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Author
Rice, Jennifer Kathleen

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College Student Suicide: How Students at Risk Use Mental Health Services and Other Sources of Support and Coping

By

Jennifer Kathleen Rice

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Committee in charge:

Professor Lonnie R. Snowden, Chair
Professor Jennifer E. Ahern
Professor Ann C. Keller

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Abstract

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College suicide rates are stable, but up to 10% of students experience suicidal ideation each year, and most do not access mental health services. Little is known about campus mental health service structure and delivery. In a mixed model, quantitative-to-qualitative design, this study examined the link between suicidal ideation, mental health service use, and suicide attempt using archival survey data of over 25,000 college students from 70 campuses, collected in 2006 by the UT Austin-based National Research Consortium of Counseling Centers in Higher Education. Survey respondents had lower levels of 12-month suicidal ideation (6%) than typical national rates, and almost half of those with ideation had accessed mental health services. The quantitative analysis included multiple psychosocial and demographic variables known to affect suicide risk – an extension of prior college suicide research. Bivariate and regression tests of association found that several health service variables, for example seeing a counselor, were significantly associated with higher rates of suicide attempt. This seemingly counter-intuitive finding was mostly driven by a group of "high reactors" - students with both significant distress and a higher tendency to access services. The qualitative analysis sought to expand knowledge of what resources students use to cope with ideation, including formal healthcare or informal sources of support, and how this differed on two variables: whether students had accessed services and whether they had made a suicide attempt. Survey respondents' open-ended descriptions of what they found helpful or unhelpful during their suicidal crises were analyzed for common themes. Social support from friends and loved ones was more often reported by service users than non-service users, and was associated with lower attempt rates. Social interaction increased attempt rates if students described receiving unhelpful feedback, such as shaming or minimization of their emotional state, and this risk was greater for those students who also did not see any mental health provider. Another common theme that was associated with lower suicide attempt rates, regardless of service use, was the use of coping behaviors and skills, such as talking problems through with a friend. These findings suggest areas of focus for future research and intervention; for example, mental health providers can guide students in recruiting appropriate social support. This study contributes to the understanding of how and whether suicidal students utilize campus mental health services and other sources of support, which is needed for guiding policy on suicide prevention efforts and directing future research on service effectiveness. Campus-level variables were also examined for differences in suicidal behaviors and service use, with few differences found across the 70 campuses.

Dedication

In memoriam

Ravi Singh Sohal

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Chapter 1 - Introduction

Overview

College is a time of excitement and great change, as students and their parents invest in their future. When a student dies by suicide, many members of a campus community may be affected, because of the unique social environment of the campus setting, with its many overlapping connections between people (Shneidman, 1993; Silverman, 2004). Counseling center staff may dedicate many hours to counseling friends and colleagues of the deceased (Levine, 2008; Seeman, 2015). High-profile campus suicides in recent years have led to increasing media attention to this issue and to mental illness among students (Arenson, 2004; Baker, 2014; *Best practices for making college campuses safe*, 2007; Kitzrow, 2003; May, 2003; Mowbray et al., 2006). While it is widely reported that mental illness is on the rise on U.S. campuses, suicide rates have remained stable since the 1990's, and they are about half the rate of suicide for the same age group in the general population. Still, suicide is the third leading cause of death among college students, and many students who attempt suicide never seek professional help (Haas, Hendin, & Mann, 2003; Kisch, Leino, & Silverman, 2005; Schwartz, 2006a). With increasing attention to this issue, many have called for improved campus suicide prevention efforts and support for campus mental health services (Berger, 2002; Chisolm, 1998; Lamberg, 2006; Levine, 2008; Pavela, 2006).

The picture of mental health service provision on campuses is complex. Campuses present both unique challenges and opportunities for preventing suicide. Most colleges and universities today have counseling centers located on campus, which are responsible for providing mental health services to all students in need. Much of their work centers on a brief therapy model to help students address normal developmental issues associated with young adulthood, such as being away from home, first serious romantic relationships, and adjusting to college life (Center for Collegiate Mental Health [CCMH], 2015a; Kitzrow, 2003; Lee, 2005). The brief therapy model is inadequate however for addressing the needs of students with chronic serious mental illness or who are in suicidal crises. They may require long-term therapy, medication management, or hospitalization. A suicide crisis necessitates a detailed and extensive risk assessment and involves multiple health professionals as well as campus staff (*Best practices for making college campuses safe*, 2007; Silverman, 2004; Simon, 2006).

Opportunities for outreach abound on campuses, through classes, student housing, and dining and other services. Recent suicide prevention efforts include the development of crisis response plans and trainings for housing and academic staff that help them identify and refer at-risk students (Arenson, 2004; Baker, 2014; *Best practices for making college campuses safe*, 2007). Though suicide rates are stable, the resources for dealing with suicidal crises are stretched thin by increased demand for services overall, including services for students with serious and chronic mental illness (Bishop, 1995; Cooper, 2005; Haas et al., 2003; Hunt & Eisenberg, 2010; Kitzrow, 2003; Lacour & Carter, 2002; May, 2003; Voelker, 2003). There is evidence that student to mental health professional ratios are particularly high at large, public universities (Gallagher, 2004-2013). Mental health professionals have expressed concerns that suicidal students are receiving inadequate or inappropriate services, such as off-campus referrals without assistance or follow-up, and forced academic withdrawal and eviction from campus housing,

thereby isolating them and possibly worsening their suicide risk and any comorbid mental illness (Baker, 2014; Lamberg, 2006; Pavela, 2006). There are psychiatric standards for best practices in assessing and treating suicide risk, as well as professional association standards and recommendations focused specifically on the campus setting (Council for the Advancement of Standards in Higher Education [CAS], 2014; Douce & Keeling, 2014; Gruttadaro & Crudo, 2013; International Association of Counseling Services [IACS], 2010; The Jed Foundation, 2015; Simon, 2006; Substance Abuse and Mental Health Services Administration [SAMHSA], 2015). Still, it is unclear whether over-stretched counseling centers can implement such standards in their campus environment. Under conditions of varying resources centers may have to be flexible in service models, by using, for example, more referrals off-campus, different mental health professional types, and session limits (Baker, 2014; CCMH, 2015a; Hunt & Eisenberg, 2010; Kitzrow, 2003; Lacour & Carter, 2002; Mowbray et al., 2006; Stone, Vespia, & Kanz, 2000).

Most suicide research comes from the fields of psychology and sociology, focusing on high-risk groups, comorbid illnesses such as depression, or related mood states such as hopelessness (Farabaugh et al., 2011; Nock et al., 2008; Silverman, 2004; Simon, 2006). College suicide studies are limited, each focusing on a few risk factors or on the prevalence of suicidal behaviors in a limited population, often one campus (Arria et al., 2009; Barrios, Everett, Simon, & Brener, 2000; Brener, Hassan, & Barrios, 1999; Farabaugh et al., 2015; Gillman, Kim, Alder, & Durrant, 2006; Langhinrichsen-Rohling, Arata, Bowers, O'Brien, & Morgan, 2004; Mackenzie et al., 2011; Van Orden et al., 2008; Westefeld et al., 2005). At the same time, no comprehensive data exist on how services are structured and delivered at different campuses to prevent and treat suicidal behaviors, or on the effectiveness of those services, creating a significant knowledge gap. Some have written of innovative screening models that use the access campuses have to their students to identify and treat suicidal risk early. Such models are being evaluated at only a few campuses, and so widespread data on their effectiveness is not yet available (Garlow et al., 2008; Lamberg, 2006; Levine, 2008). Few have examined the link between suicidal behaviors and service use beyond some studies on help-seeking behaviors, and none have included a comprehensive array of services a student in suicidal crisis might access (Brownson, Drum, Smith, & Burton Denmark, 2011; Burton Denmark, Hess, & Becker, 2012; Drum, Brownson, Burton Denmark, & Smith, 2009; Eisenberg, Downs, Golberstein, & Zivin, 2009; Givens & Tjia, 2002; Gruttadaro & Crudo, 2013; Hyun, Quinn, Madon, & Lustig, 2006; Yorgason, Linville, & Zitzman, 2008; Zivin, Eisenberg, Gollust, & Golberstein, 2009). The various models of service being used on campuses across the country provide an opportunity to evaluate them and develop best practices for suicidal risk prevention, assessment, and treatment, particularly as few evidence-based models for mental health care have been tested in the college setting (Hunt & Eisenberg, 2010; Lee, 2005; Nock et al., 2008; Silverman, 2004).

This study begins to address this knowledge gap by examining suicidal behaviors and service use from a large, aggregate survey of students from across the U.S. A mixed model of analysis is used. In the first, quantitative analysis, bivariate statistics and logistic regression are used to examine the association between suicidal behaviors and service use, as well as other variables that affect suicide risk. Data are reported on services used to treat suicidal ideation such as professional types seen, medication used, or hospitalization, an extension of previous research. Sociodemographic, psychosocial, and other variables known to be related to suicidal behavior

are included, addressing a common limitation of previous college suicide studies. In the second, qualitative analysis, students' open-ended descriptions of what they found helpful or unhelpful to their suicidal crises are analyzed for common themes. These could include both formal care and informal sources of emotional and social support, as well as previously unknown constructs and variables that may be an important part of the suicidal student's experience. This study contributes to the understanding of how and whether suicidal students utilize campus mental health services and other sources of support, which is needed for guiding policy on suicide prevention efforts and directing future research on service effectiveness.

In sum, the two main, overarching research questions posed in this study were:

1) What students are at risk for suicide, and how many of them access mental health services? What type and how many services are accessed, and how are they associated with suicidal behaviors, including suicide attempts, and other relevant variables?
2) In their own words, what do students say was most helpful to them during their suicidal crises, and what was least helpful?

In this chapter, background information is presented that describes the phenomenon of suicide, including important psychosocial and demographic factors that affect risk. Best practices for prevention of suicide and treatment of clients at risk are discussed. Data on suicidal behavior prevalence among young adults and college students follows, and a review of prior college suicide research is presented. The discussion then turns to what is known about the provision of campus mental health services, including recent trends, based on published research, professional reports, and anecdotal evidence. These sources suggest how campus counseling centers may be adjusting to increases in student demand and external pressure to prevent suicide under conditions of decreasing resources. More research is needed on what specific services suicidal students receive, and their experience of these services. This gap in knowledge provides the framing for the research questions presented here. The chapter concludes with a repeat of the study's aims and contributions.

Suicide Theory; Risk and Prevention

One of the leading authorities on suicide, Dr. Edwin Shneidman,[1] described suicide as an individual psychological event in which self-annihilation is perceived by the individual to be the best option available for decreasing intense psychological pain. He attributed the act of suicide to a combination of two factors: high lethality and high perturbation. The immediate treatment for a person in suicidal crisis includes removing any means of lethality (e.g., access to firearms) and addressing sources of perturbation (Shneidman, 1993). The short-term goal is to secure the patient's safety and provide some time for the crisis to pass. Crisis intervention may include hospitalization and taking immediate, concrete steps to decrease stressful circumstances. Identifying and addressing sources of distress may involve working with loved ones and other acquaintances of the patient (Shneidman, 1993; Simon, 2006).

[1] Dr. Shneidman founded the American Association of Suicidology and the journal *Suicide and Life-Threatening Behavior*.

Simon (2006) wrote that one can never predict a suicide; one can only determine the risk of its occurrence. Certainly very high-risk patients can be identified when a number of visible risk factors are present, such as strong suicidal ideation, access to a weapon, a written suicide note, and the presence of comorbid mental illnesses and states of mind. Suicidal ideation – suicidal thoughts and/or consideration of suicide- is one key risk factor, and it often precedes suicide planning and suicide attempts (Simon, 2006). Beck's Scale of Suicidal Ideation (SSI) is frequently administered to patients to assess current risk (Beck, Kovacs, & Weissman, 1979; Borges, Angst, Nock, Ruscio, & Kessler, 2008; Brezo et al., 2008; Reinecke & Franklin-Scott, 2004). The Suicide Intent Scale (SIS) is another measure, used with patients after a nonfatal suicide attempt, to determine the severity of their intention to die and help assess the risk of future attempts. It measures such variables as the probability of being found by someone (something that may be planned by the patient), verbalizations about intent, and patient beliefs about lethality (Freedenthal, 2008; Hasley et al., 2008; Reinecke & Franklin-Scott, 2004; Sisask, Kolves, & Varnik, 2009).

Best practices for the management of suicidal clients include frequent risk assessments that combine data from multiple sources, such as patient history, the results of any scales or tests that have been administered, consultation with others, and situational factors in the patient's life. Youth in particular may deny experiencing suicidal ideation, so involvement of family and friends when assisting a young adult in crisis may be critical. Each risk assessment should include recommendations for ongoing treatment and plans for follow-up. Completing a full risk assessment is complex, as all sources of both risk and protection must be identified and discussed with the patient and others. Risk factors include prior and current mental illness and treatment, access to a lethal method of killing oneself (e.g. a firearm), prior suicide attempts, depression, anxiety, loss of a recent relationship, and recent negative events in the patient's life. Patient beliefs about death and reasons for living, as well as emotional states such as hopelessness also affect their level of risk. [2] Comorbid physical symptoms such as insomnia or physical illness are identified and treated where possible (Simon, 2006).

One of the therapeutic goals of suicide intervention is to identify risk factors that are modifiable, and plan changes in the patient's current situation that will reduce those risk factors. The clinician must try to build a therapeutic alliance with the client, in which there is trust and open communication, as well as build cooperative agreements with other potentially supportive people such as loved ones. Delays in treatment are not only risky to the patient's life but can lead to feelings of despair and demoralization, and the risk of current psychological problems becoming entrenched (Simon, 2006). In longer term therapy following a suicidal crisis, mental health practitioners work with the patient to lessen the comorbid mental illnesses that are typically found in suicidal individuals (Shneidman, 1993; Silverman, 2004; Simon, 2006).

In addition to suicidal behavior scales, practitioners often use scales that measure related phenomena, such as the Beck Depression Inventory (BDI) and the Beck Hopelessness Scale

[2] In this paper distinction is made between two types of risk factors for suicide: mental illnesses such as depression, which are considered diagnosed medical conditions, and mental or emotional states such as hopelessness, which are not considered to be medical conditions. Research, prevention, and treatment of suicide risk often include both these categories of risk factors.

(BHS)(Reinecke & Franklin-Scott, 2005). Both depression and hopelessness are highly correlated with suicidal behavior, and are potentially treatable with cognitive behavioral therapy or dialectical behavior therapy (Silverman, 2004). Chronic mental illness of any kind, except retardation, increases suicide risk across the life span. For example, people with schizophrenia have a lifetime completed suicide rate of between 9% and 13%. Risk may be exacerbated by the combined presence of chronic mental illness such as major affective disorder or borderline personality disorder, and acute risk factors such as anxiety. Family history of mental illness and suicide, substance abuse by the patient, and patient history of suicidal behavior all increase risk as well. All of these considerations must enter into a plan of assessment, treatment, and management of an at-risk patient (Nock et al., 2008; Simon, 2006).

Mental health providers should identify protective factors in a patient's life, for they may provide some counterbalance against risk factors. Known protective factors include family and social support, pregnancy, having dependent children, religious beliefs, responsibility to family, coping skills, and cultural norms against suicide (Nock et al., 2008; Simon, 2006). It should be noted, however, that cultural norms around suicide differ across ethnic groups and in some cases may serve as a barrier to accessing mental health services, or support the belief that suicide is an acceptable choice for dealing with shame or physical illness, thus increasing the risk of suicide (Horton, 2006; Mori, 2000).

Assessing suicide rates at the population level can be challenging. This may be due partly to underreporting by coroners and what Shneidman calls "sub-intentioned" suicidal behaviors, such as increasing medication use over time. These behaviors may be partly suicidal though suicide is not recorded as a cause of death when the individual finally dies. Like other mortality statistics, aggregate suicide rate calculations rely on large databases comprised of death records, whose recording practices may vary from source to source. For example, what one coroner records as a suicide another might record as complications due to medication use. Shneidman has noted this problem when trying to ascertain the true death rate in the general population due to suicide, and recommends improved systematized methods for reporting suicide in death records (Shneidman, 1993).

Suicidal behaviors that do not result in a completed suicide (i.e., death) are even more likely to remain uncaptured by any database, particularly because of the sensitive nature of this topic. Oftentimes then, suicides are only studied when they are completed. Even then, causal information is often lacking. Psychological autopsies are conducted on a case-by-case basis to shed light on the causes and circumstances of completed suicides, but such case studies may have methodological problems (Shneidman, 1993). Studying only completed suicides results in measurement bias in two main ways – there is adverse selection away from suicidal behaviors that result in injury but not death, and there is no way to query the suicidal person's experience except via letters and other personal writings, and second-hand reports. Suicide research must contend with the problem of studying a phenomenon with a low base-rate, because completed suicides are relatively rare. One way to address this is the use of prospective surveys that assess a variety of nonfatal suicidal behaviors such as ideation, which might also illuminate what factors are influential in causing people to transition from suicidal ideation and planning to suicide attempts and fatalities (Nock et al., 2008).

Suicide Rates Among Young Adults: General Population Estimates

Though suicide rates have stabilized since the late 1990's, including among youth, suicide is still a prominent source of mortality for young people (Haas et al., 2003; Nock et al., 2008). In 2014 the World Health Organization (WHO) reported that suicide is the second leading cause of death worldwide among those 10 to 24 years old (WHO, 2014). The Centers for Disease Control (CDC) reported that for people under age 24, the suicide death rate per 100,000 was 6.16 and 1.03 for males and females, respectively (CDC, 2010). When that age range is narrowed to 20 to 24 years old, the combined rate climbs to 12.3 per 100,000 (Horton, 2006).

Youth suicide rates differ by race and gender in ways that are complex and poorly understood. In 2002, Native American males between 15 and 24 years old had the highest suicide rate of 27.9 per 100,000, followed by non-Hispanic White males with a rate of 19.3 per 100,000. Both of these rates represented declines in the previous decade. African American males in that age group had a suicide rate of 11.3 per 100,000, also a decline in the past decade, though that group had seen increases prior to 1990 from a historically low rate. Hispanic and Latino males had a rate of 10.6 per 100,000, followed by Asian American and Pacific Islander males at 8.7 per 100,000. Males in general have higher rates of completed suicide, while females have higher rates of nonfatal attempts; this is in part due to the lethality of method used (e.g., males are more likely to use firearms) and in part due to lethality of intent (Horton, 2006).

The order of risk by ethnicity differs somewhat for young women. Like males, Native American females had the highest rate of their gender in 2002, at 7.4 per 100,000, followed by non-Hispanic Whites at 3.4 per 100,000. Unlike males however, the next highest group was Asian American and Pacific Islander females, at 3.3 per 100,000. Hispanic and Latino females had rates of 2.1 per 100,000, followed by African American females, who had the lowest rate at 1.7 per 100,000 (Horton, 2006). The difference in suicide rates created by the intersection of gender and ethnicity suggests that there are complex psychosocial and cultural phenomena at work that have yet to be discovered.

Suicide Rates and Mental Illness Among Young Adults: College Student Estimates

In terms of completed suicides, the suicide rate in college-aged populations has been stable for the last several decades, after gradually decreasing over the past century. Best estimates suggest that it is about half the rate found in the general population of the same age, at between 6.5 to 7.5 per 100,000 students (Haas et al., 2003; Kisch et al., 2005; Kitzrow, 2003; Schwartz, 2006b). One difficulty in comparing college rates with general population rates is that national data usually provide rates based on the age range 15 to 24, whereas about 60% of college students are less than 24 years old; the rest are older. The Big Ten Study of 261 completed suicides on 12 campuses, from 1980 to 1990, indicated that students over age 25 were at increased risk for suicide, and graduate students had suicide rates that were higher than the general population, particularly among women. Female graduate students had a suicide rate of 9.1 per 100,000 and male graduate students 11.6 per 100,000 (Silverman, 2004). These data are now 20 years old and based on a limited sample size; more research specifically on graduate students is needed.

Before addressing the state of knowledge about suicidal behaviors among college students, it is important to note that the impact of any disease, particularly mental illness, can be measured in several ways. One is through self-report of impairment, where individuals report how an illness is affecting their quality of life or their ability to conduct the usual activities of living, such as school attendance or working. Another measure of illness is through formal medical diagnoses, provided by medical professionals and recorded through systematic coding. Diagnoses data are often aggregated for databases at higher levels, such as states or nations. A third way to quantify any disease is by measuring utilization rates of health services that treat that disease, such as hospitalization or medication use.[3] The drawback to this type of measure is that it misses those with illness who do not seek formal medical care (Horwitz & Scheid, 1999; Reeves et al., 2011; Tannenbaum, Lexchin, Tamblyn, & Romans, 2009). Given the stigma associated with both mental illness and receiving mental health services, this area of disease is probably more underreported than most, in that not all those who are mentally ill will use mental health services. Data on college student suicidal behavior come from two main sources: surveys of college students, and utilization data from campus counseling centers. Both sources have their strengths and weaknesses.

From service utilization data, there is evidence that the number of students seeking professional health services for mental illness has been steadily increasing, including for serious and chronic mental illness. Utilization data from 11 universities in the "Big Ten" Conference found a 42% increase from 1992 to 2002 in students seen at counseling centers (Voelker, 2003). Reports based on data from various individual universities have shown similar trends, with increases of 40% to 55% in students seeking counseling in the late 1990's and early 2000's, including an additional bump in demand after the September 11, 2001 terrorist attacks. It is widely reported that the number of students with serious psychological problems has increased as well, placing pressure on counseling centers to provide adequate services for them. Some of this increase is due to the advent of newer and better medications that allow seriously and chronically mentally ill students to function well enough to attend college, who would not have been able to do so in the past (Hunt & Eisenberg, 2010; Kitzrow, 2003). Because resources either remained the same or decreased for most centers during the same time period, many counseling centers adopted a brief therapy model that limited the number of sessions students were allowed to receive (Bishop, 1995; Cooper, 2005; Haas et al., 2003; Kitzrow, 2003; Lacour & Carter, 2002; Voelker, 2003).

Since 1981 an annual survey has been conducted of counseling center directors across the United States (Gallagher, 2013). For the purposes of this paper, survey data from the years 1995 through 2013 are reviewed. Beginning in 1995, the survey was sponsored by the Association of University and College Counseling Center Directors (AUCCCD)(AUCCCD, 1995-2003), and beginning in 2004, annual reports on survey data were published by the International Association of Counseling Standards (IACS), an accreditation organization for college counseling centers. Also beginning in 2004, reports were authored by Robert P. Gallagher of the University of

[3] Treatment of any one disease may or may not include preventive care or diagnostic tests for the presence of that disease. Preventive care may also be performed for less serious illness that could possibly lead to a more serious disease state if untreated. For example, a student experiencing mood states such as helplessness, or wanting assistance with a problem such as adjusting to academia, might or might not be diagnosed with a mental illness, such as depression or chronic anxiety. The service data reported here on college mental health include counseling sessions for students without a formal diagnosis for a medical condition. One limitation of current mental health research is that service data rarely include diagnoses.

Pittsburgh and co-sponsored by the American College Counseling Association (ACCA), an organization for college counseling professionals. These reports have continued to the present (Gallagher, 2004-2013). In 2006, the AUCCCD began to conduct a separate survey, substantially different from the Gallagher surveys in both item inclusion and response category ranges (Rando, Barr, & Chuy, 2008). Therefore, to track some comparable data over time, the data shown here for 2006 through 2013 are those from the Gallagher reports (Gallagher, 2006-2013). It should be noted that directors survey data are affected by both sample selection bias and measurement bias,[4] and because publicly available data are aggregated, they are limited in their generalizability to all campuses.[5] They are presented here only for background information on counseling center service trends, and not for the analyses that address the main research questions of this study.

Though survey items have changed over time, some are consistent. For every year of the directors survey from 1995 to 2013, the directors were asked to report the number of hospitalizations of students from their campus for mental health reasons, and the number of suicides.[6] These data are shown in Table 1. Hospitalization rates grew from an average of 5.72 per campus in 1995 (N=321[7]) to an average of 9.21 in 2013 (N=203). Completed suicide rates, on the other hand, remained fairly stable, ranging from 0.4 to 2.5 suicides on average per campus per year. There were 1.74 suicides per campus in 1995 (N=321) and 1.6 suicides per campus in 2005 (N=366). By 2013, the number was 1.82 (N=203) suicides on average per campus. The lowest and highest reported suicide rates were an average of 0.42 suicides per campus in 2009 (N=385), and 2.47 suicides per campus in 2004 (N=339), respectively. It should be noted that both the hospitalization rate and suicide rate are somewhat influenced by campus size, and since the composition of respondents varies from year to year, the sizes of responding campuses have differential effects on average values such as these. In 2005, for example, the survey reported some data by four size ranges of campuses: those with fewer than 2,500 students, those with between 2,500 to 7,500 students, those with between 7,500 to 15,000 students, and those with more than 15,000 students. While the overall suicide rate in 2005 was 1.6 per campus (N=366), this varied from 1.1 suicides per campus for the two smallest size ranges of campuses (N=103 and N=94), to 1.2 per campus for schools with between 7,500 to 15,000 students (N=69) and 1.9 per campus for schools with more than 15,000 students (N=97)[8](AUCCCD, 1995-2013; Gallagher, 2004-2013). Overall, the stability of the suicide rate in these data is in keeping with other reports that college suicide rates have been stable in recent years, discussed at the beginning of this section. Still, these data are by no means exhaustive, and should be viewed cautiously because of the surveys' limitations.

[4] Sample selection bias may occur in the annual directors surveys due to voluntary participation by its member colleges. Measurement bias is created by changing the wording of questions that address the same phenomena year to year. Item selection is also influenced by the preference of directors survey designers.
[5] Raw data from the surveys are not available for public use, as these data are considered to be confidential and collected for the professional benefit of the counseling center directors only.
[6] Note that this would be number of completed suicides, i.e., those resulting in death. The number of nonfatal suicide attempts on each campus is not captured by the directors survey in most years.
[7] The number of respondents for each year of the directors survey differs. Where figures for individual years are reported, the number of respondents in that year is also provided.
[8] Total number of responding campuses on this item, N=363, are fewer than the total number responding to the survey (N=366), because of missing data.

Table 1 – Trends in hospitalizations and suicides on campuses, directors survey data 1995 through 2013

Year	Average Number of Hospitalizations Per Campus	Average Number of Suicides Per Campus
1995	5.72	1.74
1996	5.7	1.68
1997	5.5	1.6
1998	5.8	1.7
1999	5	1.7
2000	5	0.5
2001	4.9	0.5
2002	5.7	N/A*
2003	7.44	2.08
2004	7.8	2.47
2005	8.2	1.6
2006	7.4	1.6
2007	8.6	1.4
2008	8.2	1.6
2009	8.5	1.3
2010	7.9	0.5
2011	9.4	N/A*
2012	8.5	1.6
2013	9.21	1.82

*This item was not queried in the given year.

In the 2006 directors survey, the total number of suicides is reported for the sample group; 142 completed suicides were reported by all the respondents (N=367), for a population rate of 3.8 per 100,000 students. This figure agrees with other reports of college suicide rates. Only 14 of the 142 (10%) students who died by suicide were former or current counseling center clients (Gallagher, 2006). As noted previously, not all students with mental illness seek mental health services. Directors would not necessarily know of any students with completed suicides who were not clients or who had dropped out of school before their death. This likely leads to some underreporting of completed suicides. It has been suggested that this loss of data artificially lowers campus suicide rate estimates, and though some researchers apply a six-month rule for counting suicides of students who withdraw from school, the standard is applied inconsistently (Haas et al., 2003).

As described earlier, campus mental health professionals have reported increasing numbers of students seeking counseling services, particularly in the late 1990's and early 2000's, as well as an increase in the number of students with serious psychological problems. The directors survey asked for the percent of the student body that sought counseling beginning in 2002. From 2002 to 2013, this varied from between 8.5% to 11.4 % of student populations, staying consistently above 10% from 2009 onwards (AUCCCD, 2002-2003; Gallagher, 2004-2013). Demand also varies by campus size; it has been suggested that usage rates at smaller colleges should fall between 15% to 20% of students, and at larger universities, between 8% to 12%. This difference

is ascribed to the greater access and individual focus of services at smaller schools (May, 2003). A similar variation in student demand by campus size was reflected in some years of the directors surveys, when the rate was reported by campus size. In 2005, 9% of students sought counseling across all campuses (N=366), but when divided by campus size, the rate varied from 14% of students at campuses with fewer than 2,500 students to 6% of students at schools with more than 15,000 students. In 2013 only three ranges of campus size were reported: fewer than 7,500 students, between 7,500 and 15,000 students, and over 15,000 students. Variation in percentage of students seeking counseling was again observed for different campus sizes. For all campuses, 11.4% of students sought counseling; for campuses with fewer than 7,500 students this figure was 13.5%, and for students at campuses with more than 15,000 students, 7.5% (Gallagher, 2005-2013).

With regard to students with serious psychological problems, the directors reported that 16% of clients fit this description in 2000 (N=286), growing to 40.7% in 2003 (N=333). By 2008, this figure was 49.2% (N=284). From 2009 onwards, this rate decreased somewhat, and was 44.3% in 2013 (N=203). The percentage of clients taking psychiatric medications also increased, from 17% in 2000 to 26% in 2008, and 25% in 2013. The 2008 report noted that in 1994, only 9% of clients had been reported as taking psychiatric medication. It seems therefore that psychotropic medication use increased rapidly from the late 90's to the early 2000's, stabilizing in the 2010's. In some years the directors were asked whether the issue of increasing numbers of students with serious psychological problems was of concern to them; from 1995 to 2013, the percent of directors who said "yes" increased from 82% to 94% of respondents. Though the rates of serious psychological problems and medication use stabilized in the last decade, it appears this issue has continued to be salient for the respondents (AUCCCD, 1995-2003; Gallagher, 2004-2013).

For nine of the years between 1995 and 2013, the survey asked directors to provide the average number of sessions received by each student client. This figure increased somewhat, from 5.18 sessions per student per campus in 1995 (N=321), to 5.6 sessions per student per campus in 2010 (N=424) and 6.2 sessions per student per campus in 2012 (N=400)(AUCCCD 1995-2003; Gallagher, 2004-2013). These figures are consistent with reports in the mental health literature that students often only attend sessions for a short period, and do not successfully complete a brief therapy model of 12 to 16 sessions, even when it is offered. Some of this is due to the natural breaks of the academic year, but session attrition has frustrated efforts to identify and evaluate long-term models of care for college students, because of lack of sufficient evidence (Bishop, 1995; Lee, 2005). In one year of the directors survey, 1999, respondents were asked to give session attendance averages by range. They reported that 25% of students came for an initial session and did not return, 31% came for three or fewer sessions, 29% attended four to eight sessions, and 18% attended nine or more sessions (AUCCCD, 1999).

