.

***Individual resilient behaviors.*** Individual self-determination was a predictor for suicide intent and suicide attempt. Based on a review of the literature, five items were selected from the Iowa Youth Survey data set that described resilient behaviors. These items loaded into a construct related to self-determination. Because this construct was a significant predictor of the suicidal behaviors of intent or attempt, a review of the items that loaded is provided. The items included in the resilient behaviors construct of self-determination asked whether youth agreed or disagreed with the following:

- When I have problems, I am good at finding a way to fix them.
- Working hard now will make my life successful in the future.
- I accept responsibility for my actions when I make a mistake or get into trouble.
- I think things through carefully before I make a decision.
- I can say “no” when someone wants me to do things I know are wrong or dangerous.

Resilient intrapersonal characteristics impact the likelihood suicidal behavior is avoided by young people. Adolescents who identify themselves as having a strong sense of purpose (Leffert et al., 1998) and self-efficacy (Beautrais, 2003) are less likely to demonstrate suicidal ideation or attempt. These positive internal beliefs about oneself appear to have an additive effect, in that youth who report feelings of competence also report avoiding destructive (risky) behaviors (Sharaf, Thompson, & Walsh, 2009). Those findings, which are in reference to

adolescents of both genders, are similar to findings from this study, where the variable of self-determination was significantly and negatively correlated with the variables of substance use and anti-social choices.

The results show young males who reported higher scores on the variable of self-determination were significantly less likely to report suicidal tendencies, including suicide attempt. Based on the questions included in this construct, youth with higher scores on this variable can be seen as future oriented, that is, able foresee the potential danger of certain behaviors, and believe that a positive behavioral investment now will serve them in the future. The construct related to self-determination was significant in predicting suicide attempt among adolescent males, suggesting the need to develop strategies to increase young males' sense of positive control over their own destiny.

**Family cohesion.** The family cohesion variable of family engagement was a predictor for suicide intent and suicide attempt. Based on a review of the literature, four items were selected from the Iowa Youth Survey data set that described family cohesion. These items loaded into a construct called family engagement. Because this construct was a significant predictor of the suicidal behaviors of intent and attempt, a review of the items that loaded is provided. The items included in the family cohesion construct of family engagement asked whether youth agreed or disagreed with the following:

- I can get help and support when I need it from someone in my home.
- I can talk about the things that bother me or I don't understand with someone in my home.
- I feel very close to at least one of my parents/guardians.
- In my home there are clear rules about what I can and cannot do.

Family plays a key role in preparing young people to manage the challenges of life, and impacts an adolescent male in ways that stretch beyond the household unit. As described by Bronfenbrenner (2005),

It is the family that determines our capacity to function effectively and to profit from later experience in the other contexts in which human beings live and grow – the school, peer group, higher education, business, community, and our society as a whole. (p. 263)

The impact of the family unit is additive and circular. In households where parents provide more support, their sons tend to have decreased emotional problems, which in turn decreases the youth's likelihood of suicide ideation (Simons & Murphy, 1985). Adolescents who describe their families as distant (Kandel et al., 1991), such as when parents do not monitor the young person's whereabouts (King et al., 2001), and do not attend school and other activities (Bearman & Moody, 2004) or make themselves available to talk (Gould et al., 1996), are more likely to display suicidal behavior.

The results of this study reflect the significance of the relationship youth have with their parents or guardians. The items included in the family engagement variable demonstrate a theme of positive communication and closeness with family members. The family engagement variable was a significant predictor of suicide intent and suicide attempt in the adolescent males in this study, pointing to a need to develop strategies with and for the family as a means of preventing youth suicide.

**School connectedness.** The variable of school connectedness was a predictor for suicide intent and suicide attempt. Based on a review of the literature, six items were selected from the Iowa Youth Survey data set that described school connectedness, and all six items loaded into the construct. Because the construct was a significant predictor of the suicidal behaviors of intent

and attempt, a review of the items that loaded is provided. The items included in the school connectedness construct asked whether youth agreed or disagreed with the following:

- My teachers care about me.
- My teachers are available to talk with students one-on-one.
- My teachers notice when I am doing a good job, and let me know about it.
- There is at least one adult at school that I could go to for help with a problem.
- I care about my school.
- I try to do my best in school.

The school setting, too, plays a role in impacting the likelihood of suicidal behavior, and certain factors can enhance or detract from the youth's personal resiliency. Adolescents who indicate feeling connected to school report decreased incidences of suicidal behavior (Beautrais, 2003), and in turn show evidence of better mental health (Kidger et al., 2012), which lessens that risk factor for suicidal behavior. Even indirectly, school personnel play a role in suicide prevention. Youth who report having teachers who understand and care about them demonstrate decreased likelihood of suicidal behavior (Simons & Murphy, 1985). While school can serve as a protective factor for young people, those who exhibit risky behavior choices while on school grounds are also more likely to also demonstrate risky behaviors that include suicidal ideation, plan, or attempt (Lester & Gatto, 1989).

The results of this study point to the significance of school connectedness in predicting the suicidal behaviors of intent and attempt. The role of school in predicting suicidal behaviors in young males is evidenced as well in the construct of anti-social choices, which included items related to risky choices on school grounds. These results suggest school-based interventions should include addressing the role of teachers and other building staff in development of

positive, supportive relationships with youth, as well as strategies to diminish anti-social behaviors on school grounds.

**Community support.** The variable of community support was a predictor for suicide intent. Based on a review of the literature, four items were selected from the Iowa Youth Survey data set that described community support, and all four items loaded into the construct. Because the construct was a significant predictor of the suicidal behavior of intent, a review of the items that loaded is provided. The items included in the community support construct asked whether youth agreed or disagreed with the following:

- Adults in my neighborhood or community help me when I need help.
- Adult in my neighborhood or community let me know they are proud of me when I do something well.
- Adults in my neighborhood or community spend time talking with me.
- Adults in my community care about people my age.

While the impact of the community may seem distantly related to the individual actions of suicidal behavior, there is clear evidence that involvement of positive adults (in addition to parents) in a young person's life is a strong protective factor in adolescent development and is correlated with improved mental health (Scales & Gibbons, 1996). As has already been established, protective factors impart the young person with the ability to be more resilient, which in turn impacts the ability to respond with positive strategies when life presents challenges rather than ones that are self-destructive.

The findings of this study show the variable of community support was a significant predictor of suicide intent, although not of suicide attempt. The lack of significance of community support as a protective factor against suicide attempt may lie in the adolescent male's

perspective about expectations other adults have on his life course and behavioral choices. For example, youth who feel a high level of support from community adults may avoid considering suicidal behavior because of feeling the care and engagement of those adults. However, a young male who feels he has disappointed community adults who have been supportive may turn to suicide to deal with the shame of having not lived up to their expectations. The items included in the community support variable demonstrate a theme of positive relationships with non-parental adults. These results suggest strategies to improve adults' ability to connect with young people within the community will help prevent suicidal behaviors.

### **Conclusion**

Each of these risk and protective factors has been demonstrated by literature to affect the microsystems in a young male's environment and contribute to the likelihood he will exhibit at least one of the suicidal behaviors of intent or attempt. In many incidences, the impact of risk or protective factors is intricately interwoven, such that the presence or absence of one factor becomes a trigger for additional positive or negative circumstances. The results described in the previous sections guided the implications for policy and practice found in the following sections.

### **Implications for Policy and Practice**

The results of this study show overlap in the microsystem variables and their prediction of suicidal behaviors. For example, this study showed a sense of connection to school, which was predictive of suicide intent and attempt, was correlated with each of the other microsystems investigated as predictors of suicidal behaviors. Thus, an increase in the variable of school connectedness also correlated with adolescent males reporting 1) decreased likelihood of engagement in substance use and anti-social behaviors, 2) increased sense of self-determination, 3) stronger family engagement, and 4) belief they have support within the community. Each of

these variables and their corresponding microsystems works interchangeably to strengthen youth interpersonally, and within the family, school, and community systems in which they interact. In turn, each of these factors works interchangeably to decrease the likelihood of suicidal behaviors. Implications for policy and practice, related to each of the microsystems examined in this study, are presented in the following sections.