In 2008 a new research and practice network of college counseling centers, the Center for Collegiate Mental Health (CCMH), began administering annual surveys of member counseling centers with items somewhat similar to the Gallagher/ACCA directors surveys. The CCMH currently contains 280 college counseling center members as well as other business and organizational partners such as the AUCCCD and ACCA (CCMH, 2015b). Its main goal is to build a research infrastructure that standardizes and collects data on clinical care and patient measures for students being served at member counseling centers, as well as enables quality

improvement and program evaluation (McAleavey, Lockard, Castonguay, Hayes, & Locke, 2015). Data from the most recent CCMH survey are described here to augment the data presented above from the directors surveys.

The 2014 CCMH survey was administered to 140 centers and contained data based on 770,000 student mental health appointments. Information was collected on the types and presenting concerns for appointments, as well as attrition rates. The top six categories for appointment types in 2014 were: individual counseling (55.7%), initial clinical evaluation (14.4%), group counseling (8.0%), brief screening/walk-in (6.0%), psychiatric follow-up (3.5%), and case management (2.3%)[9]. Using the Clinician Index of Client Concerns (CLICC), the presenting concerns that were cited more than 20% of the time included anxiety, depression, stress, family, academic performance, relationship problems, and interpersonal functioning. However, this will likely change in the future, as the eventual goal of the AFSP grant is to identify both risk factors for suicide in current clients and effective preventive treatments (CCMH, 2015a).

The CCMH survey also collected data on student attrition from appointment attendance. One of their goals is to develop a predictive clinical tool that would assess dropout risk of individual clients. The average number of all appointments attended in 2014 was 6.79 per client, and the average number of initial and individual therapy sessions was 4.75 per client – similar to the directors survey figures of between five and six sessions per client each year. Forty percent (40%) of students who attended at least one appointment failed to attend their "last scheduled" appointment. A small fraction of clients utilized a large proportion of services. Twenty percent (20%) of clients used 50% of appointments, 10% used 36% (for an average of 20.78 appointments each), and 5% used 22% (for an average of 36.06 appointments each)(CCMH, 2015a). These rates may partly reflect the students with serious and chronic mental illness who were kept on-campus for therapy or medication management rather than being referred to providers off-campus.

A drawback to both the directors survey and the CCMH survey is that there is no way at present to distinguish between students being treated for suicidal behavior and risk – with or without comorbid mental illness – and non-suicidal students being treated for mental illness and other problems. The CCMH survey does include a section called the Standardized Data Set (SDS), which collects a broad array of information from student clients on topics such as mental health history, experiences of assault or abuse, drug and alcohol use, social information such as group membership, and history of suicidal ideation and attempts (CCMH, 2015a). Some of those data are presented below in the discussion of student survey data. In general though, a weakness of service utilization data is that they usually do not measure a wide range of nonfatal suicidal behaviors, and they do not capture the experiences of suicidal students who do not use health services.

Student surveys, particularly when sampled from all students, are a way to assess a broad range of suicidal behaviors and resulting impairment or loss of function amongst the general student population. Suicide is a sensitive and stigmatized topic, and students may value the anonymity of surveys and be more willing to answer questions about their suicidal behaviors (Nock et al., 2008). A drawback to student surveys is the use of self-report, which can introduce subjective

[9] Percentages do not add to 100% because of less-frequently cited appointment types that are not reported here.

bias into measures of illness and other experiences (Arria et al., 2009). Other types of bias which might particularly influence mental health survey data include non-response bias (respondents may avoid a survey on mental health), social desirability bias (respondents may not wish to report mental illness), recall bias (incorrect memory and/or how mental illness might influence memories of the illness experience), and misinterpretation of questions. Even acquiescence bias (a tendency to choose the "yes" or "positive" response to items) and end aversion (tending to avoid the extreme ends of a ratings scale) may affect the current state of mental health data, given the re-wording and re-scaling of items on key surveys, such as the changes made to the National College Health Assessment in 2008 (Jackson, 2008).[10] Another limitation of student surveys on mental health is that they rarely ask about specific health services utilized to treat suicidal risk and behaviors.

In spite of these limitations, published research of student survey data suggests that mental illness and distress affects many college students, though it is not clear whether these have substantially increased in prevalence in recent years or instead reflect a greater willingness by students to report having mental health problems (Hunt & Eisenberg, 2010). A major challenge in comparing suicide studies is that each has its own measures, and these vary in several ways. Questions about suicidal behavior may refer to the previous month, year, or lifetime. Scales and definitions for measuring suicidal behaviors may differ (Haas et al., 2003; Nock et al., 2008). The comorbid states or illnesses that are measured in many studies vary, as do sample sizes and the number of populations sampled. A review of the extant survey research on college suicide follows, beginning with national, widespread surveys.

The 1995 National College Health Risk Behavior Survey (NCHRBS) by the Centers for Disease Control (CDC) found that among 4,609 undergraduate respondents, 10% had experienced suicidal ideation in the previous 12 months, and 1.5% had made at least one suicide attempt (CDC, 1995). The 2000 National College Health Assessment (NCHA), sponsored by the American College Health Association (ACHA), surveyed 16,000 undergraduate and graduate students and found that during the previous school year, 45% of students felt so depressed they had difficulty functioning, 9.5% had considered suicide, and 1.5% had attempted suicide at least once.[11] At the same time, fewer than 20% of students reporting suicidal ideation or attempts had received treatment – which corroborates some of the service utilization data discussed above (Brener et al., 1999; Kisch, Leino, & Silverman, 2005; Silverman, 2004). The 2008 NCHA included similar items, and found that in the past school year, 43% of students felt so depressed it was difficult to function, 9% had considered suicide, and 1.3% had made at least once suicide attempt – similar rates to the 2000 survey. Mental health service by suicidal students was not reported, though for students who had ever been diagnosed with depression, 24.5% were currently in therapy for that condition, and 35.6% were currently taking medication (American College Health Association [ACHA], 2009).

[10] It is largely to address problems in response bias that many studies of college mental health have focused on the use of and validation of scales such as the BDI (Beck Depression Index).

[11] These data are provided in the NCHA report in ranges, where students could report that they had experienced each problem zero times, between one to four times, between five to eight times, and more than nine times. The three ranges other than zero were collapsed into one "ever" measure to simplify reporting, but it should be noted that the majority of students experiencing any of these problems fell into the range of one to four times.

After 2008, the ACHA changed its annual survey somewhat and advised caution in interpreting trends for data collected before and after the change. The new survey items were continued to 2014, when the NCHA II changed some of the response categories.[12] Separate reports were made available for undergraduates and graduates. Amongst undergraduates, 33.2% had felt so depressed it was difficult to function at least once in the previous 12 months, 8.6% had experienced suicidal ideation, and 1.4% had made a suicide attempt (ACHA, 2014a). Amongst graduate students, 28.4% had felt so depressed it was difficult to function at least once in the previous 12 months, 4.5% had seriously considered suicide, and 0.5% had attempted suicide (ACHA, 2014b). The NCHA II includes some items on mental health service use. Respondents are provided with a list of mental health problems, including "other," and asked whether they had seen a professional for diagnosis or treatment of each problem in the past 12 months. For example, 12.1% of undergraduates and 11.4% of graduate students indicated they saw a professional for depression. Unfortunately, suicidal behaviors were not included in the list of conditions (ACHA, 2014a, 2014b).

Some research studies have invited student participation when they used health services. A 2011 study of students at four colleges who used their campus clinics for general medical services found suicidal ideation rates of 13% for male students and 10% for female students, using a survey instrument that asked about the prior two week period (Mackenzie et al., 2011). The 2014 Center for Collegiate Mental Health (CCMH) report, as described in the section on service use data, included student responses to the SDS (Standardized Data Set). The SDS has two items each for suicidal ideation and suicide attempt history, measuring lifetime rates for each behavior and time ranges for the most recent experience of each behavior. The survey found that 31% of clients had experienced suicidal ideation at least one time,[13] 16.5% had experienced ideation in the past two weeks, 9.4% in the past month, and 20.8% in the past year. Likewise, 8.9% had made a suicide attempt at least once, 5.5% had made an attempt in the past two weeks, 2.9% in the past month, and 14.5% in the past year (CCMH, 2015a). These rates of suicidal behavior exceed those reported in the 2014 NCHA II because respondents were counseling center clients, and therefore expected to have higher rates of mental illness overall.

Other studies have sampled from the general student population on various campuses. A 2008 study reported the results of an online survey that was developed as part of the College Screening Project, an innovative outreach effort developed by the American Foundation for Suicide Prevention (AFSP) and researchers from several universities. Data were collected from 729 undergraduate students at Emory University over a three-year period from 2002 to 2005, out of approximately 9,000 students invited each year to participate. The study found that 11.1% of respondents had experienced suicidal ideation in the previous four weeks, and 16.5% had at least one lifetime suicide attempt or other form of self-injury. Many respondents were also experiencing current depression, as measured by a validated scale. Of the respondents who had current depression or suicidal ideation, most of them (85%) were not receiving current therapy or

[12] In the 2014 NCHA II survey the response categories for having experienced these problems were "never"; "not in last 12 months"; "yes, last two weeks"; "yes, last 30 days"; "yes, last 12 months"; and "any time last 12 months."
[13] Four response categories giving ranges for the number of times each behavior had occurred were collapsed here to produce a single "ever" rate. For both ideation and attempts, most respondents who had "ever" experienced the behavior had done so either "1 time" or "2-3 times," though a nontrivial percentage, 6.2%, had experienced ideation more than five times.

medication. The findings were limited by the use of one campus population and because the survey items combined suicide attempts with any self-harm, which makes it difficult to compare to other studies. Response bias was another limitation, driven by which students chose to participate, though this also represented a success for the overall project, the main goal of which was to find and encourage at-risk students to utilize mental health services (Garlow et al., 2008).

A later study that was also held on one campus conducted four annual face-to-face interviews of 1,253 students (out of an original first-year class of 3,401) and found that 12% experienced ideation at some point during college, and 25% of those had more than one episode of ideation – what the study termed *persistent* ideators. One percent (1%) of respondents made a suicide plan or an attempt at least once during college (Wilcox et al., 2010). Another study that also used face-to-face interviews of first-year students (N=1,249) found that 6% had "current" ideation, referring to the past few days (Arria et al., 2009). This lower rate compared to other studies may have been due to the younger age of the students and the use of a narrower timeframe. Overall, when considering the findings of all the student surveys described here, and taking into account differences in sample populations (e.g., clinic users versus general populations), sample sizes, and timeframes, a general picture of college suicidal behavior prevalence emerges. It seems fair to say that, generally, college students as a whole have self-reported rates of lifetime suicidal ideation of between 9% and 12%, and rates of lifetime suicide attempts of between 1% and 1.5%, where "lifetime" means having experienced the behavior at least once. These rates have been stable for the past 20 years. At the same time, fewer than 20% of students with suicidal ideation also report receiving mental health services of any kind, though data on this is sparse.

Much scholarly work on suicide is written from a psychological or sociological perspective, searching for the individual behavioral, psychological, and sociodemographic characteristics that predispose individuals to suicidal behavior and associated mental illness. Identifying salient risk factors for suicidal behavior informs the development of best practices for assessing individual risk and preventing suicide. As noted before, mental illness and particular emotional states such as hopelessness are associated with suicidal behavior (Simon, 2006). Other risk factors have to do with group membership. Lesbian, gay, and bisexual people experience higher rates of mental illness and suicidal behaviors, including among college students (D'Augelli, 1993; Gillman et al., 2006; M. King et al., 2008; Silva, Chu, Monahan, & Joiner, 2014). The same is true for transgender people, particularly because of their status as sexual minorities (A. H. Grossman & D'Augelli, 2007). As described earlier, gender affects risk differentially. Men in general are at higher risk of completed suicides. Women and those who are young, unmarried, or have a psychiatric disorder are more at risk of nonfatal suicidal behaviors (including nonfatal attempts)(Nock et al., 2008).

College studies have established depression as a frequent comorbid illness and risk factor for suicidal behaviors, and some researchers have recommended using screening tools such as the BDI (Beck Depression Inventory) to identify students at risk (Arria et al., 2009; Farabaugh et al., 2011; Farabaugh et al., 2015; Garlow et al., 2008; Mackenzie et al., 2011). Persistent ideators have been found to have higher overall levels of depression. Other risk factors for persistent ideation include low social support, childhood exposure to domestic violence, and maternal depression (Farabaugh et al., 2011; Wilcox et al., 2010). Some mental health professionals have expressed concern about the decrease in prescriptions of anti-depressants for adolescents – due to

the “black box” warning that the medications may increase suicide risk – because it may mean college students and those about to attend college are less likely have their depression treated appropriately (Lamberg, 2006). However, the 2009 study of first-year students described above noted that only 40% of respondents who were suicidal ideators were also diagnosed as depressed, leading the authors to conclude that screening instruments that only measure depression will possibly miss a good portion of students with suicidal ideation (Arria et al., 2009).

Other studies of college students have found that ideation is associated with hopelessness and decreased quality of life (Farabaugh et al., 2011); carrying a weapon, physical fighting, boat or car use while drunk, and not using seatbelts (Barrios et al., 2000); using tobacco, alcohol, and illicit drugs (Brener et al., 1999); decreased social support, affective dysregulation, and student conflict with their fathers (Arria et al., 2009); self-reported delinquency and suicide-proneness (as measured by a scale)(Langhinrichsen-Rohling et al., 2004); summer breaks between semesters, due to students experiencing a decreased sense of “belongingness” (Van Orden et al., 2008); and high levels of desperation (Garlow et al., 2008). In a rare study that focused on students at a nontraditional commuter school, where students were an average of 25 years old and more likely to live off-campus than general college populations, suicidal ideation was found to be associated with living off-campus, being in fair health, and having been assaulted or emotionally abused (Gillman et al., 2006). In a study of 1,865 students at four colleges, among those who reported making at least one suicide attempt, the top five reasons were: stress that was related to school, relationship difficulties, family problems, depression, and hopelessness (Westefeld et al., 2005). As can be seen in this review, research on college suicide varies a great deal on what risk factors are studied and found to have an effect on suicidal behavior. This is no doubt due in part to the complexity of suicidal behavior, but also suggests that some findings may be limited because of unobserved (or unmeasured) variables that may have a significant impact on outcome variables of interest. The current study attempts to address that shortcoming by including as many predictive variables known to have an effect on suicidal behavior as possible.

Suicide attempts are often preceded by other suicidal behaviors such as ideation. Therefore, another common feature of suicide research is to measure suicidal behavior along a continuum, from ideation, intention, and planning to attempts and completed suicides (Barrios et al., 2000). Simple or multiple logistic regression may be used to predict binary or multiple categorical outcomes for a given suicidal behavior. For example, respondents might report having experienced suicidal ideation once, often, or never, measured as three potential outcomes. As another example, suicide attempts can be dichotomized into never or one or more times, depending on the measure used (Brezo et al., 2008). Such methods have featured in studies of youth and college suicide (Arria et al., 2009; Gillman et al., 2006; Kisch et al., 2005; Mackenzie et al., 2011; Molock, Puri, Matlin, & Barksdale, 2006; Pena et al., 2008; Wilcox et al., 2010). In the current study, similar methodologies were used and 12-month suicide attempt was treated as a dichotomous outcome.

A widespread, detailed survey on suicidal behavior was administered in 2006 by the National Research Consortium of Counseling Centers in Higher Education, based at the Counseling and Mental Health Center at the University of Texas at Austin (UT Austin). Data on suicide was

collected from over 25,000 undergraduate and graduate students at 70 colleges across the nation, and has been used for several suicide studies, as well as the analyses that are the subject of this paper. Initial findings were published in 2009, and similar data are reported in Chapter 2, the methods section of this paper (Drum et al., 2009). The authors examined the frequency, duration, and strength of suicidal ideation, finding that many students who had ever seriously considered suicide reported having multiple periods of ideation, often lasting less than one day. Different mood states had different effects on ideation: anger, hopelessness, helplessness, and sadness were significantly associated with the strength of suicidal intent, while hopelessness and helplessness alone were significantly associated with the duration of suicide consideration and likelihood of suicide attempt. Almost half of students did not tell anyone of their ideation, and among those that did, the other person recommended they seek professional help about half the time. Though students were more likely to receive this advice if they had strong suicidal thoughts or if the thoughts were interfering with their studies, students who had stronger *intention* to commit suicide (as shown by planning and/or preparation behaviors) were actually less often advised to seek care. Because of the shifting nature of periods of suicidal ideation and associated mood states, the authors recommended that suicide prevention efforts focus on multiple points of intervention on the continuum of suicidal behaviors (Drum et al., 2009). They expanded their discussion of such an approach in a later paper, which included strategies for decreasing pre-suicidal behaviors and emotional states at the campus-wide level, creating environments that are conducive to emotional health and resilience (Drum & Denmark, 2012).

A strength of the consortium data is that the overall sample size allows for meaningful and detailed analysis of the suicidal behavior experiences of specific sub-groups, an important contribution to current college suicide research. One study examined risk and protective factors for suicidal ideation among the more than 1,000 Asian American respondents to the survey. Some of its findings were that undergraduate status and recent family, academic, and financial problems increased suicidal ideation, while living with family decreased suicidal ideation. Using interpersonal theory and the concept of thwarted belongingness, the authors posited that living with family enhances belongingness, while undergraduates in general might be at increased risk of suicidal ideation because they feel cut off from their usual family and social support networks (Wong, Brownson, & Schwing, 2011). Another study examined differences in suicidal behaviors and help-seeking by class status (undergraduate or graduate) and gender, finding that graduate student respondents had lower rates of suicidal ideation and attempts and higher rates of accessing formal health care. A surprising finding was that female students in general had higher rates of suicidal ideation and attempts in the previous year, regardless of class status, and female graduate students were much more likely to report suicide attempts than their male peers. At the same time, among suicidal ideators, females were more likely to seek both informal help and formal care, and this difference by gender was greater for graduate students. Female graduate students were also most likely to report that mental health providers were helpful (Brownson et al., 2011). Another study focused on the small groups of respondents (N=558) who reported suicidal ideation in the previous 12 months but did not tell anyone of their ideation. Content analysis of open-ended responses to the question of why they told no one yielded nine main reasons. These included the perception that their risk of suicide attempt was low (18%), not wanting to burden others with their thoughts (16%), having a tendency to maintain privacy (15%), believing that seeking assistance would be pointless (13%), and stigma (13%) (Burton Denmark et al., 2012).

Most research that examines student knowledge of, beliefs, and use of mental health services has not focused on suicidal behaviors specifically. One study of 2,843 students on a single campus used an internet-based survey and found that 67% of respondents who were comorbid for frequent binge drinking and mental health problems also had a perceived need for mental health services. Only 38% of those same students had actually utilized services in the previous year. Though suicidal behaviors were not measured, the authors recommended outreach that combines information and resources on both suicide and alcohol/substance use, as the latter increases suicide risk (Cranford, Eisenberg, & Serras, 2009). Another study used a baseline and two-year follow-up survey to measure perceived need, service use, and mental health problem prevalence and persistence over time. Perceived need at baseline was found to predict mental health problems at follow-up, even when controlling for mental problems already present at baseline. Suicidal ideation at follow-up was also predicted by earlier perceived need. The authors concluded that many respondents were dealing with untreated mental illness, and that clinical screening measures for mental illness should also include assessment of perceived need as a predictor of future need for services. They noted the importance of ongoing care for respondents whose mental health problems persisted over the two-year period (Zivin et al., 2009).

Some research has examined the effects of stigma, knowledge of services, and self-efficacy on service use. A large study of students from 13 universities measured students' personal and perceived public stigma using a scale that assesses agreement with certain stereotypes or beliefs about people with mental illness and use of mental health services. The study found that perceived public stigma was much higher than personal stigma, but only personal stigma had a significant negative effect on help-seeking behaviors such as medication use, attending therapy, or accessing nonclinical sources of help. Personal stigma was highest for students who were male, younger, Asian American, international, religious, or from an economically poor background, suggesting that outreach to these students is particularly important (Eisenberg et al., 2009). A study of students from three universities assessed perceived self-efficacy in recognizing signs of suicide risk, and whether students had knowledge of campus resources for intervention. Eleven percent (11%) of the respondents reported that they would be able to recognize the signs of suicide risk in a friend, and 17% felt they would be able to ask a friend directly if he/she were suicidal. The respondents answering thusly were more likely to have had high school suicide prevention education or to have had a friend or family member tell them they were experiencing suicidal ideation. For all respondents, 71% were not aware of suicide prevention resources on their campus. The authors concluded that it was particularly important to provide early education and outreach for students on suicide prevention and mental health services (King, Vidourek, & Strader, 2008).

Some studies have focused on identifying service use and knowledge by various sub-groups of students. A rare survey administered to only graduate students at one large university found that use of counseling services was associated with being female, more time spent in school, and symptoms of depression. Those students who had a significant mental health event in the previous 12 months were more likely to use services if they had positive functional relationships with their advisors (Hyun et al., 2006). A survey of 1,773 students at an ethnically diverse campus found no differences in service use by gender, ethnicity, or socioeconomic status, but that many respondents with clinically significant distress, as measured by other items on the

survey, did not receive counseling services (Rosenthal & Wilson, 2008). Another, smaller study of 266 undergraduates found that lower knowledge of services was associated with being male, having spent fewer years in college, and living off-campus, while higher service use was predicted by being female and spending more years in college (Yorgason et al., 2008). These studies highlight gaps in student knowledge of services and sub-groups of students who may need additional outreach to increase service use when they experience distress. Finally, a small study of 194 medical students asked students to identify barriers that prevented them from using services. Time (48%) was the biggest barrier to use, followed by concerns about confidentiality (37%), stigma (30%), cost (28%), fear of documentation of service use on academic records (24%), and fear of unwanted intervention (20%)(Givens & Tjia, 2002). Though the study was limited by sample size and the use of a single campus, the findings suggest the importance of addressing student fears around privacy and confidentiality as well as other barriers to service use.

In 2012 the National Alliance on Mental Illness (NAMI) reported the results of a survey of 765 college students living with diagnosed mental health conditions,[14] regarding their experiences in accessing care and other accommodations necessary for them to succeed academically.[15] Overall, respondents gave good ratings to their campus' services and responses to mental health crises, but many (40%) did not access services at all. The most frequently rated barriers to care were stigma (36%), time (34%), service availability (25%), lack of information (24%), and long wait times (16%). Half (50%) of all respondents did not disclose their conditions to their schools, for reasons such as fear of others' perceptions of them, confidentiality of medical information, and not knowing accommodations were available. Lesbian, gay, bisexual, and transgender students were even more likely (62%) to not disclose their conditions due to fear of "double stigma." For those students who said services were critical to their ability to stay in college, more than half cited the availability of walk-in clinical services, individual counseling, and crisis response. Students also reported that the most helpful accommodations they received were: excused absences for treatment (54% of respondents), medical leave (46%), course withdrawals without penalty (46%), adjustment in test settings (34%), and homework extensions (33%) (Gruttadaro & Crudo, 2013). Though the NAMI study and the other research discussed here were focused on general mental health rather than suicide specifically, it is reasonable to assume that any barriers to service use will have an effect on students at risk of suicide. Still, more study of suicidal behaviors and service use specifically is needed.

[14] The most frequent diagnosed conditions were depression, bipolar disorder, anxiety, and post-traumatic stress disorder (PTSD).

[15] Accommodations for students with disabilities might include reduced course loads, tutors, or assistance communicating with professors about their disabilities.

Campus Mental Health Services

Prior study on mental health service delivery to a community has focused on providers to the general public, such as county mental health departments that interact with a number of external partners, funders, and regulators (Bazzoli et al., 1997; Provan & Milward, 1995; Provan, Sebastian, & Milward, 1996). Campus mental health services have been little studied, though they face a unique set of organizational and institutional constraints and serve a specific type of community. Most university and college campuses in the U.S. today have mental health services available *in situ* to their students in the form of on-campus counseling centers. Their clients present from a mostly young adult population of 18 to 30 year-olds, contained on one campus and facing a unique set of academic and social demands in a close community setting.

Because of its closed nature a campus provides a sort of natural laboratory for implementing and evaluating health care interventions. However, little research has been conducted on evidence-based models for treatment of college students (Hunt & Eisenberg, 2010; Lee, 2005; Nock et al., 2008; Silverman, 2004). This is partly because many students do not attend more than four or five sessions, and evaluation of long-term therapy and treatments such as cognitive behavioral therapy usually requires 12 to 16 sessions. One study of students receiving such therapy showed some measurable improvement in psychological distress around the eighth or ninth sessions, but the study was limited by the fact that only 38% of participants completed the entire therapy regimen (Lee, 2005). The CCMH 2014 report noted that while student clients with high levels of distress seemed to show improvement from therapy on several symptoms of mental illnesses, they were not "returning to normal" and could benefit from more sessions. Dropout before completion of a therapy regimen might reduce treatment effectiveness and increase the risk of relapse. These risks are part of the motivation of the CCMH to develop a clinical tool for predicting the dropout risk of new clients (CCMH, 2014a).

Traditionally, the work of counseling centers has centered on providing short-term support for challenges that college students experience as part of academic adjustment and normal young adult development. Student clients may be struggling with first serious romantic relationships, relationship endings, parental expectations, stress about academic performance, career selection, and competition with other students. In such cases short-term therapy is usually sufficient to students' needs (Kitzrow, 2003; Lee, 2005; May, 2003). A brief therapy model of counseling may be inadequate for students in crisis, suffering from serious mental illness and/or at risk of attempting suicide. College counseling centers must be prepared to respond quickly, providing crisis intervention and facilitating hospitalization as needed (May, 2003; Silverman, 2004). A rapid response to students reporting suicidal ideation is particularly important because of the role of impulsivity in suicide attempts – one in five suicides occurs on the same day a life crisis begins, and one in four occurs within two weeks of the start of a crisis (Lamberg, 2006). Delays in treatment for suicidal behavior and comorbid illness can result in worsening mental illness and emotional states that heighten suicide risk, such as hopelessness (Simon, 2006).

As described earlier, suicide risk assessments should be repeated frequently throughout a suicide crisis and subsequent care. This can be very time-consuming, as risk assessment is a complex and lengthy process. A full risk assessment for a student considers all situational factors, including the presence of any problems students often face. Counseling center staff may work

with professors, advisors, administrators, and student housing staff to identify immediate sources of distress that can be mediated, ensure the safety of the student and others who live with them – especially in student housing – and monitor student progress post-crisis. Case management may be used to ensure adequate long-term treatment is available to students who need it, including referral to off-campus providers (Baker, 2014; *Best practices for making college campuses safe*, 2007; May, 2003). Long-term, therapeutic goals specific to students may include working with them on peer interactions, to help them build a supportive social network with compatible people (Silverman, 2004).

When a student dies by suicide, counseling center staff must engage in a series of postvention services for those affected by the death, especially fellow students. The effects of a campus suicide are widespread and disruptive (Levine, 2008; Silverman, 2004). Common reactions are shock, confusion, anger, and blame. Surviving students who knew the deceased may experience guilt, especially if they had some prior knowledge of the victim's risk or unwittingly assisted the victim in their suicidal behavior in any way. Survivors may hold misperceptions about the causes of suicide and the role of mental illness. Some may experience depression or distress serious enough to require professional mental health counseling (Levine, 2008; Seeman, 2015). Even students who did not know the victim may identify with him/her and feel an increased sense of vulnerability or anxiety. Research on the effects of suicide on survivors in college settings is lacking, but one three-year study of 176 adolescents who were either exposed to a friend's suicide or selected as part of a control group found that while suicide attempt rates did not increase for the exposed group, they did experience increased depression and anxiety for six months after the suicide, and increased symptoms of post-traumatic stress disorder (PTSD) throughout the 3-year study period (Brent, Moritz, Bridge, Perper, & Canobbio, 1996).

Counselors on a college campus may need to engage in outreach activities where they educate students and staff on the multiple causes of suicide, emphasizing that suicide is not a normal response to stress and avoiding excessive details about the victim's death. A model of "debrief and defuse" includes giving media correct and factual information about the phenomenon of suicide, honoring the victim but discouraging excessive glamorization or memorialization of him/her, and offering healthy avenues for expressing grief and distress. One of the goals of postvention is to minimize any contagion effect, whereby other students are at increased risk of suicidal ideation and attempts (Seeman, 2015). Campuses should have models in place for postvention activities, which can be applied to not only suicides but other tragedies, such as loss of student housing due to fire, and regional, national, or international tragedies (Meilman & Hall, 2006).

As discussed in the previous section, published reports from mental health professionals indicate that beginning in the 1990's, student demand for mental health services and the frequency of serious mental illness among students increased. The directors survey data also show an increase in the percentage of clients with serious mental illness. It is difficult to ascertain whether these reported changes are due to a genuine increase in student mental illness or a greater willingness on the part of students to access mental health services (Hunt & Eisenberg, 2010). Student survey data indicate that suicidal behaviors are relatively stable, but many students who report such behaviors also report not seeking formal health care. For those who do seek care, it is not known how many access services for their suicidal risk specifically or for associated mental

illness and emotional distress. Likewise, it is not clear how much of campus mental health services are dedicated to chronic mental illness as compared to short-term crises – or the overlap between these two states. In short, it is not known whether and how counseling centers are meeting the reported increases in student demand for services.

One way to measure whether counseling centers are able to meet student demand for services is through the ratio of students to mental health professionals. Counseling centers have little control over this variable except in the types of mental health professionals employed, including psychiatrists and psychiatric nurses. Since psychiatric professionals generally garner larger salaries, centers can reduce costs by employing fewer of them (and perhaps replacing them with mental health providers who earn lower salaries)(May, 2003). If students require psychiatric medication consults, general practitioners (GPs) or off-campus psychiatric referrals may be utilized. Overall though, the ratio of students to professionals is a telling measure of service availability on campus.

Since the main purpose of the counseling center directors survey is to provide feedback to directors themselves, the survey in most years captures detailed information on staff variables such as professional qualifications, salaries, staff demographics, and years of experience. These data are likely most useful for the personnel involved, as a measure of employment trends in their professions. It should be noted that although directors are both the respondents and the audience of the survey, the wording and inclusion of various questions may reflect the preferences and interests of survey designers. Many items are not repeated in successive years of the survey. Still, items that were repeated over a number of years include the hospitalization and suicide rates discussed earlier, and items such as ratios of students per mental health professionals (AUCCCD, 1995-2003; Gallagher, 2004-2013).

Table 2 shows the ratios of students to mental health professionals for all responding campuses to the directors surveys for the years 1995 through 2013. This ratio increased from 1,588:1 across all responding campuses in 1995 (N=321) to 1,906:1 in 2008 (N=366). By 2013, the ratio was 1600:1 (N=203). When the ratio was reported by size beginning in 1997, larger schools consistently reported higher ratios than smaller campuses. In 2008, for example, the ratio for campuses with fewer than 2,500 students was 918:1 (N=77), and for campuses with more than 15,000 students, 3,337:1 (N=64).[16] These data suggest that overall the largest (often public) schools had the largest ratios of students to staff, which suggests they had the least number of professionals available per student for mental health services (AUCCCD, 1995-2003; Gallagher, 2004-2013).