### **Implications for Individual Interventions**

Risky behaviors have been shown as predictors of suicidal behavior, with the variables of substance use and anti-social behaviors significant predictors of both suicide intent and attempt. Youth involved in risky behaviors are likely to show secrecy about their actions, with families often aware only when the activities escalate to the point of being caught by parents or other authority figures. Added to this secrecy is the notion that adolescence is often a tumultuous time developmentally, where the “cutthroat quest for self-discovery and social adeptness, is difficult, and youth often internalize this struggle” (Galligan, Barnett, Brennan, & Israel, 2010, p. 202). Strategies to improve decision making skills can prevent anti-social choices and substance use and inhibit the likelihood youth will initiate those behaviors in the first place, as well as improve a young male’s sense of self-determination, which in turn may contribute to avoidance of risky behaviors.

Supporting positive behaviors, such as encouraging the development of the beliefs included in the self-determination construct, may be a more effective approach due to the strengths-based nature of these types of interventions. A strengths-based approach “seeks to identify and build strengths by helping [youth] to first appreciate their inherent resources and aptitudes before acting” (Saleebey, 2011, p. 477). This strategy would engage young people to recognize and strengthen their beliefs associated with feelings of self-determination, and promote

future-oriented thinking. For example, if youth are taught, beginning at an early age, strategies to avoid involvement in destructive activities, and how to respond positively to problems that do occur, they can begin to practice these skills while the issues are less complicated than what may arise in adolescence. Young people, who believe they can avoid trouble as well as deal with it appropriately when it does occur, may be less likely to turn to suicide as a solution.

The adolescent male initiating the deed of a suicidal behavior has the most intimate knowledge of his own actions, and theoretically the most ability to change the direction of those behaviors. Because the individual has the most opportunity to identify personal indicators of suicidal feelings, teaching young people to recognize when symptoms begin to impact their ability to function, as well as coping strategies and ways to ask for help, can help prevent youth suicide. An important aspect of this intervention is the specific act of talking about suicide, which decreases stigma associated with the issue as well as with underlying mental health concerns that often contribute to suicidal behaviors. Many programs exist that are designed to increase adolescent awareness of signs and symptoms of emerging mental health concerns, help them recognize signs of potential suicidal behaviors both personally as well as in their friends, and practice concrete steps on how to reach out to an adult for help.

Implementation of these strategies overlaps the implications for families, schools, and community, as youth would need these lessons, whether provided formally or informally, carried out by adults. Teaching youth to recognize signs and symptoms of suicidal behaviors can occur at the school level, such as in health classes or by families, churches, or other community groups. Approaches to prevent engagement in substance use and anti-social choices are often presented in school at the elementary level, typically through building- or district-wide strategies for encouraging positive behaviors, but these interventions often diminish as the student enters

middle school and high school. Families, schools, and community sites each have opportunities to teach youth how to avoid substance use and anti-social behaviors, and each of these systems is likely to contribute to the discussion when those behaviors do occur, both in terms of sanctions and pointed discussions with youth about the implications of their behaviors.

### **Implications for Family Systems**

Strengthening the adult-child relationship ultimately can help decrease suicidal behaviors, as evidenced by the variable of family engagement as a predictor of suicidal intent. Families need both guidance in how to strengthen relationships with their children as well as understanding the value of actions they may already be doing. One way to do this is to provide families with information about behaviors to nurture in children and youth, and why those behaviors are important. The goal is to help youth develop resiliency, which results from a combination of increasing protective factors and decreasing risk factors, and to provide families with an understanding of how simple behaviors they may already be conducting can strengthen their child in adolescence and beyond.

The Search Institute (2006) has developed a list of research based *Developmental Assets* which parents can practice and schools can enhance to help youth develop resiliency. The assets are intended to “represent the relationships, opportunities, and personal qualities that young people need to avoid risks and to thrive” (Search Institute, <http://www.search-institute.org/content/what-are-developmental-assets>, retrieved October 6, 2012).

For example, the family cohesion construct of family engagement was a predictor for each of the suicidal behaviors of intent and attempt, and items from the list of *40 Developmental Assets for Adolescents (ages 12-18)* (Search Institute, 2006) reflect items included in the construct:

- Family support – Family life provides high levels of love and support.
- Positive family communication – Young person and his or her parent(s) communicate positively, and young person is willing to seek advice and counsel from parents. (p. 1)

The list of assets are differentiated by developmental level (ages 3 to 5 years, 5 to 9 years, and 8 to 12 years) with age-appropriate descriptions, so are adaptable to various stages of family life. Each item is easily operational. For example, while most families recognize the need to offer help and support for their children, parents may not specifically connect that doing so can help prevent the likelihood of risky choices, including suicidal behavior, in adolescence. Providing families with specific strategies for how to develop supportive relationships with their youth can help prevent suicidal behaviors.

This information can be provided in person via formal or informal means, conducted by schools, community organizations, churches, or neighborhood groups; through local media outlets; or via electronic newsletters, blogs, tutorials, or other web-based methods initiated by the same organizations. Families can be provided with guidance about strengthening relationships with their children, as well as supporting other microsystems in the young person's life, and with information about the implications of family behavior on youth risk and protective factors. The benefit to families is access to information on resiliency and its impact in helping young people bounce back more easily from life's challenges.

In addition to strengthening household communication, preventive measures for adolescent suicide can include helping adult family members recognize the perhaps unspoken signals teens may present. Families are typically keen to recognize signs of distress in their children, however, may not know what to look for in adolescence, as evidenced by Friedman's (2006) finding that "parents are unaware of 90% of suicide attempts made by teenagers" (p.

2718). Providing family members with signs and symptoms of depression or other mood disorders that are risk factors for suicidal behaviors can help them understand what to watch for and initiate early intervention, especially since “children and teens are notoriously secretive about their own psychopathology” (Friedman, p. 2718). This information can be provided to parents, based on the developmental stage of the child, within other school- or community-based strategies that offer family guidance and support.

### **Implications for School Systems**

While the primary role of school is to ensure young people receive education and skills in preparation for employment, post-secondary education, and life in general, schools are poised to have a key role in suicide prevention, in part because they host an audience of youth day after day for extended periods of time. School connectedness was a significant predictor of each of the suicidal behaviors of intent and attempt. Themes in the Iowa Youth Survey items included in the school connectedness construct emphasized the role of student relationships with building staff and adolescents’ desire to perform to their personal capability in school. Implications upon the school setting are explored for each of these themes.

Evidence shows students who are more connected to school believe adults and peers in the school care about their learning as well as about them as individuals, and “students are more likely to engage in healthy behaviors and succeed academically when they feel connected to school” (CDC, 2010, p. 20). Much as with the family engagement construct, items from the school connectedness construct are reflected in the *40 Developmental Assets for Adolescents (ages 12-18)* (Search Institute, 2006), such as:

- Other adult relationships – Young person receives support from three or more nonparent adults.

- Caring school climate – School provides a caring, encouraging environment.
- Achievement motivation – Young person is motivated to do well in school.
- School engagement – Young person is actively engaged in learning.
- Bonding to school – Young person cares about her or his school. (p. 1)

As described in previous sections, the wording of each asset reflects various developmental levels (ages 3 to 5 years, 5 to 9 years, and 8 to 12 years), so are adaptable to different stages of family life. Each item is operational, allowing parents and school staff who wish to enhance the asset of school engagement to take steps in implementing strategies reflective of the asset content. For example, at the early elementary level, the asset of achievement of motivation is developmentally modified as, “Child is encouraged to remain curious and demonstrates an interest in doing well at school” (Search Institute, <http://www.search-institute.org/system/files/40AssetsK-3.pdf>, retrieved October 6, 2012). While school personnel are likely to report they believe it is important for youth to do well in school, they may not specifically understand support of that trait in students helps promote resiliency, and perhaps ultimately, rejection of suicidal behavior.

Establishing an environment of trust and engagement with students through daily personalized interaction is an intervention that costs nothing extra fiscally, and requires a relatively minor amount of time lost for other duties. Teachers and other employees who intentionally mingle with students during lunch or other breaks, stand outside classrooms during passing time, and get to know students by name and circumstance figuratively open the door to youth conversations that may at some point need to go deeper than daily chatter. This constant interaction can allow teachers and other building staff to recognize when student behavior changes and points to potential problems. The positive adult-youth relationships that develop can

also be helpful if and when the conversation becomes about anti-social behaviors on school grounds such as fighting or carrying weapons, both of which are correlated with school connectedness and ultimately are predictors of suicidal behaviors.