As noted earlier, the directors survey data are subject to problems with response bias and measurement error, and should be treated only as an indication of staffing trends. Still, the various ratios reported by the directors survey may indicate over-stretched services. May (2003) recommended that for private, selective colleges, the maximum ratios he would expect would be 600:1 for small campuses and 1000:1 for large campuses. These figures were based on his belief that the average student client would be expected to utilize counseling for five to six sessions on

[16] Though not shown in Table 2, the ratios for the two middle sizes of campuses consistently fell between the ratios for smallest and largest campuses every year. For example, in 2008 the ratio for schools with between 2,500 and 7,500 students was 1,541:1 (N=87), and for schools with between 7,500 and 15,000 students, 1,948:1 (N=50).

Table 2 – Ratio of students per mental health professionals, for all campuses, smallest, and largest campuses, AUCCCD/ACCA data 1995-20013

Year	Students per mental health professional, all schools	Students per mental health professional, campuses with fewer than 2,500 students	Students per mental health professional, campuses with more than 15,000 students
1995	1588		
1996	1598		
1997	1599	800	2332
1998	1517	786	2127
1999	1579	763	2165
2000	1632	767	2290
2001	1639	677	2216
2002	1574	660	1994
2003	1564	818	2426
2004	1511	837	2012
2005	1698	873	2305
2006	1698	870	2612
2007	1969	840	3060
2008	1906	918	3557
2009			
2010	1600	876	2500
2011	1600	805	2600
2012	1600	867	2100
2013	1604	N/A	3000

average, which agrees with the directors survey data and Center for Collegiate Mental Health (CCMH) report discussed in the earlier section on session numbers. May's concern was that time spent with therapists could not be truncated by external causes without potentially harming the quality of treatment, such as the time it takes to build trust between the therapist and client (May, 2003). Students also need sufficient session time to complete certain types of therapy or to learn problem-solving skills (Silverman, 2004). Client characteristics and the client-therapist relationship are other factors that effect the duration of therapy, and these vary by case and should be determined by the experience and judgment of the therapist (Cooper, 2005). Reduced staffing capacity may therefore strain counseling centers' ability to provide adequate time in therapy, and increase either wait times to access services or the length of time between sessions. For students seeking assistance with suicidal thoughts and behaviors, such barriers to access could mean they do not get timely and appropriate care, and if they have comorbid mental illness, they may have difficulty securing therapy that is long enough and frequent enough for their needs. As described earlier, student dropout from session attendance is a frequent problem, and it is not known what portion of students who do not continue therapy past the first few sessions are those at risk of suicidal behavior, or what factors increase the likelihood of dropout. With increasing student demand for services, centers are under increasing pressure to somehow compensate for insufficient staff numbers in how they deliver services, and minimize the kinds of problems that discourage students from seeking help.

External Demands on Counseling Centers

Other sources of pressure on counseling centers in recent decades have been external. In the late 1990's and early 2000's, two main kinds of external pressure intensified for campus counseling centers across the nation. First, many centers came under pressure to decrease costs, particularly during the spread of managed care reform. A common worry during the late 1990's for counseling centers was that their campus administrations would decide to outsource or privatize student mental health services entirely (May, 2003). This fear was reflected in the directors surveys for 1995 through 1997, which included questions specifically asking whether the respondents' campuses were considering downsizing, reorganizing, or outsourcing/privatizing student mental health services (AUCCCD, 1995-1997). One trend that countered this pressure was the implementation on many campuses of mandatory student fees for health services, included with every tuition bill, that helped stabilize funding for student health centers (Bishop, 1995). Not all counseling centers are organizationally situated as part of their campus' health services, but for those that are, mandatory fees provide a stable source of income. However, May (2003) described a major pitfall to making counseling services part of the wider student health service environment: mental health services tend to be undervalued by the kinds of cost-effectiveness calculations that are used to evaluate other medical services. Long-term therapy can look excessive in that kind of financial environment, even though it is in fact a relatively inexpensive type of care when provided by psychological professionals.[17] As such, many counseling centers have found themselves being pressured to limit sessions even as student demand for mental health services has increased (May, 2003).

The second major source of external pressure on counseling centers came from the public and campus leaders in response to a wave of high-profile campus suicides and lawsuits which received a great deal of media attention. Some of these events led to increased attention to the role and adequacy of campus mental health services (Baker, 2014; Mowbray et al., 2006). In 1995 Harvard student Trang Ho was murdered by her roommate, who then committed suicide, leading to a lawsuit by Ho's family against the university (Chisolm, 1998; Kitzrow, 2003). Harvard convened a special taskforce on student mental health services in 1999 in response to this tragedy and other student suicides. One of its findings was that there was insufficient availability of therapists to meet student needs (May, 2003). In 2000 Elizabeth Shin died by suicide in her residential room at the Massachusetts Institute of Technology (MIT), after a series of suicidal threats and gestures. She was under the care of mental health professionals at the time of her death. Her family sued MIT, and a 2005 court ruling allowed them to go forward with their claim, saying that MIT had a "duty of care" towards its students (Blanchard, 2007; Kitzrow, 2003; Pavela, 2006). MIT established a taskforce similar to Harvard's following this ruling, and one of its recommendations was that personnel across campus should be trained in identifying and reporting at-risk students to mental health services (Baker, 2014).

In 2002 Candy Wei, a student at the University of Michigan, died by suicide after unsuccessfully trying to find and see an off-campus psychiatrist. Her story highlights well the kinds of barriers a student might face in accessing care. When Wei first tried to see someone at the counseling

[17] As noted previously, the salaries of psychiatric professionals such as psychiatrists (who have medical degrees [M.D.s]) are considerably higher than psychology professionals (who usually have Ph.Ds or Masters degrees).

center, she was told it would be at least a week and a half before anyone was available. She also sought mental health care at the university's hospital but was not admitted. She then took a leave of absence from school to recuperate from mental illness. When she returned, she and her family wanted to establish regular care with a mental health professional, and contacted several off-campus providers before finding someone that could see her. The day of her suicide, she discovered that her appointment had been given to another patient. Her death drew increased attention to the lack of sufficient mental health services on campuses throughout the country, as well as the fact that many mental health providers local to colleges were overwhelmed and often unable to take students as patients (Berger, 2002; Haas et al., 2003).

In 2007, the Virginia Technical Institute (Virginia Tech) mass shooting and suicide occurred, resulting in the deaths of 32 people and injuries of 23 more. The shooter was a student who was seriously and chronically mentally ill, and attention to mental health on campuses again increased (Baker, 2014). In May of 2007 the U.S. Congressional Committee on Education and Labor held a hearing entitled "Best Practices for Making College Campuses Safe." Much of the hearing focused on public safety and crisis management on campuses, but one speaker, a professor from Virginia Tech, emphasized the importance of prevention in mental health care and the need for sufficient insurance coverage of mental illness. He also recommended that campuses form threat assessment teams that would convene when a student was in crisis and make recommendations best suited to that individual's circumstances and needs (i.e., not necessarily forcing the student to take an involuntary withdrawal). Another speaker, from the National Association of Personnel Administrators (NASPA), an organization that includes student affairs professionals, spoke of best practices on campuses such as expanded counseling services, case management for long-term care, and improved collaboration between administrative units (*Best practices for making college campuses safe*, 2007). The effect of the Virginia Tech shooting was reflected in the directors survey of 2008, in which 20% of responding directors (N=284) indicated that their centers would receive more funds specifically because of increased awareness due to the tragedy (Gallagher, 2008). The use of threat assessment teams also spread; by 2011, 80% of campuses nationwide had launched risk-assessment teams, which were required by law in some states (Baker, 2014).

Pavela (2006) wrote of another effect of the Shin ruling in 2005: high anxiety amongst campus mental health professionals, expressed in professional discussions online and at conferences. Many held the opinion at the time that at-risk students should be automatically dismissed from school (Pavela, 2006). This belief apparently spread to campus leaders; over the next several years, the use of involuntary withdrawal policies for suicidal students increased across campuses (Arenson, 2004; Baker, 2014; Lamberg, 2006). Campus leaders throughout the U.S. feared the potential liability associated with student suicide and the stigma of gaining a reputation for being a "suicide school." Unfortunately, involuntary withdrawal policies can do much harm to students in need of counseling. Some authors pointed out that at-risk students would be less likely to seek help for suicidal ideation if they feared being forced to withdrawal from school, being evicted from student housing, and consequently losing much of their current support system (Arenson, 2004; Baker, 2014; Lamberg, 2006; Pavela, 2006).

Several cases of involuntary withdrawals have drawn legal and media attention of their own. A George Washington University (GWU) student sued in 2006 for violations under the Americans

with Disabilities Act (ADA), in a case that drew much media criticism for the university. He had been put on involuntary leave after admitting to experiencing depression following a friend's suicide (Lamberg, 2006). The same year, the case of a City University of New York (CUNY) student drew media attention when she sued for having been evicted from student housing following hospitalization for a suicide attempt. In 2013, two former Amherst students who had been raped while in college filed federal complaints against the school, alleging that it tried to have them involuntarily committed when they sought help for depression and post-traumatic stress disorder (PTSD) related to their attacks. One of the women wrote an op-ed for the student newspaper on her experience that eventually was printed in the New York Times (Baker, 2014).

Another growing trend on campuses, and an alternative to involuntary withdrawal policies, is the use of disciplinary sanctions for suicidal students, in which any threat or harm to self is treated as a violation of the school's code of conduct. In theory, it is a way to force students into treatment when they are at risk of suicide or other crises. For example, the University of Illinois at Urbana-Champaign put a program in place in 1984 that requires at-risk students – those who have threatened or attempted suicide - to attend four weekly sessions for professional assessment. If they do not comply, they face disciplinary consequences. As of 2004, the school reported that of the 2,000 students who had been through the program, none had committed suicide (Arenson, 2004; Pavela, 2006). Still, many student health professionals are ambivalent about the practice of mandated counseling, questioning not only the ethics of such policies but also their effectiveness in treatment. Therapy is usually based on a model whose success is partly determined by client willingness and desire to change, and students required to attend mandated counseling may be neither willing nor interested in making changes in their life, or forming a constructive alliance with a mental health professional. Pressure to accept mandated referrals often comes from campus administrative units with authority over counseling centers, sometimes without regard to the student's current state of mind, because of the widely held belief that counseling is universally beneficial, even in the face of client resistance (Kiracofe & Wells, 2007).

Both disciplinary sanctions and involuntary withdrawals may lead to violations of student rights under the ADA. Since 1990, disability law has dictated that colleges cannot discriminate against any student with a psychiatric condition that limits at least one life activity, and they must provide reasonable accommodations for the student's medical needs so that he/she has the opportunity to succeed in school. Students who feel their rights have been violated may file complaints with the Office of Civil Rights (OCR). However, the OCR itself has been criticized for failing to pursue such cases, not disclosing the number of complaints made by students with mental disabilities, and not developing and issuing guidance for campuses and students on their rights and responsibilities under federal disability law. Yet another legal concern in these kinds of cases is that administrators frequently require the student to grant them access to all of his/her mental health treatment records, an act that may violate not just the ADA but also the Federal Educational Record Privacy Act (FERPA), as well as medical confidentiality requirements under the Health Insurance Portability and Accountability Act (HIPAA) (Baker, 2014).

In the wake of trends in involuntary withdrawal and mandated counseling policies, counseling centers have experienced increased campus administrative attention and involvement with their work. These changes have often been reflected in the directors surveys. Beginning in 2003, multiple items on mandated counseling were included in the survey, such as questions about

counseling center policies on sharing client information with other campus personnel (AUCCCD, 2003). The surveys for 2004 and 2005 added questions about suicide prevention efforts, and the 2006 survey collected detailed background information on completed suicides each campus experienced (Gallagher, 2004-2006). The 2007 survey had a number of opinion items on recommendations for "non-discriminatory" approaches to students in crisis, according to a model policy produced by the Bazelon Center for Mental Health Law (which provided legal aid for several of the student lawsuits described above) (Baker, 2014; Gallagher, 2007). Both the 2007 and 2008 surveys had a number of questions specific to reactions to the Virginia Tech shooting, such as whether directors reported an increase in faculty and staff consultation requests, having to prepare reports for administrators regarding counseling center capacity, and having to develop new guidelines around parental notification of student intervention and treatment (Gallagher, 2007-2008). In 2009 through 2013, survey items were added that dealt with release of student information to external requestors such as government agencies, stressors faced by directors in their jobs, violence on campus, pressure to share information about at-risk students with campus administrators, policies around referring students to off-campus providers, and perceptions of campus administrator awareness of the most pressing issues facing counseling centers (Gallagher, 2009-2013).

Counseling centers may use outreach to educate students about the availability of services and how counseling can help students with mental health problems (Kiracofe & Wells, 2007). A particularly innovative screening model for finding and helping students at risk of suicide has been developed by the American Foundation for Suicide Prevention (AFSP) in collaboration with the University of North Carolina at Chapel Hill and Emory University. Using a web-based program, students are invited by email to participate in an anonymous online survey. The survey uses questions from the Patient Health Questionnaire (PHQ) to assess depressive symptoms, mood states such as hopelessness or lack of interest in regular activities, and related symptoms. It also assesses suicide risk through items on suicidal ideation, past suicidal behaviors, common comorbid affective states, substance use, and current use of mental health services. If a student's responses fit a profile for increased suicide risk, they are then invited to either meet with a health provider in person or interact with one anonymously online. During such interactions, the student can get information on any concerns or questions they have about privacy, confidentiality, and barriers to treatment. The dialogue between students and providers is designed to foster trust and address the common concerns that often stop students from seeking formal care. During pilot testing, 80 of every 1,000 students invited to complete the survey did so, and of those, 20 participated in online dialogues with clinicians and 10 began treatment. Most (85%) of the students who responded to the survey invitation were at risk of suicide or other serious mental health problems, but few were currently receiving any mental health services. [18] Early feedback on the program suggested that most of the students who would not have otherwise entered treatment did so because they could communicate with clinicians without having to physically go to counseling centers first (Arenson, 2004; Lamberg, 2006). As of 2012, the AFSP model had spread to over 50 campuses nationwide, including the entire University of California system (AFSP, 2012).

[18] Preliminary findings from survey data on suicidal behavior prevalence were reported by Garlow et al. in 2008 and described in the earlier section of this chapter on survey research (Garlow et al., 2008).

Professional Standards and Best Practices for Student Mental Health Services

Though campuses may have to exhibit flexibility in how they meet student demand for services, and there is little evidence supporting specific models of care, there are professional best practices and accreditation standards written by and for campus mental health professionals. The International Association of Counseling Standards (IACS)(the same organization that publishes the directors surveys reported in this paper) provides written standards for quality campus mental health services as well as accreditation (IACS, 2010). These standards address such areas as the counseling center's relations with other parts of the campus community, personnel guidelines, and the services to be provided by the counseling center. Services should include individual and group counseling, appropriate to the needs of student clients; appropriate diagnostic assessment; crisis intervention; outreach; program evaluation; personnel development and training; and consultation and referrals from other campus personnel (IACS, 2010). Though the standards do not give specific numbers regarding session limits, the IACS does recommend staff to student ratios of one full-time equivalent (FTE) professional staff member for every 1,000 to 1,500 students. It suggests that when ratios exceed these values, there are unfavorable consequences, including increased wait times, greater difficultly serving students with serious psychological problems, and increased liability for both the center and college (IACS, 2010).

The IACS cites research that found that when students were placed on waiting lists for appointments, their attrition rate from health services increased by 14%. When these students "fall through the cracks" and have subsequent negative experiences, such as a suicide attempt, counseling centers are exposed to legal liability for failure to provide services up to professional standards. Other consequences of over-stretched services include decreased academic success for student clients and lowered staff availability for outreach and other services for the rest of the campus community. An example of such a service might be training for faculty and staff in recognizing the warning signs of depression or suicide in students, and how they can make referrals to the counseling center (IACS, 2010).

The American College Counseling Association (ACCA) endorses guidelines provided by the Council of Advancement of Standards in Higher Education (CAS). The CAS standards cover many of the same principles as the IACS, with additional guidelines on providing adequate facilities, promoting overall student development, and the growing role of technology in mental health outreach. The standards are prefaced by a contextual statement which outlines the major challenges facing college counseling centers today, including increasing numbers of students with serious mental health needs and increased accountability for counseling center providers. They recommend that counseling centers strengthen their practice of using off-campus referrals to provide appropriate community resources to meet the needs of seriously and chronically ill students. Professional training and development is also emphasized (CAS, 2014). Neither these standards nor the IACS standards provide specific guidelines for students at risk of suicide.

Other organizations provide guidance on best practices for suicide prevention on campus, such as the Jed Foundation, which also advises on legal issues, and the Substance Abuse and Mental Health Services Administration (SAMHSA), which administers grants to campuses for suicide prevention efforts (The Jed Foundation, 2015; SAMHSA, 2015). The American Psychological Association (APA) and NASPA recently produced a report on campus mental health practices

and recommendations (Douce & Keeling, 2014). The National Alliance on Mental Illness (NAMI) produced a set of guidelines for campuses on working with students with mental health disabilities, in response to findings from a student survey, discussed earlier (Gruttadaro & Crudo, 2013). Both the APA/NASPA and NAMI reports included an emphasis on the role of mental health services in promoting student retention and academic performance.

How Counseling Centers Exhibit Flexibility in Services Under Changing Conditions

There are several strategies counseling centers can use to accommodate increased demand for counseling services with the same or decreasing resources. These are session limits, decreased frequency of sessions, group counseling, case management, and the use of off-campus referrals to mental health providers in the surrounding community (Kitzrow, 2003). Centers may also make use of a mix of trainees and other professional types to deliver services (Hunt & Eisenberg, 2010). Of these six strategies, limited data and research are available on only session limit and frequency and the use of referrals. The paucity of this information highlights the need for systematic and detailed service data, such as is beginning to be collected by the CCMH.

The directors surveys collected data on session limits for eight of the years between 1995 and 2013. The percentage of schools that limited sessions was fairly stable over that time period, ranging from 54.2% in 1995 (N=321) to 47.5% in 2009 (N=366), with a low of 40.3% in 2004 (N=339)(AUCCCD, 1995-2003; Gallagher, 2004-2009). This variable was also reported by campus size for several years between 1999 and 2005. In 1999, 33.3% of the smallest campuses (N=61) had session limits, compared to 65.5% of the largest campuses (N=95)(AUCCCD, 1999). In 2005, these figures were 29.6% and 67.4% for the smallest (N=98) and largest campuses (N=95), respectively (Gallagher, 2005). The actual numerical session limit was asked in only two years. In 1995 the average limit was 11.22 sessions, and student clients received an average of 5.18 sessions each (AUCCCD, 1995). In 2009 the average limit was 11.5 sessions, with students receiving an average of 5.69 session each (Gallagher, 2009). The 2014 CCMH report also addressed this issue: of the 140 responding centers, 37.2% limited sessions, and of those, 76.4 % had limits of between 10 to 15 sessions. The average number of counseling sessions attended was 4.75 (CCMH, 2015). As described in the section on student demand, in all years that the directors surveys collected data on the average number of sessions, the values fell between 5.18 and 6.2 sessions. It appears that although many schools have session limits, and student to staff ratios increased during the 2000's, the number of sessions actually used by students has stayed consistent year to year. It should be noted that many schools in the directors survey that had session limits also had policies for making exceptions to the limit for special cases (AUCCCD, 2002-2003; Gallagher, 2004-2013). Still, it is impossible to determine which students receive the most on-campus sessions, or are allowed to exceed session limits. As discussed earlier, the CCMH 2014 data indicated that a small number of students account for a large proportion of counseling services, but it is unclear who these students are and what problems they face, including suicide risk (CCMH, 2015).

For session frequency, some years of the directors survey asked respondents whether they were adapting to increased caseloads by seeing students less often than once per week. For the nine years between 1995 and 2013 that included this item, the percentage of respondents who replied

affirmatively ranged from 61.0% to 78.8%, and did not indicate any trend over time. In only one year, 1997, the rate was also reported by campus size, with 56% of the smallest campuses (N= 60) replying "yes" to this item and 81.4% of the largest campuses (N=95) doing so. It is possible that larger campuses have used this strategy as well as session limits to accommodate high student to professional ratios, but as noted previously, the directors survey data is limited by response bias and other measurement problems (AUCCCD, 1995-2003; Gallagher, 2004-2013).

Many campus counseling centers use off-campus referrals to mental health professionals in the community as a way to serve students who require long-term care. Some centers will offer a limited number of sessions after which a student will be referred to off-campus resources. Other centers will make the decision to refer a student off-campus during an initial assessment. Limited research on which students counseling centers decide to refer out indicates that those with chronic mental health problems are more likely to be referred out, while those needing assistance with developmental issues and who are likely to respond quickly to therapy will be kept in-house (Lacour & Carter, 2002). One study found that referrals outside of campus services were not only done for long-term therapy, but also for problems beyond the scope of staff competence, including psychiatric services.[19] The same study found that while many centers reported making follow-up calls for outside referrals, many did not (Stone, Vespia, & Kanz, 2000). This could result in a student receiving no follow-up care at all, should they have difficulty securing appointments with an off-campus provider, or encounter some other problem with access. Data from the directors surveys are limited in this area, except for a few years when directors were asked whether they needed better resources for referrals to outside services. In 1995, 66% of respondents (N=321) replied affirmatively, in 2002, this number was 58.8%.(N=272)(AUCCCD, 1995, 2002). It has been questioned whether off-campus referrals are a positive alternative in general, and whether the use of them for chronically ill students is in line with ADA requirements to accommodate student need (Bishop, 1995). On the other hand, others have questioned whether it is fair to expect college counseling centers to provide for all the long-term care needs of students with serious and chronic mental illness (Baker, 2014; Mowbray et al., 2006). Off-campus referrals for some students may be the best and most efficient way to meet their care needs, especially for smaller, over-stretched counseling centers.

As seen in the directors survey data, counseling centers sometimes make exceptions to on-campus session limits for students for whom it would present too formidable a barrier to leave campus (Lacour & Carter, 2002). The potential challenges to clients in finding off-campus mental health professionals are numerous, and as noted before, campuses do not always assist in the process. Some challenges are practical: there may not be many providers who are accepting new patients or who will accept students' insurance. Students may lack transportation to an outside provider, or the money to pay them. Even co-payments on student insurance plans may be too much for a student budget. Another set of challenges are psychosocial. For example, students who are on their parents' insurance plan may not wish to use that insurance to pay for an outside mental health provider, for fear of their families learning they are receiving therapy. Some students may find it daunting to seek and find an external provider who is not affiliated with their campus, and become discouraged, a tragic example of which was seen in the case of Candy Wei discussed earlier. Some students may be referred off-campus after a few sessions

[19] It should be noted that many small campuses lack the resources to fund an on-site psychiatrist, and so all psychiatric consultations and treatment must be performed by an external provider.

with an on-campus provider, and experience the referral as a sort of abandonment (Lacour & Carter, 2002; May, 2003). More research is needed on how and when counseling centers use referral practices. For students needing long-term or psychiatric care, referrals might be appropriate and beneficial, especially for centers with limited staff availability. Still, barriers to off-campus care present a significant risk to students already experiencing mental distress, as they may be easily discouraged. Centers may be able to address these barriers, such as using case management to find and ensure follow-up with an off-campus mental health provider. Outcome-effectiveness research could determine what referral practices lead to the best treatment outcomes, especially for students with chronic mental illness and at risk of suicide.

In summary, what little information is available on service delivery, such as student to staff ratios and average session numbers, gives only a limited, general picture of campus mental health service delivery. The Center for Collegiate Mental Health (CCMH) research project shows promise in collecting standardized data on counseling center practices from members of their network. But for most counseling centers across the country, there are no comprehensive, detailed data about service delivery and structure. This raises the possibility that there could be considerable variation in service provision on different campuses, particularly at larger schools. The directors survey and CCMH data suggest that larger campuses have greater student to staff ratios, but it is not clear what strategies counseling centers use to accommodate varying client demand, or whether they have made changes to their service models that affect different categories of clients in different ways. Counseling centers may be experimenting with a mix of service models, in which different combinations of staff types, treatment types (e.g. individual vs. group counseling), and strategies for long-term care – such as case management or off-campus referrals – are in use. Different professional types may be used to serve different types of clients, or to handle different kinds of situations, such as crises or serious and chronic mental illness. Little research exists on the effectiveness of specific practices in the campus setting, except for the brief therapy model of 12 to 14 sessions which, as noted earlier, has a limited evidence base. This is partly because of the challenge of administering such a model to college students, as many students do not attend more than five to six sessions. The lack of follow-through by students suggests the need for specific research that examines the causes of attrition, be it due to semester breaks, resolution of crises, or barriers to access such as long wait times or the challenge of finding off-campus mental health providers.

For students with acute or recurring suicidal crises, the timing of care is important. It is not known what proportion of on-campus sessions are used for students in need of crisis management and risk assessment, or how quickly they receive that care. It is not known how often suicidal students are referred to off-campus resources, and what follow-up or case management occurs. In spite of increased attention to student suicide, little research has been conducted on suicide prevention beyond a few pilot studies, such as the AFSP online screening model. This represents a significant gap in college suicide research. The potential variety of service models in practice at different schools could provide a rich source of data for research on mental health service delivery and outcomes for suicidal students, as well as for students dealing with other mental health challenges.

Study Purpose and Significance

Current data sources and reports suggest that up to 11% of all college students experience suicidal ideation at some point during their education, and up to 1.5% of them will make at least one suicide attempt. It is not known what specifically the needs of these students are, how often they seek care, or what model of care they are most likely to receive. Most surveys on college suicide have focused on one or several campuses, and few have also examined service use by actively suicidal students. Service use data on treatment for suicidal students are also sparse, and do not always capture nonfatal suicidal behaviors by service users, in addition to missing students who never seek formal care. College suicide research that includes health service use is nascent, apart from several studies on help-seeking behaviors.[20] This study begins to address that gap by examining the link between suicidal ideation and service use, including a broader spectrum of services than has previously been studied, such as: provider type seen, frequency of visits, provider affiliation with the campus counseling center, medication, and hospitalization. The analysis focuses on services received specifically for suicidal ideation, limiting potential confounding by service use received before the suicidal crisis began.

The theoretical approach used in this study was based in a health services framework. The methodology was mixed, using a quantitative-to-qualitative analytical design. Archived data were used from a large, widespread survey on suicide conducted by the National Research Consortium of Counseling Centers in Higher Education, based at UT Austin, as described earlier. The survey was administered to more than 25,000 undergraduate and graduate students from 70 colleges and universities across the United States. The data set was large enough to generate a sub-group of over 1,300 respondents who had experienced suicidal ideation in the previous 12 months. These respondents were prompted to answer a series of questions about the nature of their ideation, mood states, substance use, suicidal behavior history, and mental health services they used to help with their ideation. The experiences of students who did not seek mental health services were also included in the analysis. All members of the sub-group were asked whether they made a suicide attempt following their suicidal ideation, in the same 12 month period.

In the first, quantitative part of the analysis, the aim was to examine students with 12-month suicidal ideation, what services (if any) they used, and whether service use was associated with suicide attempt and other variables related to suicide risk. Prior research on college suicide has tended to focus on a few risk factors at a time, creating the limitation that unobserved variables may account for observed variation in suicidal behaviors. This study avoided this limitation by including psychosocial, demographic, and behavioral variables that are known to be associated with suicide risk and behaviors. These include history of suicidal behavior, mood states such as hopelessness, alcohol and substance use, and emotional and physical distress. Pertinent demographic variables were included such as gender, race/ethnicity, international student status, sexual orientation, transgender status, and class status (undergraduate or graduate student). Variables describing the nature of the respondent's suicidal ideation, such as frequency and severity of thoughts, were also included. The analysis tested for associations between these

[20] No research study has included a full spectrum of services a suicidal student might access during a crisis. The Brownson et al. study of 2011 found that suicidal students who accessed a mental health service provider reported them as helpful, and was associated with lower suicide attempts, but did not account for students who also received hospitalization or medication for their ideation.

variables, health service use variables, and suicide attempt. Methods were used similar to those in other suicide studies, such as bivariate statistical tests of association and multiple logistic regressions to test the association of all relevant variables with suicide attempt, treated as a dichotomized outcome. As a further extension made possible by the size and spread of the survey, the data were also compared on lifetime service use and suicidal behaviors by campus-level variables such as financing (public/private), size, and region of the United States.

The second, qualitative part of this study followed directly from the findings of the quantitative analysis, and examined open-ended responses to two questions from the same student survey. Qualitative methodologies are used less frequently than quantitative methods in health services research, but can provide information in the way of understanding what happens during a patient's illness and treatment experience. They can also aid discovery of psychosocial and other variables that were previously unknown to be salient in the phenomenon under study. In this analysis, students described in their own words what was most and least helpful to them in resolving their crises. What they said was most helpful could include not only formal care but other forms of emotional and social support. This kind of information can help identify avenues of intervention that use informal, social connections between students. What they said was least helpful can illuminate barriers or challenges they experienced in accessing health services or securing informal support from other people. Themes in student descriptions were also grouped according to service use and suicide attempt, in order to capture differences in the experiences of different categories of ideators.

As stated at the beginning of the chapter, the two main research questions posed in this study were:

1) What students are at risk for suicide, and how many of them access mental health services? What type and how many services are accessed, and how are they associated with suicidal behaviors, including suicide attempts, and other relevant variables?
2) In their own words, what do students say was most helpful to them during their suicide crises, and what was least helpful?

This study contributes to the college mental health and suicide literature, addressing limitations in earlier research. Data linking suicidal ideation and service use are presented for a large, widespread sample of students. A broad array of variables known to be associated with suicide was included in the quantitative analysis to minimize unobserved variable bias. Nonfatal suicidal behaviors affect many students in the general population, and even in the absence of fatality, both ideation and nonfatal attempts are sources of distress, mental illness, impaired functioning, and decreased quality of life. For college students, this includes reduced academic performance and retention in school, as well as the effect on other students of mental illness and suicidal behaviors. This study contributes to the understanding of nonfatal suicidal experiences of college students and when and how health services are used by the large sub-population of suicidal ideators. The findings can help identify different categories of students within the population of suicidal ideators, and how they differ on both service use and other variables related to suicide risk. This sets the stage for future research that focuses on specific groups of ideators and how they differ from other ideators in their need for services and factors that increase their risk. Outcome-effectiveness research could measure the impact of interventions on students with

similar risk profiles, thereby controlling for other factors that influence suicidal behaviors and risk, in order to demonstrate the effectiveness of particular treatment modalities.