Establishment of a trusting relationship between students and school staff affords the opportunity for observation of an emerging mental health issue. One strategy schools can adopt is training their staff to know enough about basic symptoms of mental health concerns to enable them to refer the student for an assessment. Many programs exist to provide teachers and other school staff with the ability to recognize when a youth's behaviors warrant referral for further investigation. For example, the American Foundation for Suicide Prevention's *More Than Sad* (2009) is a brief educational video geared toward providing school staff (ranging from teachers, to bus drivers and cooks, to administrative assistants and principals), with an overview of behaviors a youth might display when in need of mental health intervention. School administrators can ensure their staff are allocated time at staff meetings or in-services to view the video and discuss implications within their own settings.

Presence of a mental health diagnosis is a key predictor of suicidal behavior in adolescents (Shaffer et al., 1996), and once identified, schools can help by offering or expanding on-site mental health services. More and more schools across the country maintain partnerships with local mental health providers, who in turn provide services during the school day in private offices within the building. School-based services are especially valuable for young people who have barriers to gaining or maintaining consistent clinical services. The provision of school based mental health services also supports the school's key goal of educating youth, as students whose emotional needs are addressed are likely to show success in school (Baskin, Slaten, Sorenson, Glover-Russell, & Merson, 2010).

Implementing measures to increase school connectedness, teaching staff how to recognize early signs and symptoms of emerging emotional health concerns, and providing site-based mental health services supports youth connectedness to school and can help prevent suicidal behaviors in adolescent males. Considering the number of adults who have the potential to interact closely each day with students, teachers and other school staff are ripe for playing a key part of prevention and possibly intervention should the young male share or demonstrate suicidal behavior.

### **Implications for the Community**

The role of community in predicting adolescent male suicidal behavior reflects a key aspect of Bronfenbrenner's (2005) belief that adults – in addition to those in a young person's own household – need to be actively involved in providing support and guidance. Community adults are also able to impact policy and practices at the macro level. The role of relationships with positive adults in addition to the youth's own family members has been identified as a key protective factor (Scales & Gibbons, 1996). When community adults develop relationships with young people, the elder may have the opportunity to notice if something is amiss.

One area where community members can become engaged in suicide prevention is through gate-keeper training such as Mental Health First Aid (Mental Health First Aid, [http://www.mentalhealthfirstaid.org/cs/program\\_overview/](http://www.mentalhealthfirstaid.org/cs/program_overview/), retrieved September 30, 2012). Such trainings are intended to allow lay people to recognize basic signs and symptoms of mental health concerns and suicidal behaviors, and coach participants on how to get help for the person who is suffering. However, these sorts of interventions cost time and money, and may receive little support in the community unless they occur in response to crisis.

Community members have a role in prevention of suicide beyond providing positive relationships with young people. Communities can be a part of a social movement, defined as “an organized activity that encourages or discourages social change” (Macionis, 2006, as cited in Spencer-Thomas & Jahn, 2012, p. 79), to change the way suicide is discussed and treated. This can be reflected by change within social policies and practices, which often require community pressure to occur. For example, community members can lobby legislators to ensure the highest level of mental health parity in employment and health insurance practices, so adolescents who need medical intervention to address mental health concerns can obtain affordable and quality care, and fair treatment if a medical mental health concern becomes protracted.

Community change can occur in the language used to refer to suicide. For example, use of the term *committed* to describe the act of suicide is seen as increasing stigma and blame (Suicide Prevention Resource Center [SPRC], <http://www.sprc.org/basics/about-suicide>, retrieved October 6, 2012) because the term is typically used in conjunction with criminal acts. Use of insensitive, although likely inadvertently so, language in turn can increase stigma and decrease the willingness of individuals to obtain treatment or share concerns with friends and loved ones. Instead, the SPRC recommends using the phrase *death by suicide* or *died by suicide*, following the same structure for attribution of death as is used for heart attacks, strokes, and other causes of death. Organized community engagement such as these and other preventive interventions requires change at the macro level, with “public policies and practices that provide opportunity, status, resources, encouragement, stability, example, and above all, *time* for parenthood, primarily by parents by also by other adults in the child’s environment, both *within and outside the home*” (Bronfenbrenner, 2005, p. 262).

## Recommendations for Future Research

The biennial Iowa Youth Survey was repeated in fall 2012. Most of the variables considered in this study were included with the same wording as compared to the 2010 survey. However, the response choices in the 2012 survey were modified for several of the items analyzed in this study. For example, the question asking about marijuana use in the prior 30 days was changed from inquiring *how many days* the substance was used to asking participants to reply *yes* or *no* as to whether they had used in the previous 30 days. The question asking whether participants had driven a car or other motor vehicle in the last 30 days was changed to inquiring whether youth had *ever* driven under the influence, and responses changed from a range including *Don't drive* to *6+ days* to a new range that asked about discrete incidents (0, 1, 2, 3+) with a lower ceiling of possible occurrences.