The qualitative analysis contributes by helping identify factors that students say were both helpful and unhelpful to them in resolving their suicidal crises, and how this differed for different groups of ideators. This kind of information can inform intervention design and research that targets groups of students based on their particular needs and characteristics. Such interventions might include both formal care and informal sources of assistance. For example, programs already exist on many campuses that train faculty and staff on identifying students at risk and connecting them with appropriate assistance. The AFSP online screening has been successful in identifying students at high risk for suicide and mental illness who also had not accessed mental health services. Research that focuses on specific groups of ideators could identify barriers to care or phenomena that prolong or worsen their suicidal crises, so that future interventions can be designed that address such problems.

Chapter 2 –Methods; Quantitative Analysis

Overview

As discussed in Chapter 1, the first part of this study used quantitative methods to explore the link between suicidal ideation and mental health service use among college students who had experienced at least one episode of ideation in the previous year. The analysis tested for associations between service use, other variables knows to be associated with suicide risk, and suicide attempt. This analysis extends previous research in several ways. A large, widespread sample allowed for selection of a sub-group of 1,321 students who reported 12-month ideation. The inclusion of psychosocial, demographic, and ideation-related variables served to minimize unobserved variable bias. Students were asked to report specifically on services received after they first realized they were experiencing suicidal ideation, limiting confounding by services they may have already been receiving. As a significant extension of previous research, a number of service use variables were collected in this study, including provider types, frequency of visits, affiliation of providers with campus counseling centers, medication use, and hospitalization. Respondents were also asked whether they went on to make at least one suicide attempt in the same 12-month period, which was converted to a dichotomized variable of "yes" or "no" for analysis. As will be described below, a series of bivariate tests were conducted on the variables for service use, psychosocial phenomena related to suicide risk, and 12-month suicide attempt. Logistic regressions were used to determine the simultaneous effect of psychosocial, demographic, ideation (strength and frequency of suicidal thoughts), and service use variables on 12-month attempt.

The findings of this analysis indicate which students with suicidal ideation use services, whether service use is correlated with other suicide risk factors, and how service use and other factors are associated with suicide attempt. This information can help identify different profiles of students and how they differ by suicide risk, service use, and other risk factors. These profiles can be used to tailor future research and interventions that target specific groups of students, based on their need for services and factors that increase their risk of recurring or worsening suicidal behaviors and associated mental distress.

Data

This study used archival data from the National Research Consortium of Counseling Centers in Higher Education, based at the Counseling and Mental Health Center at the University of Texas at Austin (UT Austin). Since 1990 the consortium has conducted five large-scale studies in the field of college mental health, and de-identified data sets are available by request for further research. Their most recent study, conducted in 2006, specifically focused on suicidal crises, and is the source of the data used here. Counseling center directors from members of the consortium were involved in the design of the survey, as well as two suicidology experts. The survey covered a wide range of psychosocial phenomena and suicidal behaviors, as well as any services or other resources utilized by respondents who reported 12-month suicidal ideation (Drum et al., 2009).

Participating colleges were chosen based on their membership in the consortium. A stratified random sample of 108,536 students in 70 colleges and universities in the U.S. were sent an invitation to participate in the survey, which was administered online. The number of respondents sampled on each campus varied by campus student population size and in such a way that each counseling center would have enough data for on-site analyses. Campuses with more than 5,000 undergraduates had 1,000 students sampled; campuses with fewer than 5,000 undergraduates had 500 students sampled. A similar strategy was used to select graduate student respondents. The response rates were 24% (15,010 out of 62,000 invited) for undergraduate students and 25% (11,441 out of 46,536 invited) for graduate students.[21] The total sample size was 26,451. All students were consented by procedures approved by the Institutional Review Board of the University of Texas at Austin, and were provided information about their local campus counseling center and other mental health service contact information (Drum et al., 2009). The data used for this study were anonymous by respondent and campus, only providing information for each campus on whether it was privately or publicly funded, its size (small, medium, or large), and geographic region within the continental United States (North, South, West or Midwest). Student class status was operationalized as either undergraduate or graduate. Data weights were provided by the data set owners that accounted for class status and individual campus, taking into account differing response rates, population sampling fractions, and sample sizes.

Table 3 provides some descriptive statistics for the entire survey sample, including class status, gender, race and ethnicity, sexual orientation, and transgender status. Of the 26,451 respondents, 56% were undergraduates and 43% graduate students.[22] Sixty percent (60%) were female and 39% of respondents were male. For race and ethnicity, 76% of respondents were Caucasian, followed by 5% each for Asian American and Hispanic/Latino. Six percent (6%) were international or foreign students, and 4% were designated multi-racial due to respondents choosing more than one category. Ninety-four percent (94%) of respondents were heterosexual, 2% gay or lesbian, 2% bisexual, and 1% questioning. When asked if they were transgender, 0.2% replied "yes."

Several items on the survey asked all respondents about their lifetime use of mental health services, also shown in Table 3. Thirty-six percent (36%) reported having received mental health services from a counselor, therapist, or psychologist.[23] Twelve percent (12%) had received mental health services from a psychiatrist; 10% from a general medicine provider (GP), such as a physician or nurse; and 6% from clergy. Fifty-four percent (54%) reported never having received mental health services from a professional. Respondents were also asked whether they had ever received services from their campus counseling center (19% reported "yes"), ever used

[21] Response rates for college suicide research vary according to sampling and method, and are reflective of the sensitive nature of this topic. Some previous studies of college suicide that sampled from the general, non-clinical student population did not report a response rate (Nock et al., 2008; Pena et al., 2008; Westefeld et al., 2005), while others reported response rates of 55% (Molock et al., 2006), 8.1% (Garlow et al., 2008), 36.8% (Wilcox et al., 2010), and 86%, in a study that included a sizeable financial incentive for respondents (Arria et al., 2009).

[22] Percent totals on categorical variables may not sum to 100%, due to missing data and rounding.

[23] Note that counselors, psychologists, and social workers do not possess medical degrees (M.D.), whereas psychiatrists do. General medicine practitioners (GPs) and psychiatrists are able to prescribe medication. The title "counselor" will be used throughout this study to designate the category of non-medical mental health providers including psychologists and social workers.

medication for psychological reasons (19% reported "yes"), and ever been hospitalized for mental health reasons (3% reported "yes").

Table 3 – Descriptive statistics of entire sample, including demographic characteristics, history of mental health service use, and history of suicidal thoughts and consideration (N=26,451)

Characteristic		Frequency	Percent*
Class status	Undergraduate	14,854	56%
	Graduate	11,500	43%
Gender	Female	15,992	60%
	Male	10,194	39%
Race/ethnicity	African American	1,056	4%
	Alaska Native/American Indian	107	0.4%
	Asian American	1,390	5%
	Caucasian/White	20,017	76%
	Hispanic American/Latino	1,251	5%
	International/Foreign student	1,513	6%
	Multi-racial	996	4%
Sexual orientation	Bisexual	580	2%
	Gay/Lesbian	582	2%
	Heterosexual	24,874	94%
	Questioning	271	1%
Transgendered	Yes	48	0.2%
	No	26,298	99%
From which of the following have you ever received mental health services?	Counselor/therapist/ Psychologist	9,613	36%
	Psychiatrist	3,182	12%
	Other medical provider (physician, nurse, etc.)	2,697	10%
	Clergy	1,628	6%
	None	14,270	54%
Ever received services from the campus counseling center		5,192	19%
Ever received medication for mental health reasons		4,965	19%
Ever hospitalized for mental health reasons		801	3%
Had the following thoughts in the past 12 months:	"I wish this would all just end"	8,860	34%

	"I wish I was dead"	2,579	10%
Phrase that best describes you:	I have had some type of suicidal thought on a regular basis for several years	503	2%
	I have repetitive episodes of suicidal thoughts with periods in between of no suicidal thoughts at all.	1,388	5%
	I have had a few discrete periods in my life of having suicidal thoughts	5,991	23%
	I have only had one period in my life of having suicidal thoughts	5,873	22%
	I have never had suicidal thoughts	12,073	46%
Ever seriously considered attempting suicide?		4,301	16%
In the past 12 months, have you seriously considered attempting suicide?**		1,321	5%

*Percent totals may not sum to 100 due to missing responses and rounding.
**This item was used to select the sub-group of respondents for the analyses presented here.

As discussed in Chapter 1, completed suicides have a low base-rate, and health service data do not capture many nonfatal suicidal behaviors, especially ideation. Studying larger non-clinical populations through the use of survey instruments permits capture of more of these behaviors (Nock et al., 2008; Reinecke & Franklin-Scott, 2004). The current survey was able to capture a significant proportion of respondents who had experienced nonfatal suicidal behaviors, regardless of their use of health services. To reduce discomfort around answering direct questions about suicide, the survey order was such that respondents were first asked whether they had either of the following thoughts about death in the previous 12 months: "I wish it would all just end" (34% reported "yes"), and "I wish I was dead" (10% reported "yes") – thoughts that might be termed passive ideation. Respondents were then asked to choose one of several statements describing their lifetime experience of thoughts about suicide, also shown in Table 3. Forty-six percent (46%) reported never having had suicidal thoughts, 45% had suicidal thoughts one or several times, 5% had repetitive episodes of suicidal thoughts, and 2% had suicidal thoughts on a regular basis. When asked directly if they had ever seriously considered suicide – what might be termed active ideation - sixteen percent (16%) reported "yes." Responses to this item were used to generate a variable for the analysis that captured lifetime suicidal ideation. Respondents were then asked whether they had seriously considered suicide in the previous 12 months, to which 5% said "yes." This item was used to select the sub-group of students used for the analyses presented here.

Measures

Sociodemographic

Several sociodemographic variables were included in the analyses that are known to affect suicidal risk, as discussed in Chapter 1. Males in general are more likely to experience completed

suicides, while females are more likely to be involved in nonfatal attempts, though female graduate students have been shown to have higher rates of ideation and attempts than females in the same age group in the general population (Silverman, 2004). Suicide rates differ by race and ethnicity, though this varies somewhat by gender. For males in the age group 15 to 24, the age range typically reported in national statistics, suicide risk is highest for Native Americans, followed by non-Hispanic Whites, African Americans, Hispanic/Latinos, and Asian/Pacific Islanders. For females the order of highest to lowest risk is Native Americans, non-Hispanic Whites, Asian/Pacific Islanders, Hispanic/Latinos, and African Americans (Horton, 2006). In the current analysis, International/Foreign was also included as a category under race and ethnicity, as International students are at greater risk for mental health problems (Mori, 2000). Gender and race/ethnicity were included in the analysis because of their potential effect on the likelihood of a 12-month suicide attempt.

Membership in a sexual minority is also a risk factor for suicide. Lesbian, gay, and bisexual people are at higher risk than heterosexual people of experiencing mental illness and suicidal behaviors, as are people who are transgendered (D'Augelli, 1993; A. H. Grossman & D'Augelli, 2007; M. King et al., 2008). These variables were therefore included in the analysis. Sexual orientation was treated as a categorical variable with four potential responses, as shown in Table 3 above: Bisexual, Heterosexual, Gay/Lesbian, or Questioning. Being transgendered was operationalized as a dichotomous variable.

Students' class status –whether they were undergraduate or graduate students – was considered an important variable to include in the analyses, partly because age is known to influence suicide rates, and because graduate students have different levels of suicide risk (Horton, 2006; Nock et al., 2008; Simon, 2006). Hyun et al (2006) noted in their own study of graduate students' mental health that most research on college students has focused on undergraduates or specific professional student groups such as medical students (Hyun et al., 2006). Bivariate associations were calculated separately for undergraduate and graduate students in this study, and regression analyses used the probability weights associated with the survey data, which took both class status and campus into account.

Psychosocial

Numerous studies have noted the higher risk of suicidal behaviors in those with certain mental illnesses, such as depression and anxiety, and certain emotional states, such as hopelessness (Borges et al., 2008; Brezo et al., 2008; Molock et al., 2006; Reinecke & Franklin-Scott, 2004; Silverman, 2004; Simon, 2006; Verona, Hicks, & Patrick, 2005). The suicide survey did not directly ask respondents whether they had current or past mental illness diagnoses. Instead, the students who experienced 12-month ideation were asked about particular emotions that described how they felt during periods of active suicidal ideation. Response items included "anxious/worried," "sad," "lonely/isolated," "hopeless," "helpless," and "anxious/panic." These variables were included in the analysis here because of their potential impact on suicide risk, as follows. The "anxious/worried" and "anxious/panic" variables were thought to serve as a proxies for high levels of anxiety and perturbation/desperation, respectively, which have been found to be associated with suicidal risk (Shneidman, 1993; Simon, 2006). "Sad" was included as a possible proxy for depression. "Lonely/isolated" was included because of the known protective effects of positive social relationships, and "hopeless" because of its well-known association

with suicide risk (Simon, 2006). "Helpless" was included as a proxy for a lack of self-efficacy, as there is some evidence to suggest that students differ on their perceived ability to recognize suicidal behaviors and seek assistance for them (K. A. King et al., 2008). All of the emotion variables were rated on a six-point scale, re-ordered for analysis, where "6" equaled "described me very much," and "1" equaled "not at all."

Respondents were asked about situational factors over the previous 12 months that may have contributed to their seriously considering suicide. One of these, "get relief from emotional or physical pain," was included in the analysis as an additional way to capture the association of emotional and other mental distress with suicide attempt, and also to capture the effects of recent negative life events. This variable was rated on a six-point scale, re-ordered for analysis, where "1" equaled "very small impact," and "6" equaled "very large impact." While there may have been some overlap between this variable and the emotion variables of "anxious/worried" and "anxious/panic" described above, it was thought that students with chronic mental illness might more consistently cite this factor, because not all mental illness would necessarily cause a respondent to report feeling anxious, worried, or panicked. It was therefore included in the analysis as a proxy for non-fear-based chronic mental illness, such as personality disorders, which are known to contribute to suicide risk in their own right through chronic traits such as impulsivity (Simon, 2006). All six of the emotion items and the item on relief from emotional and physical pain were included in the analyses as ordinal variables.

An additional factor of interest was the influence of drugs and alcohol on the likelihood of suicide attempt, as substance use is another known risk factor for suicide (Reinecke & Franklin-Scott, 2004; Silverman, 2004; Simon, 2006). Students were asked to rate their average use of the following in the previous 12 months: alcohol (5 or more drinks in a 24 hour period), marijuana, cocaine, hallucinogenic drugs (e.g. LSD, mushrooms, ecstasy, etc.), and stimulants (e.g. Adderall, Ritalin, amphetamine, etc.) that were not prescribed for them. Their responses on these items varied on a six-point scale, re-ordered for analysis, so that "1" equaled "never," "2" equaled "seldom," "3" equaled "once a month," "4" equaled "twice or more per month," "5" equaled "weekly," and "6" equaled "daily." All five alcohol and drug use items were included as ordinal variables in the analyses.

Suicidal Behaviors

As noted earlier, all respondents to the survey were asked if they had ever seriously considered suicide in their lifetimes. For those who responded "yes," they were asked to report the number of discrete periods of ideation they had ever experienced. Of these lifetime experience variables, one, whether they had ever considered suicide, was used for the analyses as a measure of history of suicidal ideation. Previous research has demonstrated that lifetime history of suicidal ideation is strongly related to present suicidal outcomes (Molock et al., 2006), though this effect has been found to decrease as college students age into older adults (Nock et al., 2008).

As noted before, 1,321 (5%) of respondents reported having seriously considered suicide in the previous 12 months, and formed the group used for the analyses presented here. The survey had built-in skip logic, so that those respondents were then asked a series of additional questions about their suicidal thoughts, and whether they had received mental health services (discussed in the next section) after they first realized they were seriously considering suicide. The follow-up

questions referred to the same 12-month interval of time, a technique recommended by researchers for capturing suicidal behaviors including ideation (Nock et al., 2008).[24] After those items, respondents were asked whether they had made a suicide attempt in the previous 12 months, an outcome variable for this study. In this manner the sequence of phenomena from ideation to service use to suicide attempt was preserved.

For those who experience suicidal ideation, the nature and frequency of their suicidal thoughts may vary, and are of great importance to health care practitioners. There are a number of scales of suicidal ideation used by healthcare practitioners. They usually include items that assess the frequency and severity of suicidal ideation, though they differ in wording and response categories. Beck's instruments typically have 3-point scales for responding to items, and the original Scale of Suicidal Ideation assesses duration and frequency of ideation (Beck et al., 1979)("Scale of Suicidal Ideation," 2014). For example, the version of Beck's scale designed for self-administration contains the item "Frequency of suicide ideation," where respondents may select from the choices of "rare occasional," "intermittent," or "persistent or continuous." A separate item, "Desire to make active suicide attempt," provides the response choices "none," "weak," and "moderate to strong"("Scale of Suicidal Ideation," 2014). Studies have indicated that the items on Beck's scales load on three factors: Desire for Death, Preparation for Suicide, and Actual Suicide Desire.[25] Beck's Scale of Suicide Ideation – Worst (SSI-W) is administered by an interviewer and asks the respondent to consider the worst period of suicidal ideation they had ever experienced when choosing responses to survey items (Brown, 2001).

Other scales exist that are modifications or extensions of Beck's original scale. For example, Miller's Modified Scale for Suicide Ideation has been used with college students, and uses a four-point Likert scale for responses. It was designed to measure suicidal symptoms over the previous 12 months, including intensity of ideation. When used with college students, the scale has been found to load on three factors: Suicidal Desire, Preparation for Attempt, and Perceived Capability of Making an Attempt. One caveat is that the Miller scale, while found to have high validity, is usually administered by a health care professional, rather than self-administered (Brown, 2001). Using such a scale in a survey would possibly lessen its validity. Another scale designed to be administered by trained personnel is the Columbia-Suicide Severity Rating Scale (C-SSRS). Several versions of this scale are available, including one designed to assess lifetime and recent suicide risk. Items include "Intensity of Suicide Ideation," for both lifetime and recent ideation, and for each the respondent gives a score from 1 to 5. Another item on "Frequency" provides five response choices, including "less than once a week," "once a week," "2-5 times in week," "daily or almost daily," and "many times each day." Respondents are also asked about the duration of their suicidal thoughts. The scale has been demonstrated to predict completed suicides amongst psychiatric patients (Posner et al., 2009).

The Self-Monitoring Suicide Ideation Scale is a self-report instrument designed to be administered daily. It has been validated on chronically suicidal college students and contains an item that reads, "Today I have had thoughts of making an actual suicide attempt," with response

[24] Several previous studies of adolescent and college suicide were not able to account for timing of services and suicidal behaviors (Kisch et al., 2005; Molock et al., 2006; Pena et al., 2008).
[25] "Desire for Death" is a concept that refers to respondents' agreement with statements such as "I wish I were dead," whereas "Actual Suicide Desire" refers to a respondent specifically considering suicide.

categories on a Likert scale ranging from "0," which corresponds to "None at all," to "3,"which corresponds to "strong" (Brown, 2001). Reynolds' Adult Suicide Ideation Questionnaire (ASIQ) has also been validated with college students. It measures frequency of various thoughts related to suicide, such as wishing one had never been born, or seriously considering attempting suicide. Responses are measured with a 7-point Likert scale (Reynolds, 1991). Jobes' Suicide Status Form can be self-administered and has been validated with college students. It uses 5-point Likert scales to assess variables such as the respondent's level of psychic pain (Jobes, Jacoby, Cimbolic, & Hustead, 1997). Rudd's Suicide Ideation Scale is a self-report instrument designed for use with college students that focuses on suicidal thoughts. It contains 10 items requiring respondents to choose a number from 1 to 5, where "1" is "never or none of the time" and "5" is "always or a great many times." This scale has high internal consistency, with Cronbach's alpha values of 0.86 and 0.90, and correlates well with scales of depression and hopelessness. It also scores higher with suicide attempters than non-attempters (Range & Knott, 1997).

Both frequency and severity of thoughts were included as independent variables in the analyses presented here, as they would likely influence the risk of suicide attempt. Respondents in the 12-month ideation sub-group were asked how many periods of time in the past 12 months they had seriously considered attempting suicide, where "period" was defined as "a day, a week, or even several months in which [they] persistently considered attempting suicide with no more than a couple of days of relief from these thoughts." They were then asked to rate the severity of their suicidal thoughts during those periods, on a 5-point scale, ranging from "very weak" to "very strong."[26]

The survey assessed whether students in the 12-month ideation group progressed to a later stage of suicidal behavior and reported having made at least one suicide attempt in the same 12 month period. This was treated as a dichotomous outcome variable, as done in previous studies (Kisch et al., 2005; Molock et al., 2006; Pena et al., 2008).[27] Bivariate tests of association were conducted for the various psychosocial, demographic, ideation (frequency and severity), and service use variables and suicide attempt. Logistic regressions were also conducted in which 12-month attempt was the outcome variable, to test the joint effect of the various independent variables on likelihood of attempt.

Mental Health Service Use

As noted above, students were specifically asked about mental health services they used after first realizing they were seriously considering suicide. These included having seen a counselor, psychiatrist, GP, or member of clergy. Though clergy are not health service professionals, this category was kept in the analysis because previous research has shown some association between religiosity and suicidal behavior (Molock et al., 2006; Simon, 2006). Respondents were also asked whether they took medication to help them with their suicidal thoughts, and whether they were hospitalized.[28] Student use of both medication and hospitalization has increased in recent

[26] The strength of suicidal thoughts scale was presented to respondents such that "1" equaled the strongest thoughts and "5" the weakest. These data were re-coded for analysis such that "1" equaled "very weak" and "5" equaled "very strong."

[27] Pena et al (2008) noted that though dichotomization of variables limits analyses in terms of data variability, it does allow for the calculation of odds ratios and simple rates of association.

[28] For respondents who reported any 12-month suicide attempt, a skip pattern directed them to a separate set of items specifically asking about medical care received after their first attempt, including hospitalization.

years (AUCCCD, 1995-2003; Gallagher, 2004-2013), and this study provided the opportunity to explore the impact of these services on students who used them for their suicidal ideation.

The wording for the mental health service provider question was as follows: "From whom did you receive psychological, psychiatric, or other mental health services after recognizing that you were seriously *considering* a suicide attempt in the past 12 months?" There were five responses provided to this question: "I did not receive any such services," "medical provider (physician, nurse)," "psychiatrist," "psychologist/social worker/counselor," and "clergy." Respondents could choose more than one response, and their choice of "yes" on any of the provider types then led to a series of questions about their service experience with that provider. They were asked for the number of visits and whether the provider was affiliated with their campus. As noted in the first chapter, session number limits and availability of certain provider types vary by campus, as counseling centers struggle to balance limited resources and increasing student demand. While service use data indicate that most student clients utilize five to six sessions on average, less is known about the number of sessions required or used by students in crisis and/or at risk of suicide. Best practices for treatment and prevention include suicide risk assessments, therapeutic intervention, and possibly medication or hospitalization, all of which entail a considerable investment of time by a team of professionals. Time is required to build a therapeutic alliance with a client, and follow-up is essential. Students may need to see a psychiatrist, a resource that is often limited in counseling centers, and not always easily substituted for by seeing a GP instead. Nock et al.'s review study (2008) demonstrated that physician training on suicide has a protective effect by lowering suicide rates, thereby implying that physicians without specific training in suicidal behaviors may be less effective at treating suicidal ideation. In this analysis, each provider type and the number of visits were included, as both variables likely affect the overall service experience (Nock et al., 2008).

Additional justification for including all provider types seen in this analysis was partly based on prior research that demonstrated the differential impact of one modality of treatment – medication or therapy – as opposed to a combination of modalities. In one study students receiving more treatment were *more* likely to report a suicide attempt, though it should be noted that severity of suicidal symptoms was not controlled for. The authors suggested that students themselves may recognize their degree of risk, and seek professional assistance, though it is not known whether that assistance is adequate or appropriate for clients in suicidal crises (Kisch et al., 2005). For this analysis, a separate variable was created that counted the number of providers seen by each student in the sub-group, though it was not known whether providers worked together in the student's treatment, or whether the effect of multiple providers would be additive, multiplicative, or counter-productive.

Students may be referred to off-campus resources, and see providers who are not directly affiliated with the campus, particularly if they have long-term psychological needs. It is not known how often this strategy is used for actively suicidal clients, or the resulting impact on them. Researchers have noted the inherent challenges in accessing off-campus resources (Lacour & Carter, 2002), and one study found that students who accessed off-campus providers were significantly less likely to be Asian American or International students (Hyun et al., 2006). This raises the possibility that students in those demographic groups experience barriers to off-campus services that differ from the experience of students from other demographic groups. For the

purposes of this study, it was thought important to include provider affiliation with campus, for the potential effect on suicidal risk and outcomes and the differential effect it may have on different groups of students.

Table 4 provides a description of some of the independent variables used in the analyses. These include lifetime and 12-month experience of suicidal ideation, characteristics of suicidal thoughts, and health service use variables. Of the latter, the dichotomous variables for use of each of the provider types were included in Model 1 of the regression analyses, described below. Number of visits and affiliation with campus for each provider type – if used by the respondent – were included in the Model 2 regression, as was the total number of providers seen.

Analysis

Survey data was imported into the software package Stata 13 IC®, and all analyses were conducted using that program. Simple descriptive statistics were generated for the entire sample. For the 12-month ideation sub-group, the various psychosocial, demographic, ideation characteristics, and service use variables were examined for their association with 12-month suicide attempt, using chi-square tests of association. These tests were conducted separately for undergraduate and graduate students.

Because 12-month suicide attempt was treated as a dichotomous outcome, in that the student either did or did not have at least one suicide attempt, multiple logistic regression models were employed to test the joint and simultaneous association of the independent variables with the outcome variable, an approach that has been used in other suicide studies (Desai, Dausey, & Rosenheck, 2005; D. C. Grossman, Milligan, & Deyo, 1991; Hershberger, Pilkington, & D'Augelli, 1997; Lawrence, Holman, Jablensky, & Fuller, 1999). Two regression models were tested. The regressions were weighted for class status and individual campus, using probability weights provided by the data set owners. Robust standard errors were used to ensure error variance was not increased with weighting so as to erroneously exclude significant variables, as recommended by Winship and Radbill (1994), as well as to account for intra-class variation by campus.

With multiple independent variables there was the potential for over-fitting the model. Some recommend only choosing independent variables that are significant in chi-square tests with the dependent or outcome variable of interest (D. C. Grossman et al., 1991), but that runs the risk of missing variables that are important to the overall model even if not significant in bivariate associations. Variable selection was therefore approached with an eye to improving model fit, as measured by adjusted R^2 values, while also not exceeding degrees of freedom such as would render the models untestable. Because of the potential for both omitted variable bias or misspecified functional form of the variables, the linktest function was used to test model specification and indicated no serious problems. Potential interactions between variables were tested by creating and including them in the regressions, including interactions between gender and race, severity of ideation and hospitalization for ideation, and between different pairings of the service use variables, such as seeing a psychiatrist and medication use. No interactions were

found to be significant or to contribute to model fit and were therefore not included in the final analyses. Wald and Likelihood ratio tests were used to test model significance, and checks for

Table 4 – Description of some variables included in the analysis:
Suicidal behaviors and use of mental health services

Concept	Operationalization	Variable Type
Lifetime experience of suicidal ideation	Whether a respondent reported a lifetime history of having seriously considered suicide	Dichotomous
12-month experience of suicidal ideation	Whether respondents said they had seriously considered suicide in the 12 months prior to the survey	Dichotomous
Frequency of suicidal ideation	The number of periods a respondent reported having had serious suicidal thoughts in 12-month period	Continuous
Severity of suicidal ideation	The severity of suicidal thoughts as rated by respondents on a 5-point scale	Ordinal
Primary care-based (GP) mental health services	Whether a respondent saw a general medicine practitioner (GP) after first realizing they were considering suicide	Dichotomous
GP number of sessions	Number of visits a respondent made to a GP for suicidal ideation	Continuous
Affiliation of GP with campus health services	Whether or not the GP seen was affiliated with campus health services	Dichotomous
Psychology-based mental health services (counselor)	Number of visits a respondent made to a counselor for suicidal ideation	Continuous
Affiliation of counselor with campus counseling center	Whether or not the counselor seen was affiliated with campus health services	Dichotomous
Psychiatry-based mental health services	Number of visits a respondent made to a psychiatrist for suicidal ideation	Continuous
Affiliation of psychiatrist with campus counseling center	Whether or not the psychiatrist seen was affiliated with campus health services	Dichotomous
Medication use	Whether a respondent reports taking medication for suicidal ideation	Dichotomous
Hospitalization	Whether a respondent reports being hospitalized for suicidal ideation	Dichotomous

NB: Not all service use variables are shown here.

multicollinearity were conducted to check for high associations between any two variables (0.8 or higher). A number of residuals tests were conducted to identify any data points with excessive influence on data structure, resulting in the removal of four cases.

Two regression models were tested. Both included the sociodemographic variables and psychosocial variables listed above, lifetime experience of suicidal ideation, frequency and severity of suicidal thoughts, and the dichotomous variables for medication use and hospitalization. The models differed in the variables describing respondents' use of different mental health professionals. Model 1 included dummy variables for whether the respondent had seen each professional type: GP, psychiatrist, counselor, or clergy. The regression was conducted for all members of the 12-month suicidal ideation group.

Model 2 focused only on those students who reported seeing at least one professional for their ideation. The variables for seeing each professional type were replaced with continuous variables describing the number of visits respondents had with each professional they saw. To capture the effect of off-campus referrals, affiliation of each provider type was included in Model 2 as a dichotomous variable, where "1" equaled affiliation with the respondent's campus. Model 2 also included the variable for total number of professional types seen, described above. This variable ranged from one to four, as students could conceivably have seen one each of a GP, counselor, psychiatrist, and clergy member.

The two regression models were used to address the following research questions:

> *For the sub-group of students with 12-month suicidal ideation, how is mental health service use - including medication, hospitalization, and seeing a provider such as a GP, psychologist/counselor, psychiatrist, or clergy - and other related psychosocial, ideation, and demographic variables, associated with at least one suicide attempt being made during the same 12-month period?*
>
> *For the sub-group of students with 12-month suicidal ideation who saw at least one professional for their ideation, how is mental health service use – including the number of visits to each provider, each provider's affiliation with campus, the total number of providers seen, medication, and hospitalization - and other related psychosocial, ideation, and demographic variables, associated with at least one suicide attempt being made during the same 12-month period?*

An additional exploratory analysis was conducted for campus-level variables. For each respondent the data set included three pieces of data about their campus – funding type (public or private), size (small, medium, or large), and region of the U.S. (Northeast, Southeast, Central, and West). These campus-level variables were subjected to chi-square tests for their association with two sets of variables – lifetime experience of suicidal behaviors (ideation and attempts), and lifetime experience of mental health service use. The rationale for this exploration was based on the differences in campus mental health services reported in the directors surveys, such as increased student to mental health professional ratios for larger schools. Geographic location was of interest because of potential cultural differences between regions, which might have an impact on suicidal behaviors and mental health service use.

Chapter 3 – Results; Quantitative Analysis

Preliminary Analysis

As noted in the previous chapter, 1,321 respondents reported having seriously considered suicide (e.g., suicidal ideation) in the previous 12 months, and were the sub-group used for the analyses presented here. These began with chi-square associations between the independent variables and the outcome variable, which was whether they reported making at least one suicide attempt in the same 12-month period. These tests were conducted separately for undergraduate and graduate student respondents. Table 5 shows the chi-square associations between lifetime suicidal ideation (whether students had seriously considered suicide at least once in their life), severity of suicidal thoughts, and the health service variables for types of professionals seen, hospitalization, and medication use. All service items were worded to ask respondents whether they received each service to help them with their suicidal ideation specifically.

Statistically significant associations were found for the variables of lifetime suicidal ideation, severity of thoughts, and *not* seeing any health professional for help with suicidal thoughts, with the outcome variable of 12-month suicide attempt, for both undergraduate and graduate students. The first two associations must be viewed conditionally as there were some problems with small cell sizes. For lifetime history of ideation, 17% of undergraduates who reported having considered suicide at least once in their lives also reported a 12-month suicide attempt, compared to 2% of those who did not report lifetime suicidal ideation. Amongst graduate students, 11% of those with history of ideation also had a 12-month attempt, compared to 2% of those without such a history. Row percentages are shown in the table, to better display the variation in 12-month attempts across each category of the independent variables.

Severity of thoughts, rated on a 5-point scale, also demonstrated a positive association with 12-month attempt. Amongst undergraduates, 29% of the students who rated their thoughts as “very strong” also had a 12-month attempt, compared to no students in the “very weak” category. With increasing steps on the strength of thoughts variable, the percentage attempting suicide consistently also increased. The same pattern was observed for graduate students, among whom those respondents experiencing the two weakest categories for strength of thoughts had no attempts, vs. 36% of the graduate students who had the strongest level of thoughts.

The variable for having seen no professional at all was captured by an item on the survey that listed this category along with the professional types seen. Therefore the “yes” response on this particular item means they did not see a professional for help with their suicidal ideation. The results on this category may seem counterintuitive; 13% of the undergraduates reporting that they saw no professional had an attempt, compared to 18% of those who responded “no” – meaning those who did *see* a professional. For graduate students, a similar pattern was seen, with 6% of those who did not see a professional having a 12-month attempt, compared to 13% of those who did. Seeing a professional was therefore associated with a higher rate of 12-month suicide attempt. For both groups of students, these associations were statistically significant.

Table 5 – Chi-square tests of association between independent variables of lifetime suicide consideration, strength of suicidal thoughts, and health service use with outcome variable of 12-month suicide attempt, by class status, N=1,321[A]

	Undergraduate			Graduate	
Row percentages	No 12-month attempt (%)[B]	12-month attempt (%)		No 12-month attempt (%)	12-month attempt (%)
Lifetime suicidal ideation No	100 (98%)	2 (2%)		57 (98%)	1 (2%)
Yes	653 (83%)	133 (17%)		309 (89%)	37 (11%)
	χ^2= 15.674	p < 0.001**		χ^2= 4.690	p = 0.030*
12- month strength of suicidal thoughts, on average:					
1 = Very weak	16 (100%)	0 (0%)		14 (100%)	0 (0%)
2	87 (97%)	3 (3%)		49 (100%)	0 (0%)
3	298 (89%)	36 (11%)		148 (96%)	6 (4%)
4	278 (80%)	70 (20%)		126 (86%)	20 (14%)
5 = Very strong	63 (71%)	26 (29%)		21 (64%)	12 (36%)
	χ^2= 37.432	p < 0.001**		χ^2= 42.543	p < 0.001**
Professional type seen for suicidal ideation[C]					
No such services received[D] No	332 (82%)	74 (18%)		172 (87%)	26 (13%)
Yes	417 (87%)	61 (13%)		191 (94%)	12 (6%)
	χ^2= 5.067	p = 0.024*		χ^2= 6.091	p = 0.014*
GP					
No	690 (85%)	121 (15%)		328 (91%)	34 (9%)
Yes	59 (81%)	14 (19%)		35 (90%)	4 (10%)
	χ^2= 0.939	p = 0.333		χ^2= 0.031	p = 0.861
Psychiatrist					
No	631 (87%)	97 (13%)		295 (92%)	25 (8%)
Yes	118 (76%)	38 (24%)		68 (84%)	13 (16%)
	χ^2= 12.090	p = 0.001**		χ^2= 5.112	p = 0.024*
Counselor					
No	478 (86%)	81 (14%)		246 (95%)	14 (5%)
Yes	271 (83%)	54 (17%)		117 (83%)	24 (17%)
	χ^2= 0.717	p = 0.397		χ^2= 14.431	p < 0.001**
Clergy					
No	79 (85%)	129 (15%)		343 (91%)	36 (10%)
Yes	10 (63%)	6 (38%)		20 (91%)	2 (9%)
	χ^2= 6.223	p = 0.013*		χ^2= 0.004	p = 0.949
Medication use					
No	561 (87%)	87 (13%)		268 (92%)	22 (8%)

Yes	188 (80%)	48 (20%)		94 (85%)	16 (15%)
	χ^2= 6.390	p = 0.011*		χ^2= 4.492	p = 0.034*
Hospitalization					
No	728 (86%)	114 (14%)		354 (92%)	30 (8%)
Yes	15 (47%)	17 (53%)		5 (38%)	8 (62%)
	χ^2= 37.913	p < 0.001**		χ^2= 41.9333	p < 0.001**

*Statistically significant at the p < 0.05 level

**Statistically significant at the p < 0.005 level

[A] This sample number is based on the total number of respondents selected into the 12-month ideation sub-group. The numbers in this table may not add up to 1,321 because of missing values on some survey items.

[B] Row percentages are shown.

[C] The percentages for respondents who received services from different providers do not add up to 100% because of respondents who received services from multiple provider types.

[D] Under the professional type item, this response choice was worded "I did not receive any such services."

The association between seeing a professional and a higher likelihood of a suicide attempt was also seen for the categories of GP (general practitioner), psychiatrist, counselor, and clergy. For both groups of students, the association between seeing a psychiatrist and 12-month attempt was statistically significant. For seeing a counselor, the association with 12-month attempt was significant for the graduate student group, whereas the association between seeing a clergy and 12-month attempt was significant only for undergraduates. The final two rows of Table 5 show the results for association of medication use and hospitalization with 12-month attempt. As with some of the professionals seen variables, these were each positively and significantly associated with the outcome variable. For undergraduates, 53% of those hospitalized for ideation also had a 12-month attempt, compared to 14% of those not hospitalized. For graduate students, 62% of those hospitalized had an attempt, compared to 8% of those who were not hospitalized. From these preliminary analyses, then, receiving some mental health services was associated with a statistically significant higher likelihood of attempting suicide, a finding that led to some *post hoc* analyses, discussed in a later section.

Table 6 shows the next set of chi-square tests for the demographic variables of the respondents in the 12-month ideation sub-group. Table 6 also includes the variable of whether respondents believed that their suicidal ideation was influenced by a desire to relieve emotional or physical pain. The first two rows show that undergraduates and graduates differed significantly on the outcome variable. Nine percent (9%) of graduate students made a 12-month attempt, compared to 15% of undergraduates. This association provided additional justification for separating the other analyses by class status, as well as including weighting in the regressions that took class status and campus into account. The next four rows of Table 6 show that not only did more women complete the survey, but also that for graduate students, being female was significantly associated with having a 12-month attempt; 12% of the female graduate students reported an attempt, compared to 5% of the male graduate student respondents. Race and ethnicity demonstrated significant differences across categories for both groups, but in different ways. For undergraduates, Hispanic/Latino respondents had the highest attempt rate, at 29%, followed by African Americans, Asian Americans, international students, Caucasians, and students whose

responses indicated they were multiracial. None of the Native American/Alaskan Native respondents, of whom there were eight in the undergraduate group, reported a 12-month attempt.

The order of race and ethnicity in 12-month attempt rates differed for graduate students. Among them, Asian Americans had the highest rate, at 30%. For African American graduate students, 28% made an attempt, followed by 23% of students who were multiracial, 17% of international students, 12% of Hispanic/Latino students, and 6% of Caucasian students. As with undergraduates, none of the three Native American/Alaska Native graduate students reported an attempt. These results suggest two sets of patterns at work: not only does student risk by race and ethnicity differ between different age groups, but also the changes in risk from undergraduate to graduate student within each race and ethnicity differ, some increasing and some decreasing. For example, these data indicate an increase in risk for African Americans, Asian Americans, international, and multiracial students, as they go from undergraduate to graduate students, while the risk decreases for graduate students who are Caucasian or Hispanic/Latino. There was no change in risk for Native American/Alaska Natives, though it must be noted that there were few members of these groups in these data. Another caveat that must be considered is that comparisons between undergraduate and graduate students in these data may be influenced by the different campuses; some of the responding schools in the data set had only undergraduate students, for example, though many schools had both undergraduate and graduate respondents to the survey. Other differences, such as the type of educational program experienced by undergraduates and graduates, especially in different fields, could not be controlled for in this analysis. Finally, Table 6 shows the results for sexual orientation and being transgendered. Bisexual students were most likely to report an attempt, but none of the associations were found to be statistically significant. The transgender results were hampered by small cell sizes, as only five undergraduates and three graduate students reported being transgendered.

Table 7 displays the chi-square associations for psychosocial variables related to emotions experienced during suicidal ideation, and 12-month attempt. For most of these categories, there was no significant association between the emotion and attempt, but it is worth noting that undergraduates in general had higher rates of attempt across all levels of each emotional variable, whether they chose the lowest level – one -indicating the emotion did not describe them at all during suicidal ideation, or the highest level – five – which indicated that the emotion described them very much. For both undergraduates and graduate students, there was not always a monotonic increase in suicide attempt for each step increase in any of the emotion variables, and for the "anxious/worried" variable, undergraduates had higher rates of attempt at the *lowest* level of the variable. Still, these associations were not statistically significant. For graduate students, higher scores on the "hopeless" variable were significantly associated with 12-month attempt, while for undergraduates the same pattern was observed but was not statistically significant. Interestingly, higher scores on the "helpless" variable were significantly associated with higher attempt rates for both groups of students. Nineteen percent (19%) of undergraduates who said that "helpless" described them very much also had an attempt, compared to 8% of those who chose the lowest level on that variable. For graduate students, 17% of students with the highest level on "helpless" made an attempt, compared to 6% of those on the lowest level. An additional significant association was found for the "anxious/panic" variable for graduate students but not for undergraduates. Seventeen percent (17%) of graduate students who said that "anxious/panic" described them very much also had a 12-month attempt, compared to 6% who

Table 6 – Chi-square tests of association between independent variables related to demographics, with outcome variable of 12-month suicide attempt, by class status, N=1,321

Row percentages	No 12-month attempt (%)	12-month attempt (%)		No 12-month attempt (%)	12-month attempt (%)
Class					
Undergraduate	754 (85%)	135 (15%)			
Graduate	366 (91%)	38 (9%)			
	χ^2= 8.006	p = 0.005**			
	Undergraduate			*Graduate*	
Gender:					
Male	238 (86%)	40 (14%)		140 (95%)	7 (5%)
Female	510 (85%)	93 (15%)		223 (88%)	31 (12%)
	χ^2= 0.159	p = 0.690		χ^2= 6.013	p = 0.014*
Race					
African American	27 (77%)	8 (23%)		13 (72%)	5 (28%)
Native American/ Alaska Native	8 (100%)	0 (0%)		3 (100%)	0 (0%)
Asian American	43 (78%)	12 (22%)		7 (70%)	3 (30%)
Caucasian	596 (86%)	96 (14%)		281 (94%)	17 (6%)
Hispanic/Latino	29 (71%)	12 (29%)		15 (88%)	2 (12%)
International	11 (85%)	2 (15%)		29 (83%)	6 (17%)
Multiracial	39 (89%)	5 (11%)		17 (77%)	5 (23%)
	χ^2= 12.637	p = 0.049*		χ^2= 23.306	p < 0.001**
Sexual orientation					
Bisexual	51 (78%)	14 (22%)		19 (79%)	5 (21%)
Gay/Lesbian	25 (96%)	1 (4%)		20 (91%)	2 (9%)
Heterosexual	651 (85%)	116 (15%)		321 (92%)	29 (8%)
Questioning	25 (86%)	4 (14%)		5 (83%)	1 (17%)
	χ^2= 4.670	p = 0.198		χ^2= 4.637	p = 0.200
Transgendered					
No	747 (85%)	133 (15%)		362 (91%)	37 (9%)
Yes	5 (100%)	0 (0%)		2 (67%)	1 (33%)
	χ^2= 0.889	p = 0.346		χ^2= 2.014	p = 0.156

*Statistically significant at the p < 0.05 level

**Statistically significant at the p < 0.005 level

reported it did not describe them at all. The graduate student results were somewhat hampered by small cell sizes. The final chi-square test shown in Table 7, relief from emotional and physical pain as a factor contributing to ideation, indicated that higher levels were correlated with greater likelihood of 12-month attempt, but these associations were not statistically significant.

Table 7 – Chi-square tests of association between independent variables related to emotional state, with outcome variable of 12-month suicide attempt, by class status, N=1,321

	Undergraduate			Graduate	
	No 12-month attempt (%)	12-month attempt (%)		No 12-month attempt (%)	12-month attempt (%)
Words describing respondent during periods of ideation:					
Anxious/worried					
1 = not at all	102 (82%)	22 (18%)		38 (95%)	2 (5%)
2	89 (86%)	14 (14%)		28 (100%)	0 (0%)
3	109 (84%)	21 (16%)		57 (95%)	3 (5%)
4	162 (84%)	31 (16%)		85 (90%)	9 (10%)
5 = described me very much	274 (87%)	42 (13%)		139 (87%)	20 (13%)
	χ^2= 1.920	p = 0.750		χ^2= 7.300	p = 0.121
Sad					
1 = not at all	21 (88%)	3 (13%)		11 (92%)	1 (8%)
2	24 (89%)	3 (11%)		16 (94%)	1 (6%)
3	58 (89%)	7 (11%)		32 (91%)	3 (9%)
4	157 (86%)	25 (14%)		92 (97%)	3 (3%)
5 = described me very much	483 (84%)	94 (16%)		203 (88%)	29 (13%)
	χ^2= 2.317	p = 0.678		χ^2= 7.211	p = 0.125
Lonely/isolated					
1 = not at all	36 (86%)	6 (14%)		30 (97%)	1 (3%)
2	30 (91%)	3 (9%)		24 (92%)	2 (8%)
3	71 (88%)	10 (12%)		35 (92%)	3 (8%)
4	149 (87%)	23 (13%)		66 (93%)	5 (7%)
5 = described me very much	458 (83%)	91 (17%)		198 (89%)	24 (11%)
	χ^2= 2.751	p = 0.600		χ^2= 2.589	p = 0.629
Hopeless					
1 = not at all	38 (86%)	6 (14%)		24 (92%)	2 (8%)
2	41 (95%)	2 (5%)		10 (91%)	1 (9%)
3	76 (92%)	7 (8%)		40 (98%)	1 (2%)
4	144 (84%)	27 (16%)		84 (98%)	2 (2%)
5 = described me very much	444 (83%)	90 (17%)		191 (86%)	30 (14%)
	χ^2= 7.964	p = 0.093		χ^2= 12.055	p = 0.017*
Helpless					
1 = not at all	77 (92%)	7 (8%)		50 (94%)	3 (6%)
2	87 (91%)	9 (9%)		35 (100%)	0 (0%)
3	122 (88%)	17 (12%)		49 (92%)	4 (8%)
4	135 (88%)	18 (12%)		73 (97%)	2 (3%)
5 = described me very much	319 (81%)	77 (19%)		136 (83%)	27 (17%)
	χ^2= 13.685	p = 0.008*		χ^2= 18.355	p=0.001**

Anxious/panic					
1 = not at all	182 (86%)	30 (14%)		65 (94%)	4 (6%)
2	100 (84%)	19 (16%)		50 (100%)	0 (0%)
3	115 (85%)	20 (15%)		59 (94%)	4 (6%)
4	116 (86%)	19 (14%)		63 (91%)	6 (9%)
5 = described me very much	228 (85%)	41 (15%)		105 (83%)	21 (17%)
	χ^2= 0.296	p = 0.990		χ^2= 14.940	p=0.005**
Relief of emotional or physical pain as factor in suicidal ideation					
1 = very small impact	520 (86%)	88 (14%)		269 (91%)	26 (9%)
2	72 (84%)	14 (16%)		31 (100%)	0 (0%)
3	68 (87%)	10 (13%)		15 (94%)	1 (6%)
4	34 (83%)	7 (17%)		12 (80%)	3 (20%)
5 = very large impact	35 (76%)	11 (24%)		7 (78%)	2 (22%)
	χ^2= 3.500	p = 0.478		χ^2= 7.528	p = 0.110

*Statistically significant at the $p < 0.05$ level

**Statistically significant at the $p < 0.005$ level

The remaining chi-square tests are shown in Table 8, which displays the results for the 12-month alcohol and drug use variables. Each substance type was operationalized as an ordinal variable with a six-point scale, ranging from never to daily. Results of these tests were somewhat limited, as relatively few respondents reported high levels of alcohol and drug use, particularly for drugs other than marijuana. Some levels of drug use had no responses for a given class status, and were therefore excluded from the overall test by the software. These cells are indicated by "N/A" in Table 8. The chi-square test was significant for the undergraduate students on the use of marijuana, but these results were difficult to interpret as the percentages of undergraduates making a 12-month attempt did not uniformly increase or decrease with each increasing level of use. For the top, or "daily" category of marijuana use, 28% of undergraduates reported an attempt, compared to 14% of the bottom, or "never" category, with various percentages in the categories between. The relationship between frequency of marijuana use and likelihood of attempt appears almost quadratic, but small cell sizes limit this interpretation. The chi-square test for hallucinogenic drug use was also difficult to interpret, because while it was statistically significant for undergraduates, there were no respondents who selected the "daily" category and few who chose the "weekly" or "twice or more per month" categories. The chi-square test was therefore based only on the cells for the bottom three categories, which indicated that higher levels of use were associated with higher attempt rates. A similar pattern existed for graduate students on the use of non-prescribed stimulants, in that while higher levels of use were associated with higher attempt rates, the significance of the chi-square test was called into question by missing and low cell size values.

One independent variable, frequency of thoughts, was an integer variable that respondents entered by hand, in response to the question of how many periods of suicidal consideration they

Table 8 – Chi-square tests of association between independent variables related to alcohol and drug use, and 12-month suicide attempt, by class status, N=1,321

	Undergraduate			Graduate	
	No 12-month attempt (%)	12-month attempt (%)	χ^2	No 12-month attempt (%)	12-month attempt (%)
12-month use of:					
Alcohol – 5 or more drinks in 24 period					
1 = Never	204 (87%)	31 (13%)		133 (90%)	15 (10%)
2 = Seldom	173 (82%)	38 (18%)		106 (88%)	14 (12%)
3 = Once a month	73 (84%)	14 (16%)		43 (90%)	5 (10%)
4 = Twice or more per month	122 (85%)	21 (15%)		38 (95%)	2 (5%)
5 = Weekly	170 (85%)	29 (15%)		43 (98%)	1 (2%)
6 = Daily	10 (91%)	1 (9%)		2 (67%)	1 (33%)
	χ^2= 2.496	p = 0.777		χ^2= 6.409	p = 0.268
Marijuana					
1 = Never	431 (86%)	70 (14%)		277 (91%)	28 (9%)
2 = Seldom	161 (83%)	33 (17%)		57 (89%)	7 (11%)
3 = Once a month	38 (95%)	2 (5%)		7 (78%)	2 (22%)
4 = Twice or more per month	32 (82%)	7 (18%)		8 (100%)	0 (0%)
5 = Weekly	43 (88%)	6 (12%)		9 (100%)	0 (0%)
6 = Daily	44 (72%)	17 (28%)		7 (100%)	0 (0%)
	χ^2= 12.413	p = 0.030*		χ^2= 4.488	p = 0.481
Cocaine					
1 = Never	678 (86%)	114 (14%)		345 (91%)	35 (9%)
2 = Seldom	51 (77%)	15 (23%)		13 (87%)	2 (13%)
3 = Once a month	9 (90%)	1 (10%)		2 (100%)	0 (0%)
4 = Twice or more per month	6 (75%)	2 (25%)		1 (100%)	0 (0%)
5 = Weekly	5 (71%)	2 (29%)		1 (100%)	0 (0%)
6 = Daily	N/A	N/A		N/A	N/A
	χ^2= 5.084	p = 0.279		χ^2= 0.704	p = 0.951
Hallucinogenic drugs (i.e. LSD, ecstasy, etc)					
1 = Never	664 (86%)	106 (14%)		346 (91%)	34 (9%)
2 = Seldom	74 (77%)	22 (23%)		16 (84%)	3 (16%)
3 = Once a month	3 (30%)	7 (70%)		1 (100%)	0 (0%)
4 = Twice or more per month	5 (100%)	0 (0%)		1 (100%)	0 (0%)
5 = Weekly	2 (100%)	0 (0%)		N/A	N/A
6 = Daily	N/A	N/A		N/A	N/A
	χ^2= 30.067	p < 0.001**		χ^2= 1.216	p = 0.749

Used stimulants (i.e. Adderall) not prescribed for them					
1 = Never	640 (86%)	108 (14%)		349 (91%)	33 (9%)
2 = Seldom	67 (79%)	18 (21%)		12 (80%)	3 (20%)
3 = Once a month	17 (100%)	0 (0%)		1 (100%)	0 (0%)
4 = Twice or more per month	14 (82%)	3 (18%)		1 (50%)	1 (50%)
5 = Weekly	8 (80%)	2 (20%)		N/A	N/A
6 = Daily	4 (57%)	3 (43%)		1 (50%)	1 (50%)
	χ^2= 10.173	p = 0.070		χ^2= 10.033	p = 0.040*

*Statistically significant at the $p < 0.05$ level

**Statistically significant at the $p < 0.005$ level

NB: 'N/A' were categories removed by the software due to lack of responses within that class.

had experienced in the previous 12 months. The association of this variable with 12-month attempt was tested using t-tests of mean values across the two categories of 12-month attempt status (i.e., whether they had or had not made a 12-month attempt). Because of right-hand skew in the frequency data, due to some respondents entering very high values, the t-test was conducted with controlling for unequal variances. Table 9 shows the results of these tests, which were not found to be statistically significant. Undergraduates differed a good deal; those who had a 12-month attempt had a mean of 25.3 periods of consideration in the previous 12 months, compared to 4.58 periods of consideration amongst those who did not make an attempt. For graduate students, there was no appreciable difference; attempters had a mean of 3.45 periods of consideration, compared to 4.00 periods for non-attempters. Standard errors were relatively small for the graduate student respondents and the undergraduate non-attempters, at less than one, whereas for the undergraduate attempters, the standard error was 15.23. These respondents were more likely to enter high values for periods of consideration, which might indicate greater distress or more continuous experience of suicide consideration over the 12-month period.

Table 9 – T-test with unequal variances on the mean frequency of number of periods of serious suicide consideration, by 12-month suicide attempt status (N = 1,321)

	Undergraduate		Graduate	
Group	Mean (S.E.)	Conf. Interval	Mean (S.E.)	Conf. Interval
No 12-month suicide attempt	4.58 (0.67)	3.25, 5.90	4.00 (0.54)	2.93, 5.07
12-month suicide attempt	25.30 (15.23)	-4.82, 55.43	3.45 (0.62)	2.19, 4.70
p-value	0.176		0.504	

Model 1 Test

All the independent variables originally planned for Model 1 were included in the regression with two exceptions. The emotion variable for "anxious/panic" was found in post-regression diagnostics to correlate fairly well with the "anxious/worried" variable (with a correlation of over 0.6), and was removed from the model. The category for sexual orientation described as "questioning" was also left out because it led to model failure – there were simply too few data on that variable to be included in a large regression model (C. Krogslund, personal communication, November 25, 2014). Dummy variables were created for each race/ethnicity and sexual orientation category. Table 10 shows the results of the Model 1 regression. The model combined undergraduate and graduate respondents, but used weighting values provided by the data set owners that accounted for class status and individual campus response rates and sampling fractions.

Seven independent variables were found to be statistically significant in this model: hospitalization, severity of thoughts, being Caucasian/White, being transgender, having a history of suicidal ideation, the emotion "anxious/worried," and seeing a clergy for assistance with suicidal thoughts. Odds ratios and robust standard errors are shown as well as p-values and confidence intervals. The highest odds ratios were for hospitalization and history of ideation, at 5.38 and 5.29, respectively, with p-values of 0.002 and 0.036. In other words, students who received hospitalization for suicidal ideation or who had a history of ideation had more than five times the odds of making a 12-month attempt than those who did not. The odds ratio for severity of thoughts was 2.08, with a p-value of < 0.001, indicating an increase in odds of more than two for each step increase in severity of thoughts on a 5-point scale. Seeing a clergy member had an odds ratio of 3.29, with a p-value of 0.046, indicating an increase in the likelihood of a 12-month attempt for those who saw that type of professional. The findings for this variable and for being transgender must be considered in light of the relatively few respondents who selected these categories. Transgender status had an odds ratio of 0.05 and a p-value of 0.054, seemingly indicating a strong protective association between transgender and suicide attempt, but this finding may be an artifact of the data structure and should be viewed cautiously.

Being Caucasian/White had an odds ratio of 0.34, with a p-value of 0.043, meaning that being Caucasian lowered a respondent's odds of having a 12-month attempt. This is somewhat in keeping with the findings in the chi-square tests of association that showed Caucasian/White students had lower likelihoods of attempt than other races, for both undergraduate and graduate students. The emotion variable of "anxious/worried" had an odds ratio of 0.82 and p-value of 0.042, indicating that for each step increase on that variable, the odds of a 12-month attempt decreased. This was largely a reflection of the undergraduate responses on this variable, which showed a similar pattern of lower attempt rates for higher categories on that variable.

The adjusted R-squared value for the model was 0.2, indicating that the model explained 20% of the variance in the outcome. This value was not considered unusually low given that the outcome, 12-month attempt, could be considered a "rare event" for the sub-group of 1,321 respondents, with only 173 reporting an attempt, and in fact almost 300 students were removed from the regression due to missing values on some of the variables (C. Krogslund, personal communication, November 25, 2014). Interacting variables such as gender and race, and

Table 10 – Results for logistic regression on Model 1: Association of any exposure to health services and other independent variables on likelihood of 12-month suicide attempt, N = 1,093

Variable	*Odds Ratio (SE)*		*p-value*	*Confidence Interval*
Medication use	0.86	(0.42)	0.755	0.33, 2.26
Hospitalization	5.38	(2.85)	0.002**	1.90, 15.21
Severity of thoughts	2.08	(0.35)	< 0.001**	1.50, 2.88
Frequency of thoughts	1.01	(0.00)	0.103	1.00, 1.02
African American	0.73	(0.47)	0.623	0.21, 2.54
Alaska Native/ American Indian	0.77	(1.15)	0.860	0.04, 14.56
Asian American	0.74	(0.36)	0.533	0.28, 1.92
Caucasian/White	0.34	(0.18)	0.043*	0.12, 0.97
Hispanic American/ Latino	0.79	(0.43)	0.662	0.27, 2.31
International/Foreign	0.48	(0.34)	0.299	0.12, 1.90
Gender – female	1.08	(0.34)	0.817	0.58, 2.00
Heterosexual	0.69	(0.37)	0.493	0.25, 1.97
Gay/lesbian	0.65	(0.63)	0.655	0.09, 4.29
Bisexual	0.54	(0.40)	0.402	0.13, 2.29
Transgender	0.05	(0.08)	0.054*	0.002, 1.05
History of suicidal ideation	5.29	(4.20)	0.036*	1.12, 25.06
12-month: alcohol use	1.04	(0.11)	0.680	0.85, 1.28
marijuana use	1.01	(0.12)	0.924	0.80, 1.29
cocaine use	0.83	(0.28)	0.579	0.43, 1.61
hallucinogenic drug use	1.86	(0.68)	0.091	0.91, 3.81
stimulants (not prescribed)	0.98	(0.16)	0.902	0.71, 1.36
Relief from emotional/physical pain	0.91	(0.09)	0.290	0.75, 1.09
Words describing respondent during times of suicide consideration: Anxious/Worried	0.82	(0.08)	0.042*	0.68, 0.99
Sad	1.23	(0.24)	0.289	0.84, 1.81
Lonely/Isolated	1.34	(0.26)	0.129	0.92, 1.95
Hopeless	0.81	(0.14)	0.202	0.58, 1.12
Helpless	1.25	(0.14)	0.055	1.00, 1.57
Professional seen for suicidal ideation: GP	0.66	(0.34)	0.410	0.24, 1.79
Psychiatrist	1.27	(0.53)	0.572	0.56, 2.88
Counselor	0.95	(0.34)	0.886	0.47, 1.91
Clergy	3.29	(1.96)	0.046*	1.02, 10.57

*Significant at the level of p = 0.05
**Significant at the level of p = 0.005

different service types, did not significantly improve model fit. Tests for specification error and model fit indicated no significant problems with the model. Collinearity checks found that the highest correlation was 0.58, between the two "anxious" emotions (before "anxious/panic" was removed), followed by 0.55 for the "hopeless" and "helpless" variables. These were both kept in the analysis because of theoretical differences in what constructs they were thought to be

measuring. The other emotion variables were fairly distinct from each other, with correlations ranging between 0.1 and 0.3. There were modest correlations between some of the service use variables, but none high enough to justify their removal, such as medication use, which had a 0.55 correlation with seeing a psychiatrist and 0.35 correlation with seeing a GP. These associations may have occurred because in order to obtain medication, it is necessary to see a health professional who can write prescriptions.

Model 2 Test

Of the 1,321 students in the 12-month ideation sub-group, 581 saw at least one health professional, and many saw more than one. One hundred eleven (111) respondents saw a GP for assistance with their suicidal thoughts, 238 saw a psychiatrist, 467 saw a counselor, and 38 saw a member of clergy. For each provider type that a respondent selected as having seen, they were then directed to answer several more items referring specifically to their experience of seeing that provider. These items asked for the number of visits made to the provider, whether the provider was affiliated with the respondent's campus student services, a rating on a 5-point scale of the provider's helpfulness in preventing a suicide attempt, and a rating on a 5-point scale of the level of difficulty in accessing that provider. These variables were tested for differences by class status, gender, and 12-month suicide attempt, using chi-square tests of association and t-tests where appropriate.