Significant changes were also made in the questions asking about suicidal behavior. In the 2010 survey, the term *attempting suicide* was changed to *killing yourself* for 6<sup>th</sup> and 8<sup>th</sup> grade respondents, but not for 11<sup>th</sup> grade participants. In the 2012 survey, each of the three questions that ask about suicide ideation, plan, or attempt were modified to read *attempting suicide* for all three grade levels of participants. While the differences in phraseology may seem slight, a direct comparison from one survey to another on these variables is difficult because it is not known how much the change in wording impacts participant response. These types of changes in the instrument make cross-survey comparisons more difficult. Despite these changes, future research should consider analysis of similar variables from the Iowa Youth Survey in order to establish trends in predictors of suicidal behaviors in 11<sup>th</sup> grade males.

Future examination of the data should be expanded for populations beyond 11<sup>th</sup> grade males. Researchers may want to include analysis of the Iowa Youth Survey for younger students

who are administered the questionnaire. Because half of mental health diagnoses known to impact suicidal behaviors (e.g., related to substance use, mood or anxiety, or impulse-control) start in young people by 14 years (Kessler, Berglund, Borges, Nock, & Wang, 2005), examination of predictors to suicidal behavior should include responses of 8<sup>th</sup> grade students, who typically turn 14 at some point during that school year. The responses of 6<sup>th</sup> grade students should also be examined. In a longitudinal study of young people with depressive symptoms, Mazzo, Catalano, Abbott, and Haggerty (2011) found nearly 40% of youth who reported having ever attempted suicide exhibited their first attempt in elementary or middle school. Analyzing responses between each of the grades would offer an opportunity to establish trends. Because the Iowa Youth Survey is now conducted every two years instead of every three years, analysis would not have the benefit of comparing a cohort of 8<sup>th</sup> grade students from across the state again as 11<sup>th</sup> graders, but since 6<sup>th</sup> graders are offered the Iowa Youth Survey again as 8<sup>th</sup> graders, there is still an opportunity to develop trends with a similar cohort.

Examination of Iowa Youth Survey data should include responses of female students, since the constellation of risk and protective factors impacting adolescent female suicide behavior is different from male peers (Lester & Gatto, 1989). Predictors of suicidal behavior in students who receive special education services should also be considered. There is little written on the impact of physical or cognitive disabilities on suicidal behaviors, but what little is available points to students with disabilities as more likely to have suicidal ideation or attempt than regular education peers (Bender, Rosenkrans, & Crane, 1999; Wachter & Bouck, 2008).

Future research may also want to explore the relationship between suicidal behavior and bullying, an area examined in the Iowa Youth Survey. Research has established a connection between bullying and suicide, with bullied youth and those who are perpetrators of bullying

more likely at risk for suicide (Hay & Meldrum, 2010). However, caution should be used in examination of bullying as a predictor of suicidal behavior, as the connection has been “sensationalized and oversimplified” (Youth Today, [http://www.youthtoday.org/view\\_article.cfm?article\\_id=5486](http://www.youthtoday.org/view_article.cfm?article_id=5486), retrieved September 30, 2012). In the past few years, several incidents of youth suicide have been blamed on bullying, and while that destructive behavior may “aggravate depression and increase suicide risk (Huffington Post, [http://www.huffingtonpost.com/2012/02/08/bullying-suicide-teens-depression\\_n\\_1247875.html](http://www.huffingtonpost.com/2012/02/08/bullying-suicide-teens-depression_n_1247875.html), retrieved September 30, 2012), suicidal behavior is complex and cannot be tied to just one precipitator. While the Iowa Youth Survey does not yet include items that ask about gender identity, future studies should consider reaching out to the population of lesbian, gay, bisexual, and transgender (LGBT) youth, as emerging research has indicated that these youth not only are more at risk of suicidal behaviors than their heterosexual counterparts (Cooper & Blumenfeld, 2010; Joe, Canetto, & Romer, 2008), they are more likely to be bullied (Berlan, Corliss, Field, Goodman, & Austin, 2010; Cooper & Blumenfeld, 2010). These two risk factors combined make LGBT youth more at risk for serious emotional and physical consequences.