Table 11 shows the results of t-tests with unequal variances for the average number of visits made to each of the provider types, by 12-month attempt status, along with the standard errors for each group. Visit number was an integer variable that respondents entered by hand, and there was a strong right-hand skew to these values, with some respondents reporting a large number of visits. Interestingly, higher numbers of visits to each provider type was associated with a greater likelihood of a 12-month suicide attempt, with the exception of visits to clergy. For students who saw a GP, for example, the non-attempters reported an average of 4.5 visits, compared to 5.4 visits for the attempters. For students who saw a counselor, the average number of visits for non-attempters and attempters was 17.3 and 25.4, respectively. None of the results were statistically significant, however. Visits to a clergy member were a reverse of this pattern; more visits on average were associated with a lowered likelihood of 12-month attempt, but this finding was tentative because of small group sizes.

Though not shown here, other t-tests were conducted for visit numbers across the categories of class status and gender. For students who saw a GP, the average number of visits did not differ significantly by class status. Women did have significantly more visits than men, with 5.18 visits on average to a GP compared to 3.12 visits by men. For visits to a psychiatrist, there was no difference in mean visits by either class status or gender. For counselor use, there was a significant difference by class status. Undergraduates had a mean of 16 visits to counselors, compared to 24.6 visits on average for graduate students. For visits to clergy, no significant findings by class status or gender were found.

Table 11 – Two sample t-tests with unequal variances on mean number of visits to a GP, psychiatrist, counselor, or clergy, by 12-month suicide attempt

Provider type	Number of observations	Mean number of visits (S.E.)	p-value	Conf. interval
GP				
No 12-month suicide attempt	92	4.48 (0.63)	0.57	3.23, 5.73
12-month suicide attempt	18	5.39 (1.47)		2.29, 8.48
Psychiatrist				
No 12-month suicide attempt	65	9.38 (2.44)	0.22	4.50, 14.27
12-month suicide attempt	170	12.97 (1.62)		9.78, 16.61
Counselor				
No 12-month suicide attempt	386	17.30 (1.51)	0.15	14.32, 20.27
12-month suicide attempt	78	25.35 (5.33)		14.73, 35.96
Clergy				
No 12-month suicide attempt	30	6.37 (1.37)	0.007*	3.57, 9.16
12-month suicide attempt	8	2.25 (0.45)		1.18, 3.32

*This would normally indicate a statistically significant result, but because there were only eight students in the attempt category, this test was inconclusive.

Table 12 – Percent of medical professionals seen who were affiliated with campus health services

Provider type	% affiliated with campus	Number of observations
Medical provider	25%	109
Psychiatrist	28%	237
Psychologist/counselor	49%	464
Clergy	5%	38

Table 12 shows the percent affiliations with respondents' campuses reported for each provider type. Perhaps surprisingly, barely half of the counselors seen by the respondents, 49%, were affiliated with the students' campuses, followed by 28% of psychiatrists, 25% of GPs, and 5% of clergy. Affiliation for each provider type was tested across the categories of class status, gender, and 12-month attempt with chi-square tests of association. No statistically significant

associations were found for GP, psychiatrist, or clergy affiliation. For counselor affiliation, however, there was a difference by gender: 44% of female respondents said the counselor they saw was affiliated with their campus, compared to 60% of men.

Ratings on a 5-point scale of helpfulness showed no significant associations with 12-month attempt for students who saw a GP, but for students who saw a psychiatrist, there was a significant association between 12-month suicide attempt and rating. For the students who chose the first category on the helpfulness variable, "not at all helpful," 36% belonged to the 12-month attempt group. For students who chose the fifth category, "very helpful," 14% belonged to the attempt group. The p-value for this finding was 0.05. Perceived helpfulness of a students' psychiatrist was therefore associated with lower likelihood of 12-month attempt. Helpfulness ratings differed across gender for those who saw a counselor, with women rating their counselors as more helpful, but this relationship was not found to be statistically significant. Helpfulness also did not differ significantly by class status or 12-month attempt for those who saw a counselor. There were no significant findings between the helpfulness variable and class status, gender, or attempt rates for students who saw a clergy member.

Finally, ratings on difficulty of access were compared for each provider type across the three groups of interest. No conclusive findings were made for GP, psychiatrist, or clergy member. Counselor use, however, turned up a significant association between access and 12-month attempt, seen in Table 13. For students who rated seeing a counselor in the top category, "very difficult," 43% had a 12-month attempt, compared to 17% of those who chose the lowest rating, "not at all difficult." This difference was significant with a p-value of 0.02.

Table 13 – Chi-square test of association between difficulty of access for students who saw a counselor and 12-month suicide attempt, N=1,321

	No 12-month attempt (%)	12-month attempt (%)
Rating on difficulty of access for counselor visits:		
1 = Not at all difficult	176 (83%)	37 (17%)
2	97 (85%)	17 (15%)
3	62 (87%)	9 (13%)
4	36 (88%)	5 (12%)
5 = Very difficult	12 (57%)	9 (43%)
	χ^2= 12.061	p = 0.017*

Respondents were able to select more than one provider type on the survey. As noted at the beginning of this section, 581 students saw at least one provider. Of these, 358 saw one provider only, 170 saw two, 46 saw three, and 7 saw all four types. Chi-square tests of association found that graduate students were significantly less likely than undergraduates to have seen more than one provider, with a p-value of 0.001. There was not, however, a significant difference in the number of providers by either gender or 12-month attempt. Of the 581 students who saw at least one provider, 99 of them made at least one suicide attempt, compared to 74 of the students who

saw no provider for help with their suicidal ideation - an echo of the earlier counter-intuitive finding that having seen no provider was associated with lower likelihood of suicide attempt.

Model 2 was created by replacing the professional type variables with number of visits to each professional type, for the subset of students who reported seeing at least one provider. Also included was a variable that gave the number of providers seen, ranging from one to four. It was originally planned that affiliation of providers with campus, and the variable for difficulty of access to each provider type, would also be included in Model 2. However, several methodological problems arose. The version of Model 2 that simply replaced in Model 1 the binary variable for having seen a provider with an integer variable for number of visits to each provider led to model failure. This was due to an artifact of the data, in that most respondents had missing values on at least one of those variables, either because they did not see that provider type or because they skipped the survey item. Because the software used for analysis used listwise deletion, every case that was missing a variable was excluded from the model. This caused the remaining cases on which the complete model could be run to be untenably low. Attempts to revise the model by limiting variable inclusion did not address the problem, simply because too many respondents saw only one or two providers, and therefore could be deleted for at least one of the provider variables, depending on which ones were still in the model. Cutting down each model to only one provider type meant smaller sub-samples were available for analysis, and cases could still be lost due to missing values on any of the other variables of interest. In order to generate a large enough sample group to test Model 2, one solution was to replace the provider number of visits with "0" whenever this value was missing. The revised model was first run on the entire sub-group of 1,321 respondents. The results were similar to those produced for Model 1, with the same variables showing significance, with one exception. The variable of having seen a clergy member became insignificant when it was replaced with number of visits to clergy. Because results were similar to Model 1, they are not reported here.

A second run of Model 2 was then conducted exclusively on the 581 students who saw at least one provider. The regression results indicated that the previously significant variables of history of ideation, being Caucasian/White, and being transgender lost significance, while hallucinogenic drug use became significant. The adjusted R-squared value for this model was 0.27. Hospitalization remained significant, though the odds ratio grew to 10.4. Further iterations of the model, by adding other provider variables such as affiliation with campus and difficulty of access, led to changes in coefficients that suggested they were being largely influenced by scant or missing data. For example, variables with few cases, such as hallucinogenic drug use, changed in significance depending on which provider variables were included. The odds ratios for variables such as hospitalization and history of ideation grew excessively large with the addition of provider variables for affiliation and difficulty of access, though strangely enough, severity of thoughts continued to have a stable odds ratio of 1.8. Also, because the outcome of suicide attempt was a comparably rare event, findings were limited when there were simply not enough cases distributed across the outcome variable for each independent variable, particularly those with multiple categories. This problem was exacerbated by respondents' skipping some items on the questionnaire. Imputation of missing variables by entering a "0" is one option in that situation but is not always methodology defensible, unless the researcher knows why a respondent chose to skip certain items (C. Krogslund, November 25, 2014). Particularly with a long survey, and a survey dealing with a stigmatized subject such as suicide, there could be many

reasons a respondent may choose to not answer certain items. As such, it was determined that the findings from testing Model 2 were largely based on data structure and not useful for addressing the research questions. Analysis of the various provider variables was therefore contained to the bivariate associations discussed above. The limitations of the Model 2 regression led to the decision to conduct *post hoc* analyses, discussed in a later section.

Campus-level Variable Analysis

Region

Because this part of the analysis was more exploratory in nature, testing for campus-level associations, students were not separated by class status, and responses to items administered to the entire group of respondents were used. The first part of the exploration was to examine how lifetime use of mental health services might differ across the four regions assigned to the 70 campuses included in the survey. Table 14 shows chi-square associations of lifetime mental health service use from different provider types across the four regions. Column percentages for each region are shown. Lifetime use of a GP for mental health care ranged from 9% in the Northeast to 11% in the South and Midwest. Lifetime psychiatrist use ranged from 11% in the Midwest to 14% in the Northeast. Lifetime counselor use ranged from 35% in the Midwest to 39% in the Northeast. These differences were statistically significant at the level of p = .05.

Table 14 – Chi-square associations of lifetime use of GP, psychiatrist, or counselor for mental health services, by region (N=26,122)

Provider Type	Region (column %)				
GP	Midwest	Northeast	South	West	TOTAL
No	7,003 (89%)	3,911 (91%)	7,616 (89%)	4,895 (90%)	23,425
Yes	846 (11%)	407 (9%)	903 (11%)	523 (10%)	2,697
TOTAL	7,867	4,318	8,519	5,418	26,122
		χ^2 = 10.78	p = 0.013*		
Psychiatrist	Midwest	Northeast	South	West	TOTAL
No	7,027 (89%)	3,732 (86%)	7,391 (87%)	4,790 (88%)	22,940
Yes	840 (11%)	586 (14%)	1,128 (13%)	628 (12%)	3,182
TOTAL	7,867	4,318	8,519	5,418	26,122
		χ^2 = 35.13	p < 0.001**		
Counselor	Midwest	Northeast	South	West	TOTAL
No	5,078 (65%)	2,628 (61%)	5,397 (63%)	3,406 (63%)	16,509
Yes	2,789 (35%)	1,690 (39%)	3,122 (37%)	2,012 (37%)	9,613
TOTAL	7,867	4,318	8,519	5,418	26,122
		χ^2= 16.65	p = 0.001**		

*Significant at the level of p = .05

**Significant at the level of p = .005

Similarly, whether respondents reported *never* having used mental health services varied across the regions, from 53% in the Northeast to 56% in the Midwest. This finding matches well with the findings above that students in the Northeast tended to use psychiatrists and counselors the most while those in the Midwest used them the least. When asked whether they had ever used their college counseling center, twenty-two percent (22%) of students in the West reporting doing so, 20% of students in the Midwest and the Northeast, and in the South, 18% of students. For lifetime medication use for mental illness, in all regions 18% of students reported using medication, except for the South, at 21%. For lifetime hospitalization, in all regions but the Northeast, 3% of students reported having been hospitalized at least once for mental health reasons. In the Northeast, this figure was 4%. Tables for all these results are included in Appendix I.

While the different regions showed statistically significant differences in the variables concerning service use, they did not show differences in the variables on mental illness. The next two tables show whether respondents ever considered suicide in their lifetime, and the number of periods of consideration, by region. Table 15 indicates that 16 to 17% of students had lifetime suicide consideration, with no statistically significant differences across regions. Table 16 shows the number of periods of suicide consideration, which averaged 1.8 lifetime periods. An ANOVA test detected no statistically significant differences across the regions on this variable.

Table 15 - Lifetime experience of suicide consideration, by region (N=26,046)

Ever Considered Suicide	Region (column %)				
	Midwest	Northeast	South	West	TOTAL
Yes	1,264 (16%)	734 (17%)	1,398 (16%)	905 (17%)	4,301
No	6,585 (84%)	3,571 (83%)	7,093 (84%)	4,496 (83%)	21,745
TOTAL	7,849	4,305	8,491	5,401	26,046

$\chi^2 = 2.10$, $p = 0.55$

Funding Status

Data on lifetime suicidal behavior and lifetime service use for all the respondents were also analyzed by the funding status of the campuses – whether they were private or publicly funded. There were some differences worth noting. For public campuses, respondents were more likely to report having ever seen a GP for mental health services (11% vs. 8% of students on private campuses), but there were no differences in psychiatrist or psychologist use. These results can be seen in Table 17. This finding may be suggestive of the need for larger campuses to triage some of their mental health service delivery through general medicine services. The analysis of whether students reported *never* having accessed services showed no significant differences by campus funding status. The table for those results can be found in Appendix I.

Table 16 - ANOVA of number of periods of consideration by region*

Region	*Mean*	*Std Dev*	*Freq*
Midwest	*1.84*	*0.37*	*7,849*
Northeast	*1.83*	*0.38*	*4,305*
South	*1.84*	*0.37*	*8,491*
West	*1.83*	*0.37*	*5,401*
TOTAL	*1.84*	*0.37*	*26,046*
Source	*SS*	*MS*	*F-test*
Between Groups	*0.29*	*1.00*	*0.70*
Within Groups	*3,590.48*	*0.14*	
TOTAL	*3,590.77*	*0.14*	

Bartlett's Test for Equal Variances: $\chi^2 = 3.42$, $p = 0.33$

*Because of the wording of the survey, this could include recent 12-month periods of consideration as well as lifetime experience.

Table 17 - Lifetime use of GP, psychiatrist, or counselor for mental health services, by funding status of college (N = 26,122)

Provider Type	Funding Status		
GP	Private	Public	TOTAL
No	8,089 (92%)	15,336 (89%)	23,425
Yes	745 (8%)	1,952 (11%)	2,697
TOTAL	8,834	17,288	26,122
	chi-square = 51.57	$p < 0.001$**	
Psychiatrist	Private	Public	TOTAL
No	7,757 (88%)	15,183 (88%)	22,940
Yes	1,077 (12%)	2,105 (12%)	3,182
TOTAL	8,834	17,288	26,122
	chi-square = 0.00	$p = 0.97$	
Counselor	Private	Public	TOTAL
No	5,607 (63%)	10,902 (63%)	16,509
Yes	3,227 (37%)	6,386 (37%)	9,613
TOTAL	8,834	17,288	26,122
	chi-square = 0.42	$p = 0.52$	

*Significant at the level of p = .05

**Significant at the level of p = .005

More students at private campuses used a campus counseling center (21% vs. 19% of public campus students), but fewer reported lifetime medication use for mental illness (16% vs. 21% of public campus students). Hospitalization rates were similar, at 3%, though at a smaller degree of precision (i.e., no rounding) there was in fact a statistically significant difference, which may be an artifact of sample size. These service use figures can be seen in Table 18.

Table 18 – Lifetime use of campus counseling center, medication, and hospitalization for mental illness, by funding status of campus

Service Type	Funding Status		
Counseling center	Private	Public	TOTAL
Yes	1,866 (21%)	3,326 (19%)	5,192
No	6,933 (79%)	13,887 (81%)	20,820
TOTAL	8,799	17,213	26,012
	χ^2= 12.94	p < 0.001**	
Medication			
	Private	Public	TOTAL
Yes	1,437 (16%)	3,528 (21%)	4,965
No	7,356 (84%)	13,677 (79%)	21,033
TOTAL	8,793	17,205	25,998
	χ^2= 65.28	p < 0.001**	
Hospitalization	Private	Public	TOTAL
Yes	240 (3%)	561 (3%)	801
No	8,543 (97%)	16,633 (97%)	25,176
TOTAL	8,783	17,194	25,977
	χ^2 = 5.47	p = 0.02*	

*Significant at the level of p = .05
**Significant at the level of p = .005

Fifteen percent (15%) of students at private campuses reported ever considering suicide versus 17% of students on public campuses, but these results were not statistically significant at a level of p = 0.05. The average number of periods of lifetime suicide consideration was 1.85 for students at private colleges, vs. 1.83 for those at public colleges, which was a statistically significant difference. These two results suggest that while private college students were less likely to ever have considered suicide, when they did it was with slightly greater frequency than public college students. The number of lifetime suicide attempts was significantly different at 0.097 for private campus students and 0.133 for public campus students. This may be indicative that private students receive more support at any stage in their lives (since the comparison is lifetime suicide attempts rather than attempts in the past 12 months). Since these were lifetime experiences it would be difficult to know what intervening variables might exist except to hypothesize that the families of private students have more access to resources in general, including mental health care. The results of the chi-square tests for campus funding type and lifetime mental illness experience are shown in Tables 19, 20, and 21.

Table 19 - Lifetime consideration of suicide, by funding status of campus (N = 26,046)

Ever Considered Suicide	Funding Status (column %)		
	Private	Public	TOTAL
Yes	1,352 (15%)	2,949 (17%)	4,301
No	7,463 (85%)	14,282 (83%)	21,745
TOTAL	8,815	17,231	26,046

$\chi^2 = 0.42$, $p = 0.52$

Table 20 - ANOVA of number of periods of suicide consideration, by campus funding status (N=26,046)

Funding	Mean	Std Dev	Freq
Private	1.85	0.36	8,815
Public	1.83	0.38	17,231
TOTAL	1.83	0.37	26,046
Source	SS	MS	F-test
Between Groups	1.84	1.84	13.36
Within Groups	3,588.93	0.14	
TOTAL	3,590.77	0.14	

Bartlett's Test for Equal Variances: $\chi^2 = 22.54$, $p < 0.001$

Table 21 - ANOVA of number of lifetime suicide attempts by campus funding status (N = 26,122)

Funding	Mean	Std Dev	Freq
Private	0.10	0.54	8,834
Public	0.13	1.04	17,288
TOTAL	0.12	0.90	26,122
Source	SS	MS	F-test
Between Groups	7.69	7.69	9.41
Within Groups	21,344.80	0.82	
TOTAL	21,352.49	0.82	

Bartlett's Test for Equal Variances: $\chi^2 = 4.2 \times e^3$, $p < 0.001$

Campus Size

Finally, chi-square tests for campus size and specific provider types used for mental health services are shown in Table 22, with three categories: Small (< 2,000 students), Medium (2,000 to 10,000 students), and Large (> 10,000 students). Students were significantly more likely to have seen a counselor in their lifetime if they attended a smaller campus, but there were no differences in lifetime use of a GP or psychiatrist for mental health services between the three sizes of campus. Similarly, students were more likely to report *never* using any kind of mental health service if they attended a large campus (see Appendix I). This may partly be a reflection of the challenges faced by large campuses in serving their communities, but since these were lifetime experiences, it may also be explained by students' families' financial ability to access services; large schools are usually publicly funded while small schools are more often privately funded. Therefore private students in these data may have had more resources available to them.

Table 22 - Lifetime use of GP, psychiatrist, or counselor for mental health services, by campus size (N = 25,363)

Provider Type	Size (column %)			
GP	Large	Medium	Small	TOTAL
No	13,143 (90%)	7,634 (90%)	1,932 (89%)	22,709
Yes	1,538 (10%)	883 (10%)	233 (11%)	2,654
TOTAL	14,681	8,517	2,165	25,363
	$\chi^2 = 0.29$	p = 0.86		
Psychiatrist	Size			
	Large	Medium	Small	TOTAL
No	12,888 (88%)	7,495 (88%)	1,907 (88%)	22,290
Yes	1,793 (12%)	1,022 (12%)	258 (12%)	3,073
TOTAL	14,681	8,517	2,165	25,363
	chi-square = 0.32	p = 0.85		
Counselor	Size			
	Large	Medium	Small	TOTAL
No	9, 335 (64%)	5,363 (63%)	1,308 (60%)	16,006
Yes	5, 346 (36%)	3,154 (37%)	857 (40%)	9,357
TOTAL	14,681	8,517	2,165	25,363
	chi-square = 8.25	p = 0.02*		

*Significant at the level of p = .05

Respondents were also significantly more likely to have used their campus counseling center if they attended a small school, a finding that correlates well with their greater likelihood of lifetime use of a counselor, and which may reflect the ability of smaller campuses to provider easier access to services. Medication use and hospitalization did not differ across campus size. These data are shown in Table 23. Table 24 shows some surprising results: lifetime history of ever experiencing suicide consideration was highest on the smaller campuses, at 19% of students. For larger campuses that figure was 17%, and for medium-sized campuses, 16%. These relationships were statistically significant though harder to interpret because of the u-shaped

curve to the relationship between school size and lifetime ideation, though it was surprising that smaller schools had the highest percentage. Since public schools often have the largest campuses, and private schools are often smaller, it would be expected that the largest schools would have the highest rates of ideation.

Table 23 – Lifetime use of campus counseling center, medication, and hospitalization for mental illness, by size of campus (N = 25,363)

Service type	Size			
Counseling Center	Large (column %)	Medium	Small	TOTAL
Yes	2,820 (19%)	1,698 (20%)	552 (24%)	5,040
No	11,798 (81%)	6,782 (80%)	1,636 (76%)	20,216
TOTAL	14,681	8,480	2,158	25,256
	χ^2= 28.28	p < 0.001**		
	Size			
Medication	Large	Medium	Small	TOTAL
Yes	2,850 (19.5%)	1,589 (19%)	404 (19%)	4,843
No	11,764 (80.5%)	6,889 (81%)	1749 (81%)	20,402
TOTAL	14,614	8,478	2,153	25,245
	χ^2 = 2.26	p = 0.32		
	Size			
Hospitalization	Large	Medium	Small	TOTAL
Yes	425 (3%)	281 (3%)	78 (4%)	784
No	14,181 (97%)	8,184 (97%)	2,074 (96%)	24,439
TOTAL	14,606	8,465	2,152	25,223
	χ^2 = 5.07	p = 0.08		

**Significant at the level of p = .005

Table 24 - Lifetime consideration of suicide, by size of campus (N = 25,289)

Ever Considered Suicide	Size (column %)			
	Large	Medium	Small	TOTAL
Yes	2,430 (17%)	1,373 (16%)	409 (19%)	4,212
No	12,209 (83%)	7,119 (84%)	1,749 (81%)	21,077
TOTAL	14,639	8,492	2,158	25,289
	χ^2= 9.70	p = 0.008**		

**Significant at the level of p = .005

The number of periods of serious suicide consideration were statistically the same across campuses (see Appendix I), but actual suicide attempts were higher on small campuses, with 0.15 attempts on average per student, compared to 0.12 for students at both medium and large schools, as shown in Table 25. Again, this finding differs from the earlier observation that

students at private colleges were less likely to make an attempt, indicating that the students at the smallest campuses are different from those attending private colleges. Since these are lifetime data, it is again worth noting that the latter group – students in at private colleges – may experience positive contributory factors such as family resources or better access to services prior to entering college. Additionally, private colleges may be able to provide some of the best services, in terms of quality, no matter their size.

Table 25 - ANOVA of number of lifetime suicide attempts by campus size (N = 25,363)

Size	Mean	Std Dev	Freq
Large	0.12	1.08	14,681
Medium	0.12	0.60	8,517
Small	0.15	0.73	2,165
TOTAL	0.12	0.92	25,363
Source	SS	MS	F-test
Between Groups	1.57	0.79	0.94
Within Groups	21,296.4	0.84	
TOTAL	21,297.97	0.84	

Bartlett's Test for Equal Variances: $\chi^2 = 3.5 \times e^3$, $p < 0.001$

Post-hoc Analysis – "High Reactors"

One of the findings of the analysis was that a number of service variables were associated with higher likelihood of suicide attempt. Hospitalization for serious suicide consideration was consistently and highly associated with a later suicide attempt, while other service variables, such as seeing a psychiatrist, counselor (for graduate students), clergy (for undergraduates), or taking medication were found in bivariate tests to also be significant and positively associated with a higher likelihood of a suicide attempt. In the analysis of the respondents who saw at least one provider for help with their suicidal thoughts, number of visits was also often found to be positively associated with increased attempt rates, though without statistic significance. All of these findings may appear counter-intuitive if one expected service use to be protective against any suicide attempt. Conversely, it could be indicative that students who were most at-risk of suicide were self-identifying as needing help and were more likely to seek out professional health services.

Since severity of suicide thoughts was a strong predictor of attempt, it is possible that some respondents experienced such severe mental and emotional pain that they were more willing to get help. Such students are "high reactors," meaning that their mental pain is sufficient to motivate help-seeking behavior. For respondents such as those, mental health service use and suicide attempts would appear to be positively correlated, as seen in the results here. Hospitalization for suicidal ideation was also a significant independent variable, and may have

reflected the severity of each case. Unfortunately then, it appeared that the help they received was not always enough to prevent an attempt, though in fact without knowing what would have happened to them otherwise, the services may have prevented worsening mental illness and/or suicidal risk, and they may have received relief for related co-morbidities, such as depression.

To explore the concept of high reactors, some examination of the entire survey data set was conducted to see if a similar correlation between lifetime service use and lifetime suicidal behavior was present. Tables 26 and 27 show the relationships between these data. In Table 26, respondents who experienced any suicidal ideation in their lifetime were significantly more likely to report having ever seen a counselor, at 64% versus 31% of the entire sample. The same was true for ever seeing a psychiatrist (31% vs. 8% of the entire sample) and for having ever seen a GP for mental health services (22% vs. 8% of the entire sample). Table 27 also demonstrates this trend, in that those with lifetime suicide consideration were significantly less likely to report *never* having used mental health services (29% vs. 60%).

Table 26 - All respondents – Chi-square tests for lifetime suicide consideration with lifetime GP, counselor, or psychiatrist use for mental health services, (N = 26,046)

Lifetime GP Use	Lifetime Suicide Consideration (column percentages)		
	Yes	No	TOTAL
No	20,014 (92%)	3,340 (78%)	23,354
Yes	1,731 (8%)	961 (22%)	2,692
TOTAL	21,745	4,301	26,046
	χ^2= 801.6	p < 0.001**	
Lifetime Psychiatrist Use			
	Yes	No	TOTAL
No	2,968 (69%)	19,905 (92%)	22,873
Yes	1,333 (31%)	1,840 (8%)	3,173
TOTAL	4,301	21,745	26,046
	χ2 = 1.7 x e3	p < 0.001**	
Lifetime Counselor Use			
	Yes	No	TOTAL
No	1,541 (36%)	14,914 (69%)	16,509
Yes	2,760 (64%)	6,831 (31%)	9,613
TOTAL	4,301	21,745	26,451
	χ2 = 2.3 x e4	p < 0.001**	

**Significant at the level of p = .005

Table 27 - All respondents – Chi-square test for lifetime suicide consideration with *no* mental health service use, (N = 26,046)

No mental health services ever used	Lifetime Suicide Consideration (column percentages)		
	Yes	No	TOTAL
No	3,074 (71%)	8,723 (40%)	11,797
Yes	1,227 (29%)	13,022 (60%)	14,249
TOTAL	4,301	21,745	26,046
	$\chi^2 = 1.4 \times e^3$	$p < 0.001$**	

**Significant at the level of p = .005

This concept was explored further by generating t-test statistics for mean number of suicide attempts by each type of service use. For respondents in the entire data set who ever saw a GP, psychiatrist, or counselor for mental health services, they had a higher average number of lifetime suicide attempts. For example, students who had ever seen a counselor had an average of 0.23 lifetime suicide attempts, compared to 0.06 attempts on average for those who had not seen such a professional. The reverse trend was found for students who reported they had *never* accessed professional mental health services; they reported 0.05 lifetime attempts on average, compared to 0.21 attempts by those who had accessed services. Tables with these results are located in Appendix I.

One limitation to these tests of association in the overall sample was that unlike with the survey items asked only of the 12-month ideation sub-group, there was no way to know whether lifetime services had been accessed before, during, or after periods of suicidal ideation or suicide attempts, including those in the past 12 months. The survey items regarding lifetime service use were not worded or ordered in such a way as to assess timing of any services received. While it was possible to observe the same pattern as seen in the sub-group, where increased service use was associated with increased suicidal behavior in general, it was still unknown whether the sub-group was unique in some way that affected the earlier results. If the experience of suicidal ideation was itself a driver of increased service use, because those students were more likely to seek mental health services, then selection into the sub-group was affecting the results of the analyses.

Another approach to understanding the findings, then, and to test the idea that those respondents contained a disproportionate number of "high reactors" who were driving the results, was to explore whether there were differences between the sub-group and the wider sample on lifetime mental health service use. In health services research, patient groups are often distinguished on two levels – those who are users of a particular type of service, measurable as a dichotomous variable, and then as a secondary, continuous variable, how much of that service they use. It is reasonable to assume that there are differences, perhaps difficult to measure, between people who use a little of a service and those who use a great deal of the same service.

In this analysis thus far, the sub-group of 12-month suicide ideators included all students who reported any 12-month ideation without distinguishing history of service use, which might affect

their subsequent service use and/or suicidal behaviors. Therefore, an additional analysis was conducted on the entire data set of over 25,000 respondents to see what health service variables were predictive of selection into the 12-month ideation sub-group. In this new analysis, the dependent variable was a "yes" or "no" on the 12-month ideation question. The independent variables were lifetime mental health service use including seeing a GP, counselor, or psychiatrist, taking medication, and hospitalization. The regression model for this analysis, Model 3, was as follows:

Model 3 – Association of lifetime mental health service use with likelihood of selection into 12-month suicidal ideation sub-group:

$$\textit{Likelihood of recent 12-month suicidal ideation} = \alpha + \beta_1(GP)(\textit{dichotomous variable for having ever seen a GP for mental health reasons}) + \beta_2(couns)(\textit{dichotomous variable for having ever seen a counselor for mental health reasons}) + \beta_3(psych)(\textit{dichotomous variable for having ever seen a psychiatrist for mental health reasons}) + \beta_4(hosp)(\textit{dichotomous variable for ever having been hospitalized for mental health reasons}) + \beta_5(meds)(\textit{dichotomous variable for prescription medicine ever used for mental health reasons}) + \epsilon$$

Preliminary chi-square tests found statistically significant, positive associations between all of the service use variables and selection into the 12-month suicidal ideation sub-group. Table 28 below shows the results of the regression of Model 3. All five lifetime service use variables were significant predictors of selection into the sub-group, ranging from an increase in odds of being selected of 1.42 for respondents who had ever seen a psychiatrist to an increase in odds of 2.24 of being selected for those respondents who had ever been hospitalized. These results seem to support the concept of "high reactors"; using services over a lifetime predicted 12-month ideation, and within the sub-group, using services predicted suicide attempt. Thus it appears that many respondents who experienced suicidal ideation were able to correctly identify their need for services and seek assistance. The earlier finding that service use was associated with higher likelihood of suicide attempt can be attributed in part to self-selection by patients into services.