### **Final Thoughts**

Suicide is a complex public health problem made especially tragic when it impacts the life of a young person. Family and friends are left to grieve for the victim’s imagined future, and seek desperately to understand the meaning behind the young person’s death. The factors impacting the possibility a young male will engage in suicidal behaviors are complex, but there are patterns of influences that can predict the likelihood of suicidal intent or attempt. For adolescents, those influences typically come from within, or through the family, school, and community. The hope of this study was to inform future practice so as to diminish the incidence

of youth suicide, and thereby decrease the personal impact of a loss that can never be fully understood.

## Appendix

2010 Iowa Youth Survey questions used to inform this study are provided in this section.

### Demographic Characteristics

- A4 In what grade of school are you?
- A5 What is your current age?
- A6 Are you a male or a female?
- A7 Would you describe yourself as? [Race/ethnicity]
- A8 Where are you now living?
- A10 Do you have a physical, health, or learning disability?
- A11 Are you a student who has an IEP and/or receives special education services?

### Things I have Tried or Done and Things That Have Happened to Me

- B26 During the last 30 days, on how many days did you have 5 or more drinks of alcohol (glasses, bottles or cans of beer; glasses of wine, liquor, mixed drinks) in a row, that is within a couple of hours?
- B27 In the last 30 days, how many days have you driven a car or other motor vehicle after using any amount of alcohol or other drugs?
- B30 In the past 30 days, on how many days have you had at least one drink of alcohol (glass, bottle or can of beer; glass of wine, liquor or mixed drink)?
- B31 In the past 30 days, on how many days have you used marijuana (pot, grass, hash, bud, weed)?
- B84 During the past 12 months, did you ever seriously consider attempting suicide?
- B85 During the past 12 months, did you make a plan about how you would attempt suicide?
- B86 During the past 12 months, how many times did you actually attempt suicide?
- B88 In the past 12 months, how often have you carried a gun, knife, club, or other weapon to school?
- B91 In the past 12 months, how often have you been disciplined at school for fighting, theft, or damaging property?
- B93 In the past 12 months, how often have you damaged property just for fun (like breaking windows, scratching a car, etc.)?
- B94 In the past 12 months, how often have you beaten up on or fought someone because they made you angry?
- B97 In the past 12 months, how often have you stolen something?

### My Beliefs and Attitudes

How much do you agree or disagree that each of the following statements is true:

- C6 I can say “no” when someone wants me to do things I know are wrong or dangerous.
- C8 Violence is the worst way to solve problems.
- C9 It is against my values to have sex as a teenager.

- C11 It is against my values to use alcohol and drugs as a teenager.
- C12 I accept responsibility for my actions when I make a mistake or get into trouble.
- C14 When I have problems, I am good at finding a way to fix them.
- C15 I think things through carefully before I make a decision.
- C17 I believe that working hard now will make my life successful in the future.

### **School Questions**

How much do you agree or disagree that each of the following statements is true:

- E16 My teachers care about me.
- E17 My teachers are available to talk with students one-on-one.
- E18 My teachers notice when I am doing a good job and let me know about it.
- E21 I care about my school.
- E22 I try to do my best in school.
- E26 There is at least one adult at school that I could go to for help with a problem.

### **Family Questions**

How much do you agree or disagree that each of the following statements is true:

- F1 In my home there are clear rules about what I can and cannot do.
- F4 I feel very close to at least one of my parents/guardians.
- F5 I can talk about the things that bother me or I don't understand with someone in my home.
- F6 I can get help and support when I need it from someone in my home.

How often do the following occur:

- F7 A parent/guardian knows where I am and who I am with, especially in the evening and on weekends.
- F8 A parent/guardian checks to make sure I have done the things I am supposed to do (school homework, household chores, get home on time, etc.).
- F12 At least one of my parents/guardians goes to school activities that I am involved in.

### **Community Questions**

How much do you agree or disagree that each of the following statements is true:

- G21 Adults in my community care about people my age.
- G24 Adults in my neighborhood or community let me know they are proud of my when I do something well.
- G25 Adults in my neighborhood or community help me when I need help.
- G26 Adults in my neighborhood or community spend time talking with me.

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