Table 28 – Results for logistic regression of Model 3: Association of lifetime mental health service use with likelihood of selection into 12-month suicidal ideation sub-group, (N = 25,886)

Variable	Odds Ratio (SE)		p-value	Confidence Interval
Lifetime counselor use	2.09	(0.15)	0.000**	1.83, 2.40
Lifetime psychiatrist use	1.42	(0.12)	0.000**	1.20, 1,67
Lifetime GP use (for mental health reasons)	1.46	(0.11)	0.000**	1.25, 1.70
Lifetime medication use	1.59	(0.13)	0.000**	1.35, 1.87
Lifetime hospitalization	2.24	(0.23)	0.000**	1.83, 2.74

**significant at the level of $p < 0.001$

The earlier analysis of the sub-group found that when all other variables were controlled for, severity of thoughts and hospitalization for ideation, which is usually only done for the most at-risk suicidal patients, were two significant predictive factors for suicide attempt. This suggests

that the most severely at-risk students accounted for some of the earlier findings. Out of 1,321 respondents in the 12-month ideation group, 45 were hospitalized for their suicidal ideation, and 25 made at least one suicide attempt. These respondents represented a high-need, high-risk group. Still, not all students who were hospitalized or had strong suicidal thoughts attempted suicide, and some students who were neither hospitalized nor had severe thoughts did make an attempt. For those students, other risk factors, such as history of ideation, contributed to their likelihood of a suicide attempt.

How Respondents Assess Timing of Services Received

To further understand the findings that service exposure was associated with *greater* likelihood of suicide attempt rather than lesser, the timing of services received by the sub-group of 12-month ideation respondents was more closely examined. One concern was how the respondents actually answered the question used to generate the health provider use data for the analysis, which asked "From whom did you receive psychological, psychiatric, or other mental health services after recognizing that you were seriously *considering* a suicide attempt in the past 12 months?" Though this question was worded to try to assess services received specifically for suicidal ideation, it was not known how respondents might interpret it. What if they were already receiving services when they first seriously considered suicide? How would they answer this question? One possibility was that they might underreport their use of the provider types if they interpreted the question to mean only services first received after suicide consideration, and not prior or concurrent services. This might then tend to exclude respondents with long-term mental health needs and service use, and bias the responses towards those who only first saw a provider because of new mental illness and suicide consideration. If these students were by their nature more inclined to make a suicide attempt than the hypothetically excluded group, then this would bias the findings towards showing an association between service exposure and greater likelihood of a suicide attempt. Another possibility is that students who were already receiving services selected "yes" to this question, meaning that the study group in the analysis contained students who required mental health services longer term than those who received mental health services only in response to suicidal ideation. If these students were also more likely to attempt suicide due to, for example, chronic mental illness, this would bias the results such that it would again appear that services were associated with higher suicide attempt likelihood. This scenario would fit with the "high reactors" logic explained before.

To check for these types of biases, responses on another question from the survey were examined. This question asked, "Some people receive assistance from professionals (counselors, medical providers, clergy) for coping with suicidal thoughts. Which of the following statements best describes you?" Response categories were: "I never received professional help," "I was already receiving professional help when these thoughts first appeared," "I received professional help immediately after recognizing these suicidal thoughts," "I received professional help after some time had passed, but before I ever attempted suicide," and "I received professional help after I had attempted suicide."

Table 29 shows how the study sub-group answered this question and what their likelihood of a 12-month suicide attempt was. There was no clear trend between timing and suicide attempt likelihood except for the portion of the sub-group who indicated they received professional help after they attempted suicide. This group had a 12-month suicide attempt rate of 51%, as opposed to between 7% and 16% for the other categories. The fact that their rate was not 100% suggests that the attempt they were thinking of when they answered this question occurred outside of the prior 12 months. For those who selected "I never received professional help," 14 (2%) of them did in fact later select the response of "GP" when asked from whom they received professional help in response to serious suicide consideration. Seven of that same group (1%) said they saw a psychiatrist, and 13 (2%) saw a counselor. Conversely, for all of the respondents who said they saw a GP after first recognizing their suicidal ideation, 89% had chosen one of the categories other than "I never received professional help," including 18% who chose the category "I received professional help after I had attempted suicide." Similar patterns were observed for psychiatrist and counselor use. Therefore, in response to the question "From whom did you receive psychological, psychiatric, or other mental health services after recognizing that you were seriously *considering* a suicide attempt in the past 12 months?," respondents tended to answer affirmatively even if the timing of the services they received predated suicide consideration or occurred after suicide attempt(s).

Table 29 - Timing of professional help received, all sub-group
Question text: "Some people receive assistance from professionals (counselors, medical providers, clergy) for coping with suicidal thoughts. Which of the following statements best describes you?" (N = 1270)

Response Text	% of Total	N	% 12-month Suicide Attempt
"I never received professional help"	52	659	10
"I was already receiving professional help when these thoughts first appeared"	16	202	16
"I received professional help immediately after recognizing these suicidal thoughts"	8	102	7
"I received professional help after some time had passed, but before I ever attempted suicide"	17	214	10
"I received professional help after I had attempted suicide"	7	93	51

Because of this finding, a second analysis was run on the respondents according to their answers on the timing of services question. If they selected either that they never received services, or that they only received services after a suicide attempt, they were excluded. The remaining respondents were analyzed by service type (GP, psychiatrist, and counselor) and likelihood of 12-month suicide attempt, as in the initial analysis. No conclusions could be drawn about GP or counselor exposure because of small cell size problems, but for exposure to a psychiatrist, the

results were the same as in the original analysis. Those students who reported seeing a psychiatrist were statistically more likely to report a suicide attempt. The same was true for hospitalization for suicidal thoughts, which remained statistically associated with a greater likelihood of a suicide attempt.

Service Paths Analysis

Another extension of the original analysis was to try to map out the various service paths experienced by the respondents, to see if there were appreciable differences in suicide attempt risk. This task proved somewhat ungainly, because even with only a few questions about service use, there were a great many combinations of service a respondent could have experienced. Figure 1 shows a diagram of all possible service experiences for the 12-month suicidal ideation sub-group. These include the path of no professional seen for suicidal ideation, though students on that path could still have indicated using medication or receiving hospitalization. However, the survey specifically asked students whether they received medication or were hospitalized to help them with their suicidal thoughts, which should mean that they had to see at least one professional to receive those services. It was possible though that some respondents selected these services even if they received them before suicidal ideation or after an attempt. Such cases would represent measurement error on those variables. Table 30, which shows the 12-month attempt rate for each possible service path, also shows that there was a small group of respondents who fit into this category, shown in rows Y, Z, and ZZ.

Figure 1 – All possible service paths for students in 12-month suicidal ideation sub-group

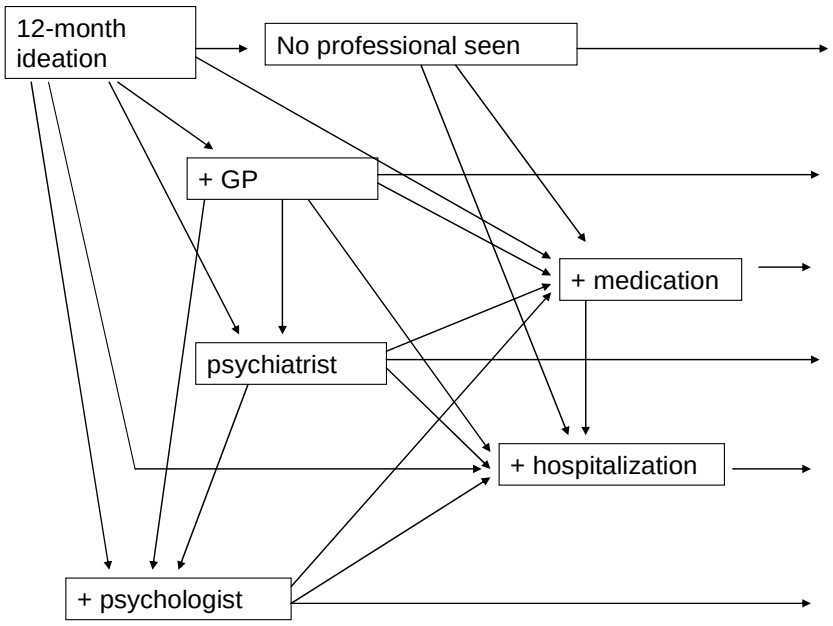

Table 30 - Service experiences of sub-group and 12-month suicide attempt rate*

Case	Service Experience	N	% 12-month suicide attempt
A	GP only	7	14%
B	GP + med	26	15%
C	GP + med + hosp	0	N/A
D	GP + hosp	0	N/A
E	GP + psychiatrist	2	50%
F	GP + psychiatrist + med	2	50%
G	GP + psychiatrist + med + hosp	1	0%
H	GP + psychiatrist + hosp	0	N/A
I	GP + psychiatrist + psychologist	6	17%
J	GP + psychiatrist + psychologist + med	24	4%
K	GP + psychiatrist + psychologist + med + hosp	10	50%
L	GP + psychiatrist + psychologist + hosp	1	0%
M	Psychiatrist only	22	18%
N	Psychiatrist + med	34	15%
O	Psychiatrist + med + hosp	3	67%
P	Psychiatrist + hosp	0	N/A
Q	Psychiatrist + psychologist	20	25%
R	Psychiatrist + psychologist + med	91	15%
S	Psychiatrist + psychologist + med + hosp	21	57%
T	Psychiatrist + psychologist + hosp	0	N/A
U	Psychologist only	184	12%
V	Psychologist + med	70	13%
W	Psychologist + med + hosp	6	83%
X	Psychologist + hosp	0	N/A
Y	No professional seen, med only	31	6.5%
Z	No professional seen, hosp only	1	100%
ZZ	No professional seen, med *and* hosp	2	50%
ZZZ	No professional seen, no med, no hosp	633	10.4%
	TOTAL (not including missing)	**1,197**	

*"med" = medication; "hosp" = hospitalization

Because the service paths were so numerous, the analysis was then simplified to consider only three possible exposure types: medication with no therapy, medication plus therapy, and therapy only. In this case, "therapy" was confined to having seen a counselor, because it was possible that a respondent saw a psychiatrist or GP for medication use but not therapy. The word "therapy" is used in this section to include only that which was received from a counselor and

not any therapy provided by a psychiatrist or GP. Table 31 shows chi-square associations for the three combinations of medication and therapy and 12-month suicide attempt likelihood.

Table 31 – Chi-square associations for three types of service experiences and 12-month suicide attempt likelihood (with column percentages)

12-Month Suicide Attempt	Medication Only	Medication Plus Counseling	TOTAL
No	84 (84%)	197 (80%)	281
Yes	16 (16%)	48 (20%)	64
TOTAL	100	245	345
	$\chi^2 = 0.6064$	p = 0.436	
	Counseling Only	Medication Plus Counseling	TOTAL
No	190 (86%)	197 (80%)	387
Yes	30 (14%)	48 (20%)	78
TOTAL	220	245	465
	$\chi^2 = 2.9449$	p = 0.086	
	No Medication Or Counseling	Medication Plus Counseling	TOTAL
No	633 (89%)	197 (80%)	838
Yes	79 (11%)	48 (20%)	109
TOTAL	712	245	947
	$\chi^2 = 11.4324$	p = 0.001**	

*Significant at the level of p = .05
**Significant at the level of p = .005

The only statistically significant relationship was for the comparison between the group that received therapy and medication and the group that received neither. The former were 12% more likely to report a 12-month suicide attempt. This result disappeared when cases who were hospitalized were removed from the analysis, mainly because they tended to be the same cases who received both types of treatment and had a 12-month suicide attempt. The number of cases in that cell of the above table decreased from 48 to 26 once hospitalization was removed. This finding correlates with the earlier observation that hospitalization was a significant predictor of suicide attempt risk, because it tended to identify severely at-risk students. Still, given that hospitalization accounted for only 45 cases, out of almost 600 students who accessed services and 1,321 who had 12-month ideation, and there were 173 suicide attempts, a number of students at risk of suicide were never hospitalized and could not be identified by means of that service only. As found in the bivariate and Model 1 results, there were other variables predictive of suicide attempt that were not related to service use, such as severity of thoughts. Students who had high values on those variables would be missed by health professionals if they never sought services.

Chapter 4 – Discussion; Quantitative Analysis

Key Findings

The respondents in this study had slightly lower rates of suicidal ideation and attempts than those found in other national studies of college student populations. Out of more than 26,451 students, 1,321 (5%) had experienced suicidal ideation in the previous 12 months, and 173 (0.7%) reported making at least one suicide attempt. When this was split out by class status, 3.5% of graduate students had 12-month ideation, and 0.3% had made at least one 12-month attempt; 6% of the undergraduate students had 12-month ideation, with 0.9% made at least one attempt. As described in Chapter 1, the 2014 NCHA II study – one of the only national surveys to report undergraduate and graduate responses separately - found that amongst graduate students, 4.5% had seriously considered suicide in the past 12 months, and 0.5% had attempted suicide (ACHA, 2014b), while for undergraduates, 8.6% had experienced suicidal ideation in the previous 12 months, and 1.4% had made a suicide attempt (ACHA, 2014a). For the 12-month suicidal ideation sub-group in this study, both male and female undergraduates had comparable 12-month suicide attempt rates, 15% and 14%, respectively. Male graduate students in the sub-group had a much lower attempt rate, at 5%, while female graduate students had a 12% attempt rate. These figures are in keeping with older research indicating that female graduate students have suicidal risk that is higher than that of male graduate students (Silverman, 2004). The intersection between class status and gender in this data set has been discussed at length by Brownson et al. (2011). Female graduate students represent a sub-group with unique qualities that warrant further study.

The order of attempt rates by race and ethnicity differed for undergraduates and graduates in unpredictable ways. For undergraduates, Hispanic/Latino respondents had the highest attempt rate, followed by African Americans and Asian Americans. The attempt rates for these groups ranged between 20% and 30%, whereas the rate for Caucasians was 14%. For graduate students, Asian Americans had the highest rates, at 30%, followed by African Americans at 28%. Hispanic/Latino graduate students had a much lower rate of 12% compared to their undergraduate counterparts. Neither of these patterns was similar to those found in the general population for completed suicides, though it should be noted that the sub-group has unique characteristics and could only report nonfatal suicidal behavior. As described in Chapter 1, in the general population of 15-24 year-old males, the reported suicide rates are highest for Native Americans, followed by non-Hispanic Whites, African Americans, Hispanic/Latinos, and Asian/Pacific Islanders. For females the order from highest to lowest rates of suicide are Native Americans, non-Hispanic Whites, Asian/Pacific Islanders, Hispanic/Latinos, and African Americans (Horton, 2006). There were no suicide attempts by the American Indian/Alaskan Native students in this study, of whom there were very few. One factor at work in this study may be response bias, in that members of different groups may have been more likely to participate. Women had a higher response rate than men, though gender alone could not explain the patterns in race/ethnicity. Further exploration of the intersection of gender and race/ethnicity could shed light on these patterns, and on the transition from undergraduate to graduate status that seems to lower risk for some groups while increasing it for others. The differences in racial/ethnic groups also suggest the need for further research that concentrates on each group separately.

Graduate and undergraduate students differed in the bivariate associations of several emotional variables with suicide attempt. Higher scores on the "hopeless" and "anxious/panic" variables were significantly associated with higher suicide attempt rates for graduate students, while both groups had significant and positive associations between higher scores on the "helpless" variable and attempt. One surprise was that undergraduates had higher rates of attempt for *lower* scores on the "anxious/worried" variable. These findings should be interpreted cautiously because they are limited by small cell sizes and some non-monotonic increases in suicide attempt for each stepwise increase for some of the emotional variables. Also, the two "anxious" variables were found to be highly correlated. These findings suggest that future study might focus on nuances of emotions while also generating large enough samples so that findings are more robust. Small cell size also hampered the analysis of the alcohol and drug use variables, particularly as many respondents did not use substances at the highest levels of the scale provided – a good sign perhaps, but one that frustrated efforts to find clear associations between substance use and suicide attempt. Marijuana use appeared to be positively and significantly associated with attempt for undergraduate students, except that attempt rates did not increase monotonically with each stepwise increase in the frequency of marijuana use. These problems suggest that categories of use for substances may need to be measured in different ways, in order to generate data that can yield significant and reliable associations.

Another surprise was the rate at which students reported using mental health services. The 2000 NCHA survey reported that fewer than 20% of students with 12-month suicidal ideation or attempts had received treatment (Kisch et al. 2005). In this study, mental health service use was considerably higher: 581 (44%) of the 12-month ideators reported seeing at least one professional for their suicidal thoughts, 346 (26%) took medication, and 45 (3.4%) were hospitalized. The primary purpose of this analysis was to learn how suicidal ideation was connected to service use and to test the association of service use with 12-month suicide attempt. The main finding was that in many cases, students were *more* likely to have attempted suicide who also received mental health services. In bivariate association tests, *not* seeing a health professional for suicidal ideation was associated with lower suicide attempt rates, while seeing a psychiatrist was associated with higher attempt rates. These associations were significant for both graduate and undergraduate students, as were positive associations for medication use and hospitalization with attempt rates. Graduate students also had a significant positive association between seeing a counselor and 12-month attempt. This positive relationship between service use and attempt was similar to findings of previous research (Kisch et al., 2005), and is discussed further below.

In the Model 1 regression, hospitalization was the only service use variable that was significantly and positively associated with suicide attempt. Strength of suicidal thoughts was also strongly associated with suicide attempt. The other significant variables in the model were history of suicidal ideation, Caucasian ethnicity, being transgendered, seeing clergy for mental health services, and the emotion of "anxious/worried." As noted in Chapter 3, the findings for transgender status and clergy use were limited because of the few students who chose those variables. The "anxious/worried" variable was again found to be associated with attempt in an unexpected direction – higher levels on that emotion led to lower odds of attempt. This finding was most likely due to the pattern seen in the bivariate association test for undergraduates, but is still somewhat a mystery. Caucasian ethnicity produced a protective effect, which may be due to

different experiences with both risk factors and supports, particularly in the use of mental health services. Many counseling centers engage in outreach to encourage members of other race/ethnic groups to use formal mental health services to assist them with mental distress.

Model 2 could not be adequately performed because of methodological issues. Both Model 2 and the path analysis highlighted the challenges of evaluating different types of service, particularly with limited data and multiple possible combinations of services. There is a great need for outcome-effectiveness studies in this field, and the Center for Collegiate Mental Health intends to engage in this kind of research. For this study, instead of the Model 2 regression, bivariate analyses were conducted for the 581 students in the ideation sub-group who saw at least one provider type. These tests showed positive associations between average number of visits to the different provider types and attempt, though these were not statistically significant. The most visits were paid to counselors; graduate students had 25 visits on average to them while undergraduates had 16 visits on average. These were higher than the five to six session averages discussed in Chapter 1. This may indicate that these students were receiving something other than the brief therapy model often used by campus counseling services. It was also possible that they were being referred off-campus, a strategy that counseling centers may use for chronic and serious mental health conditions, or if a student needs to see a psychiatrist, a professional type often not available on smaller campuses. The affiliation of the providers seen by this group of respondents is suggestive. Fewer than half of the counselors seen by respondents were affiliated with their campus, and only 28% of psychiatrists were. It would seem then that for students at suicidal risk who see a counselor, they will have at least 16 sessions and go off-campus about half of the time. Future research could focus on the transition to off-campus providers and any barriers experienced. Survey items could ask each student whether he/she received an off-campus referral from their counseling center, as it cannot be known from these data whether students were referred by their counseling centers or chose to find external providers on their own. For students who do not see a mental health provider, surveys should ask if they were offered the option of seeing someone off-campus, and whether this influenced their decision not to engage in therapy.

The use of off-campus providers could present some barriers to access, over which many students have little control.[29] In these data, however, there was no association between suicide attempt and whether a professional that was seen was affiliated with the respondent's campus. Perceived helpfulness was significantly associated with a lower likelihood of 12-month attempt for students who saw a psychiatrist. Difficulty of access was significantly associated with 12-month attempt for those who saw a counselor; as difficulty increased, so too did the likelihood of an attempt. Limited conclusions can be drawn from these findings, and more study about off-campus provider use is needed to determine if referrals are detrimental for students at risk of suicide. In the wake of high-profile campus suicides that have campus leaders worrying about having sufficient mental health resources, this finding is an example of the impact of making it difficult for students to access those resources.

The finding that exposure to services increased suicide attempt at first seemed counter-intuitive and discouraging, if interpreted to mean that mental health services are ineffective for actively

[29] Some students are able to choose to see providers at their campus health services or obtain a referral to see an independent provider off-campus, but many centers do not offer this choice except under special conditions.

suicidal patients. Another possible interpretation is that receipt of mental health services is indicative of help-seeking behavior by patients who are in great psychic pain and recognize their own risk of a suicide attempt. These data may indicate that those respondents who were suffering serious mental distress were in fact quite good at identifying their own risk of suicide and seeking help from professionals. If so, this self-selected group would by its very nature also have a higher rate of suicide attempts. Kisch et al. (2005) have found in their own research that the use of multiple types of service, such as medication and seeing a mental health professional, can help identify a specific population at risk of suicidal behavior (Kisch et al., 2005).

Schwartz (2006a) noted that while national survey data indicate that counseling center clients have a suicide rate three times that of non-clients, it should be understood that clients are already predisposed to have 18 times the risk of suicide, before they ever receive services. As such, services can be viewed as effective in that they reduce the suicide rate among clients to one-sixth of what it might otherwise be (Schwartz, 2006a). The current study could not determine whether a student's risk was lowered after receiving services. The data were limited in detail about different professional types, and respondents were sometimes missing data on provider variables. Future study could focus on the kinds of services received, the length of visits, and whether psychiatrists handle medication needs and/or offer therapy. Information on the use of referrals could illuminate how the referral process works and what provider types students are most likely to see when they go off-campus. It would also benefit the field to learn whether, how, and when suicide risk assessments are conducted in response to suicidal ideation, which is a best practice for assessing both suicide risk factors and protective factors for each individual client.

To explore the idea of "high reactors," those who are both at greatest risk and also most likely to use services, several *post-hoc* analyses were conducted, a technique employed in other suicide studies (Molock et al., 2006; Nock et al., 2008). An examination of the entire sample of 26,451 students was made to see whether lifetime use of mental health services was associated with a greater number of lifetime suicide attempts. The finding of a positive association between these variables lent support to the idea that students who had suicidal ideation, and were "high reactors," were also more likely to receive some kind of mental health service than those who were not. One weakness for the lifetime association analysis was that temporality could not be determined; it was unknown whether lifetime services were received before or after suicidal behaviors, and there was a time period overlap between lifetime and 12-month histories because of the survey's design. The responses of the 1,321 students with 12-month ideation may have affected the results for the entire group. Therefore, a new regression, Model 3, was conducted which tested the effect of lifetime mental health service use on likelihood of selection into the 12-month ideation sub-group.

The results of that regression, which applied to the entire data set of 26,451 students, showed that all of the lifetime service use variables predicted selection into the sub-group. These results confirmed that the sub-group differed from other respondents in that they historically used mental health services more frequently, and were more likely to be actively suicidal. This supported the suggestion that the sub-group's very nature as "high reactors" was a strong driving force for many of the quantitative analysis results. As such, the implication for mental health practice is that assessment of actively suicidal students should include their mental health history, history of service use, and what services have previously been useful to them in

preventing suicide attempts. Frequency and severity of prior ideation, as well as prior attempts, should also be included.

As noted previously, bivariate tests of association showed that higher numbers of visits to health service professionals were consistently associated with increased likelihood of a 12-month attempt, though none of the associations were found to be statistically significant. Higher numbers of visits may again have been indicative of "high reactors" who were in need of the most assistance (and more likely to report an attempt). The number of providers seen could range from one to four. Amongst the 581 members of the sub-group who saw at least one provider, 358 saw one type of provider, 170 saw two, 46 saw three, and 7 saw all four types (GP, psychiatrist, counselor, and clergy). Undergraduate students were significantly more likely to report seeing multiple providers than graduate students, but this variable was not associated with 12-month attempt. The visit data exhibited strong right-hand skews, due to a few respondents having many more sessions than average. This is similar to the CCMH 2014 Annual Report that noted that a small percentage of counseling center clients accounted for a large percentage of sessions (CCMH, 2014a). Still, in the case of the CCMH data it is not known how many of those clients were at risk of suicide, and the data here showed that half of the respondents who saw counselors did so off-campus, therefore not using on-campus sessions.

No conclusions could be drawn about the effect of visit numbers or number of providers on suicide risk. Perhaps whatever occurs when patients access mental health services is not something that can be captured by these quantitative variables. This might include building of trust and a provider-patient alliance, sufficient time to address mental health needs, the use of specific assessment tools or treatment models, and the training of the provider. There may also be something in the nature of the interaction between patient and provider that has an impact on outcomes, some behavior or effect that has not yet been conceptualized. Further research suggests a qualitative study, such as patient/provider interviewers and focus groups, to explore and find potential variables that are important to the mental health service experience.

The Effect of Region, Campus Size, and Public/Private Funding

There were no significant geographic differences in suicidal ideation. Students across the nation had a lifetime suicide consideration rate of between 16 and 17%. Across the regions, there were statistically significant differences in mental health service use, but the significance was often due to large sample size. The actual figures were small and perhaps not useful to policymakers. It may be most useful to look at where differences were greatest. In lifetime use of a counselor, for example, 39% of Northeastern college students had seen one, versus a low of 35% in the Midwest, with the other two regions falling in-between. For lifetime psychiatrist use, the figures were 14% in the Northeast versus 11% in the Midwest. This trend is reversed for seeing a GP for mental health services, at 11% of students in the Midwest and the South compared to 9% in the Northeast. These represent an interesting regional practice pattern variation, perhaps, in that it suggests a difference in whether mental health professionals specifically are seen for mental illness rather than general practitioners. Another interesting practice variation was whether respondents had used their campus counseling center, with a high in the West of 22% and a low in the South of 18%. With regard to other types of services, medication use rates were mostly

even across regions, except that students in the South were significantly higher than all three other regions (21% versus 18%) in their use. Lifetime hospitalization rates were mostly even across the regions except for a 1% higher rate for students in the Northeast (4%).

There were some significant differences according to campus funding type, private or public, in mental health services used by students. Those attending public university were significantly more likely to have seen a general practitioner, to have used their campus counseling center, and to have used medication for mental illness, compared to those at private universities, but use of counselors and psychiatrists were similar. Those attending private university reported a higher frequency of suicidal ideation, while students at public universities had more suicide attempts. Given the large ratios of mental health professionals to students experienced by larger public campuses, it is encouraging to find similar rates of counselor and psychiatrist use.

It was important to recognize that funding status is often related to size; the other campus variable examined here. Most large campuses were publicly funded, and many small campuses were privately funded. On large campuses students reported that they were more likely never to have used mental health services, and more likely to have seen general practitioners for mental health services. Students at smaller campuses were more likely to have seen a counselor, though students at larger campuses used their counseling center more. This might indicate that smaller campuses are less likely to provide in-house counseling at a specific counseling center, though overall it seems their students had greater access to counselors than those at large schools.

In keeping with the finding that students at private campuses had higher levels of suicidal ideation, so too did those at small campuses. Likewise, suicide attempts were higher for students of large campuses, similar to the finding that this was true of public campus students. Medium-sized campuses did not have suicidal behavior rates that fit monotonically with those of smaller and larger campuses; medium-sized campuses had the lowest rates of ideation and attempts. This may be a reflection of the mixed funding status for the schools in this category, leading to a more even balance of private and public schools, or a reflection of the overall structure of the campuses that fit into the medium-sized category. For example, a medium-sized college might be large enough to have an independent counseling center, while at the same time not being overwhelmed by high student demand or high levels of administrative complexity.

It is difficult to interpret these data in terms of policy, except to note the importance of counseling centers to students of large, public campuses. The finding that these students had higher levels of suicide attempts leads to questions about what type of care they are receiving when they access services and whether they are being screened for suicidal history and prior mental health service use, ideation severity, and other risk factors. These services could improve assessment of suicide risk, even for those students who are not “high reactors” and may not see themselves as needing specialized services.

Limitations

Some limitations were already mentioned above, such as the challenges experienced in some of the regression modeling. Fewer variables would limit these problems, but one aim of this

analysis was to avoid omitted variable bias. Other limitations were discovered in the *post hoc* analyses, such as an examination of how students assessed timing of services received, with the finding that many respondents were inexact in reporting services received specifically after they first recognized they were having suicidal ideation. Also, there were not enough respondents for some categories of the demographic and alcohol/substance use variables. Targeted surveys of particular groups of students, as well as fewer response choices to some survey items, would improve on these challenges. These data were not longitudinal, so no controlling for cause-and-effect or services received over time could be performed. Another limitation was that although this study contributed by including multiple service variables, some of these lacked detail. The survey instrument was not originally designed for health services research, but rather for psychological research into the psychosocial precursors to suicidal behavior and help-seeking behavior in general. Response rates were another limitation, at 24% of undergraduates and 25% of graduate students sampled. Similar studies often do not report response rates (Kisch et al., 2005; Nock et al., 2008; Pena et al., 2008), though one achieved a rate of 55% after cluster sampling schools (Molock et al., 2006). It should be recognized that suicide is a stigmatized topic which may repel potential respondents. Another weakness was response bias – student respondents had to identify their own suicidal ideation. The survey attempted to make this easier for students by first giving them sample statements and asking whether they agreed with them, such as, "I wish I would die." It is difficult to say whether this increased or decreased reporting of suicidal ideation, however. Qualitative research into what students mean when they think of "ideation" could shed light on this.

Like much of mental illness, diagnosis of suicidal ideation is very often based on self-report. It was clear in this analysis that there was a group of students who both identified the seriousness of their suicidal risk and utilized services to that end – the "high reactors" who used services but still reported suicide attempts. Of course, the reporting of suicide attempts is also based on self-report, and probably somewhat biased depending on how attempts were defined by the respondents. It not clear in what direction bias would occur. Students could have compelling reasons to both under-report and over-report suicide attempts.

Another limitation is that the definition health professionals and researchers use for suicidal behaviors may not adequately describe or fit the reality of all kinds of suicidal behavior, resulting in question items that do not cover all possible contingencies experienced by respondents. In that case, respondents may have to use considerable discretion in how they answer survey items that are confusing or irrelevant to them. This would introduce some response bias into the data. This will always be a challenge when assessing something as complex and individualized as mental illness.

Although these data indicate that respondents had higher session numbers than the average college student client, and many used off-campus providers, it was not known how these services were organized. No information on referrals or coordination between providers was collected. Likewise, details of services received were unknown. Information about the type of therapy received and amount of time spent on each visit was not collected.

Though "hopeless" was a variable that could be included in the analysis, because it was included in the survey, depression was not, and this was a weakness in the model testing the simultaneous

association of all potentially important variables with suicide attempt. Depression is a frequent co-morbid condition for suicidal ideation, but as respondents were not asked about depression, the variable "sad" was used as a proxy. Other co-morbidities such as chronic mental health conditions would also have been included in the model were that information available. The use of the emotion variables and the variable for relieving emotional and physical pain were meager substitutes.

A large barrier to identification of suicidal behavior is the stigma attached to it; students may prefer to be treated for other diagnoses such as depression or social anxiety, whether those diagnoses are strictly accurate or not. It may be that one reason these data yielded "high reactors," or those students who were willing to report using services for suicidal behavior, is because students who were in intense psychological pain were more willing to forego stigma and seek help for their suicidal ideation. The data were unfortunately limited in not providing information about co-morbid mental illness.

The phenomenon of "high reactors" warrants much more research. This would include a more in-depth study of the specific services received by suicidal ideators: the types of professionals seen, time frame of treatment, types of medication used, type of counseling (e.g. cognitive behavior therapy, group therapy), supportive services provided, and treatment of co-morbidities such as depression, drug use, and other physical illness. Targeted services for "high reactors" should be piloted and tested. Also, the data were able to demonstrate some variation in service patterns across different campuses, but without much detail. A national survey of detailed service variables for students at risk of suicide could address this knowledge gap. Many researchers have noted that the campus environment is a natural laboratory for evaluating different models of prevention and treatment, though little evidence-based research on college suicide has been conducted thus far (Hunt & Eisenberg, 2010; Lee, 2005; Nock et al., 2008; Silverman, 2004). These data were cross-sectional, but a longitudinal study of students with follow-up could better establish cause-and-effect of services and suicidal behaviors.

Finally, and sadly, there are students who died by suicide and never took this survey. What cannot be determined is whether students who completed suicide would have reported fewer or more services used before they made a suicide attempt, compared to the study group here. It is not in the realm of the impossible that they might have received fewer services, for example, and that the study group's having received more services somehow prevented completed suicides, even if they did not always prevent attempts. Research has found variation in incomplete versus complete suicides for different groups, such as gender. Mental health services may play a role in affecting such variation in suicidal behavior, which is another potential area of future research.

Chapter 5 – Methods; Qualitative Analysis

Introduction

The results of the quantitative analysis described in the previous chapter were both intriguing and discouraging. On the one hand, some of the students who were experiencing the most severe forms of suicidal ideation and distress were accessing campus mental health services, a desirable outcome from the point of view of health professionals. What is discouraging is that many of them still reported making an attempt on their life, even after receiving such services to help them with their ideation. This is a negative outcome that mental health service professionals and other stakeholders hope to prevent by providing or changing services available to college students. There is a pressing need to understand what happens during the service experience that might decrease the likelihood of such an outcome.

It is possible that simple exposure to mental health services does not always prevent a suicide attempt for those experiencing suicidal ideation because those with the most severe ideation are more likely to access services. The finding from the quantitative analysis that severity of suicidal thoughts, and whether the student was hospitalized, were both strong predictive variables of suicide attempt lends support to this proposition.[30] But other questions arose as a result of that finding. First, it was unknown whether all "exposures" to mental health services were similar for respondents that used them. The only way to match service experiences was whether they saw a GP, counselor, psychiatrist, or clergy, whether they received medication, and whether they were hospitalized. The number of visits to each provider type, the provider's affiliation with the campus, helpfulness of each provider, and difficulty of access were also included in the quantitative portion of this study. Beyond that information though, little was known about what actually happened during the care experience for each respondent. Yet there is good reason to suppose it varies, both by campus – as indicated by the differing responses on the annual directors surveys of counseling centers on the services they provide – and by individual. For example, one respondent might see a counselor for many visits, followed by a single visit to a psychiatrist who consults on medication use, while another respondent sees both provider types with no consultation occurring between the two providers. Or, the type of therapy provided by any one mental health professional may differ, such as one patient receiving individual therapy for up to 20 sessions, and another receiving a brief therapy model consisting of five to six sessions. Factors such as sociodemographic characteristics, personality traits, and communication styles can affect the therapeutic alliance that develops between any one client and his/her mental health provider. Other variations in service experience might have to do with ease of access in terms of scheduling appointments, paperwork, and other bureaucratic requirements that must be met; location of appointments; and the perceived risk of being seen by other members of the community entering a counseling center or mental health provider's office. How the mental health professional coordinates with or reports to other college administrators, in situations where they have been requested to do so, will also influence any one student's service experience.

The full Model 1 in the quantitative study included a number of demographic and psychosocial variables previously known to be related suicide risk, as well as the respondent's history of

[30] See the section on "high reactors" in Chapter 3.

suicidal ideation. Little is known about how these variables affects different patients within college populations. There may be other non-service use phenomena that are unique and significant in the college setting, but have not yet been identified.

To further extend the study of student use of mental health services, and identify additional phenomena that are important to the suicide risk for college students, four additional research questions were developed:

1. Were all "exposures" to mental health services experienced in the same way by students with suicidal ideation? How did they differ? Which services were problematic or involved barriers to access?
2. What did students say was helpful about service use? What was unhelpful? How could mental health services have been improved?
3. What prevented students from using mental health services? What did they say they would have found helpful, either in terms of service use or other, non-service resources?
4. How else do students cope with suicidal crises, if not through mental health services?

The fourth question was particularly important, as it could help identify important phenomena that affect student mental health outcomes but are yet recognized by healthcare providers and campus policy makers. These phenomena may not exist in the traditional sphere of health services, but could still serve as useful action points for assisting students in recovering mental health and stability during times of crisis.

Mixed Methods – From Quantitative Results to Qualitative Exploration

Studying health service use and health outcomes as quantitative variables, often dichotomous in that there are only two possible choices, can be a blunt tool, in that the researcher only knows whether a patient was exposed to a particular service – e.g., seeing a psychiatrist – and not necessarily what specifically occurred during that service (e.g., therapy). In the case of campus mental health services, it is often not known in what order services occur, whether services are well-organized and accessible (or perceived as accessible), and whether the services were appropriate to the patient's needs. For example, a counseling center might report providing "therapy" to its clients, but not what type, which might include cognitive behavioral therapy (CBT), dialectical behavioral therapy (DBT), or emotion-focused therapy (EFT), to name a few methods. A "brief therapy model" could include anywhere from five to 20 sessions, as described in Chapter 1.

Health services exposures can and often have been measured as large-number variables, averaged across groups of people and sometimes split according to group-level characteristics such as gender, race, age, or the presence of other medical conditions – often referred to as comorbidities. Comorbidities occur fairly often, such as obesity in the presence of diabetes, or more germane to this study, mental illness in the presence of suicidal ideation. While group-level variables can capture frequencies of patients who receive various levels of care, such as, say, blood pressure checks or cholesterol tests, this is much less easily done with the complex treatments required for mental illness. Quantitative methodologies may also miss important

effects caused by context and setting, or how, when, or what part of a service is delivered. Qualitative methods can help elucidate these details (Bradley, Curry, & Devers, 2007; Shortell, 1999). For example, a qualitative description of a service might describe the quality of communication between the patient and provider, and how it affected a respondent's likelihood of compliance with instructions on medical care and follow-up. Visits with providers that feel rushed or abrupt might decrease a respondent's desire to have return. Inadequate time with a provider might mean that important symptoms are not reported by a patient, which would otherwise affect treatment decisions. A respondent might report feeling intimidated by the provider or the health care environment, decreasing what they might be willing to say about sensitive medical issues, particularly mental illness.

Sobo et al (Sobo, Seid, & Gelhard, 2006) have noted that health service researchers often make the assumption that any care received is good care, without considering how a bad experience with the health care system might affect a patient in the long run. In their study on parents' perceptions of primary pediatric care, they conducted focus groups of parents to learn about barriers they had experienced in accessing care. Part of the motivation in conducting this research was due to prior quantitative findings that were difficult to explain. These earlier analyses had indicated that certain quantifiable phenomena in vulnerable populations, such as having health insurance or the presence of a regular medical provider, were found to be predictive of experiencing worse primary care rather than better. This surprising finding led researchers to believe that quantitative measures were missing some important part of the care process. A qualitative approach was therefore used to help discover new avenues of research, new variables, and care processes previously unexamined in the health care experience. From the focus groups researchers learned that even when certain services were available to them, parents who reported having difficulty in accessing those services were less likely to utilize services in the future, which helped in part to explain the earlier findings (Sobo et al., 2006).

The importance of using qualitative methods to illuminate what happens inside the continuum of mental health care is particularly important because of the complexity of mental illness phenomena. Suicidal behavior, ranging from thoughts about dying to actual attempts, is no exception. As noted in an earlier chapter, mental health professionals can only predict the level of risk for any one patient; it is not possible to predict whether any one person will eventually commit suicide. Service providers must combine data about known risk factors with personal information about each patient's history and situation to make determinations about prognosis and recommended care, while simultaneously building a therapeutic alliance with the patient (Simon, 2006).

Health services research (HSR) as a field draws from many disciplines and traditions, including those that focus on qualitative methods, such as anthropology (Sobo et al., 2006; Sofaer, 1999). It can be daunting for the researcher to not know before conducting an HSR study what variables, processes, or contexts are important in the patient care experience being examined. On the other hand, there is also epistemological freedom if he/she is willing to observe data with no *a priori*[31] ideas about possible significant findings or theoretical relationships that will be discovered. He/she may not know ahead of time exactly the right questions to ask about the patient experience or other phenomena, or what there is to know about the care setting that is

[31] Latin "from the earlier;" refers to knowledge that is known before experience or evidence is accumulated.

important to the care process, but these things are learned through the iterative process of qualitative analysis. Using qualitative techniques in an inductive way can assist health services researchers in developing new theories and new concepts (Patton, 1999; Sofaer, 1999), social and psychological constructs of interest (Braun & Clarke, 2006; Sobo et al., 2006), conditions and settings under which specific interventions affect outcomes (Bradley et al., 2001; Bradley et al., 2007; Lewin, Glenton, & Oxman, 2009; Shortell, 1999), specific parts of interventions or services that are effective (Lewin et al., 2009), the meaning of illness for patients or health care providers (Giacomini & Cook, 2000), and importance of timing of service use (Janesick, 1994).

In practice, most qualitative studies begin with some predetermined questions and concepts of interest, such as the four questions posed at the beginning of this chapter, but allow for emergent concepts to arise during analysis. Data usually come in the form of text, such as responses to interview questions. As concepts emerge from the text and are assigned codes that capture their meaning, researchers will try to find their range and context (Sobo et al., 2006). Many qualitative analyses are conducted in an iterative manner, or what is sometimes referred to as a "dialogue with the data," in that the researcher will use part of the data to discover a concept or pattern, and then use another part of the data to verify the concept. When a new concept, construct, or variable is identified and verified by repeated reference to data, this is called the Constant Comparative Method (CCM). When someone says their findings are "grounded," they mean that they have taken initial results and verified them against some portion of their original data, and thus the verified results are "grounded" in that data. One caution is that a researcher should not try to force data to confirm previously found variables or relationships between variables. In fact, qualitative researchers should deliberately seek out disconfirming and alternate cases throughout their analysis and be prepared to modify their models accordingly (Patton, 1990).

In addition to identifying variables, iterative, inductive analysis will often lead to the discovery of patterns of phenomena and relationships between variables, allowing the researcher to build typologies and new theoretical frameworks that may suggest causal relationships (Giacomini & Cook, 2000). Gradually emergent concepts may be found to have domains or dimensions, which can be organized into some type of taxonomy that indicates how they all relate to one another. Whatever method is used to organize the data into a hierarchy, it is subject to continual modification as needed. Data may also be organized by themes, which are broad concepts that arise when participants describe experiences (Bradley et al., 2007). Ideally, repeated inductive analyses lead to new theories that in turn lead to testable hypotheses – which can be tested with quantitative methods if measurable variables have been identified. New questions, survey instruments, and sampling methods may be developed, especially if sub-groups of interest have been identified by prior qualitative exploration (L. Palinkas, personal communication, April 15, 2013). An additional advantage to qualitative methods is that they can document the personal responses of groups who are usually marginalized or not part of research dialogue (Lewin et al., 2009; Sobo et al., 2006; Sofaer, 1999).

Qualitative methods may be used in tandem with a quantitative analysis that resulted in surprising findings, especially if current theory fails to explain them (Giacomini & Cook, 2000). Such was the case in the first part of this study, with the finding that students who received mental health services for their suicidal ideation were more likely to report a suicide attempt. The

use of both quantitative and qualitative methods is often referred to as *mixed methods* (Patton, 1990).

Combining quantitative and qualitative approaches can greatly strengthen and extend a research study. This study follows a sequential quantitative-to-qualitative mixed methods design, in which quantitative methods were used in a theoretically driven manner first, followed by qualitative methods used in an inductive manner. Because the results of the quantitative analysis were unexpected, they are followed in the next section by a qualitative analysis that begins to attempt to explain and provide insight into those findings. The qualitative part of the analysis was inductive and explorative, designed to identify new constructs and new theory rather than test or confirm known theory (L. Palinkas, personal communication, April 15, 2013)(Richards & Morse, 2007, Chapter 4).

How a researcher approaches qualitative analysis depends on several things – whether they have some theoretical framework in mind for their data, whether they follow a certain ontological or epistemological paradigm, and how iterative they wish their process to be. A well-known type of analysis is often referred to as grounded theory, though how it is used by researchers may vary considerably. The Constant Comparison Method (CCM) preceded grounded theory but Glaser, Strauss and Corbin are probably best known for their use and writings on the importance of iterative dialogue between the researcher and his/her data (Heath & Cowley, 2004). Glaser followed a positivistic, objectivistic paradigm, using theoretical sampling, coding, and written memos during analysis (Heath & Cowley, 2004). Strauss and Corbin later took a more interpretative, constructivist approach, and published detailed methods of how to use different types of data coding, such as open and axial coding, as part of the process of iterative analysis and verification (Hallberg, 2006). Essentially these three researchers had similar ontological views but different epistemological views, differing in how much interaction they believed was necessary between the researcher and his/her data, how much induction and deduction should occur during analysis, and whether the researcher should start with a known research problem or question or whether that created too much bias or preconception towards the data before analysis began (Heath & Cowley, 2004). Purely open analysis would begin with no given research question and simply look for emergent concepts as provided by participants during open-ended interviews.

Braun and Clarke (2006) suggested that thematic analysis as a methodology has "theoretical freedom" from the earlier traditions of grounded theory and yet can still be used to provide rich, in-depth analyses of qualitative data that identify patterns and themes. In fact, they suggested that much of what is published as grounded theory is actually thematic analysis (Braun & Clark, 2006). Thematic analysis usually refers to identifying larger patterns of words or phrases in data, rather than simpler, shorter terms (Aronson, 1994; Floersch, Longhofer, Kranke, & Townsend, 2010). Thematic analysis may be essentialist and realist, or constructionist. The former focuses on experiences, meanings, and the reality of the respondents. It assumes you can theorize motivations and experiences in a straightforward way. The latter is more about how meanings are constructed as the effects of discourses in society, sociocultural contexts and structural conditions (Braun & Clarke, 2006). For most health services research, the former approach, essentialist/realist, will be of interest to researchers as they document the perspectives, meanings, and experience of patients, clinicians, and other health services stakeholders. Because the four

research questions of this study sought to understand the care experience of respondents, or alternative experiences that helped them cope (or not) with their suicidal crises, thematic analysis with an essentialist/realist approach was the method used for this study.

It has been suggested that there is no one best way to do qualitative research (Bradley et al., 2007). The first guiding principal in developing a methodological approach is that it should be guided by the research question (Giacomini & Cook, 2000; Hallberg, 2006). Morse (1994) notes that qualitative research questions may be one of several types: those that explore meaning, those that seek description, and process questions (Morse, 1994). Open-ended questions during interviews are ideal for qualitative data collection, especially if the research approach is inductive in nature, because the questions are less restrictive of respondents' answers. This allows them to generate ideas or discuss phenomena that are most important or salient to them. Structured interviews containing more closed questions may not be appropriate for theory-generative work if it hinders respondents from using their own words. The way an interviewer leads a respondent to think about and describe an experience, through the order and wording of questions, can also influence responses. In this study, the survey items used to generate the qualitative data were open-ended in their elicitation of respondents' experiences. The wording of these survey items was as follows:

"What did you find most helpful in resolving the suicide crisis?"

"What did you find least helpful in resolving the suicide crisis?"

The wording of these questions meant that respondents could talk about any thing they wanted to that was relevant to their experience of a suicidal crisis. They were not being prompted to generate responses specific to any person, place, health service, feelings, actions, behaviors, interactions with others, and so on. They could choose the phenomena that were most important to them – or most important for them to talk about.

Qualitative methodology is often more powerful when it focuses on depth rather than breadth. Shorter interactions with multiple participants, as opposed to longer interactions with fewer participants, can actually equal less rigor in analytical depth rather than more (Giacomini & Cook, 2000). This is very different from quantitative methods, where more respondents usually equal greater reliability and confidence in research findings. An unfortunate weakness in the current study was its reliance on survey data and the varying length of the responses to the open-ended items. By selecting randomly from specific sub-groups who differed on specific variables of interest, such as mental health service use and suicide attempt, a method of data collection was designed that would maximize a search for meaning and themes as described by the respondents to the campus surveys.

As review of student text responses began, categories and concepts were either identified (in the case of *a priori* theorizing) or newly generated from the data (Hallberg, 2006). Bradley et al. (2007) describe five types of codes: conceptual, relationship, participant perspective, participant characteristics, and setting (Bradley et al., 2007). Richards and Morse (2007, Chapter 6) discuss the use of codes to store facts about respondents, events, settings, and context, including such information as the year of an interview or which question was being asked at the time of a

response. However many descriptive codes are added to the data, they may later be used for querying data on differences in variables of interest, for example gender or role (Richards & Morse, 2007, Chapter 6). Participant codes are sometimes used for a similar purpose, as they identify group membership for each respondent and therefore allow comparison across groups (Bradley et al., 2007). This method proved particularly useful with the data in this study, since respondents could be divided into four groups based on their exposure to services and whether they had made a suicide attempt.

During coding and analysis, qualitative researchers begin to develop insights into their data, such as how respondents characterize events, and analytic codes may be used to record these insights. Notes about code development and refinement are recorded via memos and assist in creating an auditable trail of the iterative process of developing and refining codes, concepts, domains, and/or themes. Memos assist to explain the logic behind any organizing taxonomy, as well as researcher thoughts about potential causal linkages between variables of interest. This in turn may lead to early theorizing about potential phenomena of interest, either explaining or predicting causation between variables. It is particularly important that the researcher does not force data into categories but rather focuses on refinement of codes as needed (Richards & Morse, 2007, Chapter 6).

Gradually over time the codes that emerge may begin to form patterns that lend themselves to some type of organization. Codes may have sub-codes or sub-categories, for example, that seem to fit into a hierarchy, or a single type of code may seem to have different dimensions or domains. A taxonomy may expand to include higher levels of organization, such as themes, which are often broad concepts that arise when respondents describe experiences (Bradley et al., 2007). Richards and Morse (2007, Chapter 6) have noted that theme development may occur at any part of the coding process but does tend to mean something more extensive than any one code or category. Because the research questions in this study sought to explore the experiences students had in resolving their suicidal crises, possibly identifying challenges or sources of support, coding was conducted with an eye to discovering overarching themes in the data (Richards & Morse, 2007).

In some cases, a researcher may have some ideas based on current theory and knowledge about what concepts might appear in the data that are significant to the phenomena of interest. If so, he/she can develop a preliminary list of codes before beginning analysis (Bradley et al., 2007). This list is added to later by emergent codes that are discovered during analysis, therefore making the analysis serve the purpose of both confirmation and discovery of variables of significant theoretical interest. The iterative process of coding and analysis can therefore be both inductive and deductive, referring back to current theory when appropriate as a way of validating some findings, while simultaneously discovering wholly novel concepts. Floersch et al. (2010) noted that the identification of new themes can sometimes later be confirmed by current literature and theory (Floersch, 2010). Because of the existing literature and theory on suicide risk and protective factors, it was possible in this study to create an *a priori* list of concepts to use when coding the data, alongside open coding for emergent concepts.

Qualitative researchers may switch back and forth between inductive and deductive phases of analysis, in an iterative way. In an inductive phase of analysis, the researcher is immersed in

some part of the data, so that meanings and connections can be identified. This might also include theoretical sampling, in which a researcher tries to establish the scope and dimensions of each concept or variable. During deductive phases of analysis, the researcher draws again from the data to test and if necessary refine their understanding of identified concepts and relationships between variables. This process is conducted with rigor and as much objectivity as possible, supported by an auditable trail of decisions made (Floersch et al., 2010). While perfect objectivity is impossible - a frequent criticism by non-qualitative researchers - good qualitative research makes extensive use of memo-writing, demonstrates careful attention to detail, and identifies possible sources of bias in the viewpoint of the observer – at every stage of decision-making.

Theoretical sampling is used to find the maximum range and characteristics of an identified concept or variable, and theoretical saturation refers to the point at which the researcher decides that further data checks will not likely change their findings about that concept (Giacomini & Cook, 2000; Hallberg, 2006). Additionally, during analysis not only should connections between variables be explored, but also characteristics that allow for differentiation between different concepts. Any cases or samples that are exceptions to the findings generated by most of the data should be reported and described; such cases may produce some of the most interesting discussions of a study's results (Patton, 1999). In this study, as many initial codes were developed as were deemed necessary to adequately capture the variation in respondents' descriptions, even for concepts that appeared only once or a few times.

As noted before, thematic analysis was chosen as the most suitable approach to these data because it examines broad, encompassing ideas that may cover entire experiences. Thematic analysis can be particularly useful when analyzing how respondents describe their experiences with illness or other healthcare issues. Researchers may discover information about disease causation, etiology, comorbidity, treatment, or illness resolution (L. Palinkas, personal communication, April 15, 2013). More specifically, researchers can discover the meanings that respondents ascribe to particular situations or experiences. Themes that are found during analysis should be confirmed, and validity of findings is enhanced when a systematic coding methodology is used (Floersch et al., 2010). Generally, and ideally, thematic analysis is conducted on longer texts such as interview data. This is a limitation of the current study because only semi-structured survey responses were available for qualitative analysis, and they were somewhat truncated in length.

Qualitative researchers have to be as concerned with reliability and validity as any quantitative researcher, contrary to the frequent accusation that what they do is a "soft" science with no real analytic rigor. It is in fact the recognition of subjectivity and the importance of perspective that requires them to acknowledge and record, early and frequently, all sources of bias, perception, social influence, and other factors that influence the outcomes of any qualitative study. One way the researcher can enhance validity of findings is through triangulation.

Triangulation of any kind helps avoid systematic bias and the possibility of instrument error. Particularly with qualitative research, purposeful sampling is a powerful way of developing in-depth, rich data about a case or group of respondents, but researchers must beware of over-generalizing from their sample to the general population. Their results will necessarily be limited

by the type of respondents they have sampled and other situational characteristics such as time or place. How their sampling is designed will have necessary implications for their findings (Patton, 1999). Still, triangulation can strengthen confidence in both the reliability and validity of findings, and there are multiple ways to triangulate. One type of triangulation is the use of multiple investigators to code data, looking to achieve some level of inter-rater reliability, usually 80%. If investigators have different disciplinary backgrounds, this may strengthen confidence in the level of agreement found. This form of triangulation is limited by resource availability (Bradley et al., 2007; Patton, 1999). Bradley et al. (2007) also noted that several experts recommend using one researcher for all the coding of a given data set (Bradley et al., 2007). This approach was taken in this study.

Other types of triangulation involve the combination of data from different sources, such as documents, field notes, quantitative data, survey data, or deliberately sampling respondents in a way that gains multiple perspectives (Patton, 1999). The data for this study came from survey data that included quantitative measures of some of the phenomena of interest, such as whether the respondents had received mental health services and whether they had a 12-month suicide attempt. Responses on these items allowed for sampling from four specific groups. Another type of triangulation is through theory, in which the findings from a study are found to be in accordance with current theory on the phenomenon or subject in question (Bradley et al., 2007; Patton, 1999). In this study an *a priori* list of codes was generated based on current suicide literature and theory. Additional codes were generated based on services the respondents were asked about earlier in the study, including mental health professional type, medication, and hospitalization.

Qualitative Analysis of Sub-Group: Purpose and Approach

To help illuminate the findings of the quantitative portion of this study, a qualitative analysis was designed using open-ended responses to two items in the same survey. The survey items used did not specifically ask about health services, allowing the students to generate in their own words the descriptions of what they believed was most and least helpful to them in their experience of suicidal crises. Because *a priori* theoretical constructs were included in a code list to be used at the beginning of the analysis, described in the next chapter, the analysis took a mixed inductive/deductive approach. The approach to coding and analysis was mostly inductive and open in nature, allowing the data to generate themes based on whatever phenomena the students discussed. Researcher bias in the direction of over-emphasizing health services was considered; careful attention was paid to sources of support for the student other than health care that they discussed, as well as negative experiences with health services, barriers to health care, or any experiences that seemed to run counter to commonly accepted knowledge in the field of health services research. The Constant Comparison Method was used in combination with thematic analysis, as it was thought most appropriate to try to capture the overall experiences described by each student in their survey responses. The use of Atlas.ti® software allowed for extensive use of memos and comments as themes were developed, revised, and/or combined. Student responses were sampled until a sense of theoretical saturation on the main themes that emerged had been reached. Since each stage of results dictated the next stage of analysis, in an iterative fashion, the next chapter combines both analysis and results.

Chapter 6 – Results; Qualitative Analysis

Initial Round of Analysis

As described in Chapter 2, students who took the survey and were identified as having experienced 12-month suicidal ideation (1,371 out of the more than 25,000 respondents) then answered a series of questions about their suicide crises. This included four open-ended questions, shown in Table 32. To explore their experience of mental health service use, or lack of use, during their suicidal crises, and to identify what factors they considered helpful, the qualitative analysis began by exploring their responses on the second open-ended item, "*What did you find most helpful in resolving the suicide crisis?"* This item was considered especially useful for discovering new concepts about what was helpful for students, since the question did not specifically mention health services and allowed the respondents to generate their own ideas of what was most significant in their recovery process, if anything.

Table 32 – Open-ended items from survey, on resolution of suicide crisis

Why do you believe you stopped considering a suicide attempt?
What did you find most helpful in resolving the suicide crisis?
What did you find least helpful in resolving the suicide crisis?
What else could have been helpful in assisting you in the resolution of the suicide crisis?

An *a priori* list of variables, shown in Table 33, was created based on background research on suicide theory, the results of the quantitative analysis, and variables for mental health service use. These variables were used as an initial list of codes to begin analysis with, forming part of the deductive phase of the mixed inductive/deductive design, as the purpose was to confirm the existence of previously identified risk or protective factors for suicide. It seemed reasonable that some of these variables should appear in the student responses, given prior knowledge of suicide phenomena, and therefore useful to test for their presence. The initial list of codes is shown in Table 33 below. The first round of coding utilized these codes as well as allowed for new codes to be generated for any responses that did not seem to be well captured by the existing code list. Simultaneous open coding allowed for the inductive phase of the analysis to apply to the same data, so that new concepts could emerge as described by respondents.

As in the quantitative analysis, the sub-group of 1,371 respondents with 12-month suicidal ideation was divided into four groups: those who used no services and had no suicide attempt, those who used no services and had at least one attempt, those who used services and had no attempt, and those who used services and had at least one attempt. Since part of the purpose of the qualitative analysis was to better understand the findings of the quantitative analysis, which had discovered differences amongst these groups, stratified random sampling was used based on the same four groups. This allowed for additional exploration of the association of the two main phenomena of interest – whether students used services, and whether they had an attempt.

For the first round of analysis, fifteen cases were pulled at random from each respondent group, and survey responses from the open-ended items were loaded into the software Atlas.ti,® which was used for the analysis. Open coding was employed, with multiple codes applied to each response as necessary and new codes created where *a priori* codes could not describe or capture a concept in any given response. The memo and comment functions in the software were used to document the creation of new codes, questions arising as to code definition and scope, and code revisions.

Table 33 – *A priori* list of variables for qualitative analysis of suicide crisis response item

Demographic variables:
male, white – fatal behaviors
female, young, unmarried – nonfatal behaviors
Preventative variables
religious beliefs, moral objections, social support
impact of loved ones
belonging to social group
Predictive variables
life event
mental health disorders
depression and hopelessness
perturbation and lethality
substance use
prior suicidal behavior
cognitive and attributional styles*
ideation and intention
Planning
thought severity and frequency
Service use – historical and current
immediate crisis vs. long-term counseling
Hospitalization
history of mental health services use
professionals seen
access to services
usefulness of services
mental health professional type seen
number of sessions

*how people process or understand emotions, thoughts, memories, and other cognitive tasks that affect their mental and emotional state

From the initial coding, 31 different codes (13 *a priori* and 18 new) were found to occur, as shown in Table 34 below. Codes that are in bold represent those that were new, arising from the data, rather than *a priori*, based on background research. As far as number of codes applied to responses, three of the sample groups had 31 to 33 codes each amongst their 15 samples. The group of students who had used services and had a suicide attempt had a lower total number of codes applied on the response item, at 22. This tended to reflect less variation in their descriptions of what they found most helpful in resolving a suicide crisis. However, similar to the other three groups, their top listed code was *protective - social support*, a code that was used whenever the support of friends or "others" was described. This code, which was most frequently mentioned overall at 19 uses for all four groups, was distinguished early on in the coding process from mentions of family or partners. In such cases the code *protective - loved ones* was used – which was the next most frequent code, at 13 mentions across all 60 responses. The third most frequently mentioned code was a new one that arose from the data, *coping behavior/skill*, which referred to instances where the respondent described engaging in some behavior or action that helped them resolve or ease their suicidal crisis or suicidal thoughts, or helped them with negative emotions and thoughts.

Table 35 shows some typical responses from all four groups of respondents that were coded with the three most frequently used codes. For each sample, the key portion of text that corresponds to the code in question is in italics. The adjacent text is included to provide context for the quote.

Coping behavior/skill as a concept varied by group; six of the students who reported using services and not making an attempt described engaging in coping behavior, compared to three from the non-service attempt group, one from the non-service non-attempt group, and none from the service use attempt group. This particular finding is complex in that it suggests that it might be a combination of factors – accessing services and exhibiting specific coping behaviors – that helps lower risk of a suicide attempt. Since this was one of the biggest differences found between the attempters and non-attempters amongst those who accessed services, further analysis was dedicated partly to exploring this dimension more, described in the next section.

Another notable difference occurred on the dimension of social support between the two groups of students who did not access services - attempters and non-attempters. The non-attempters mentioned the importance of this factor more often than the attempters, at seven vs. three mentions. While this is not an enormous difference given the sample size, this was another area of interest for further examination in the second round of analysis.

There was little mention of health service use overall, even by the sub-groups who were selected for inclusion by their service use, as reported on earlier sections of the survey. Selection in the two "services used" sub-groups meant that when asked if they had received any mental health services after first realizing they were experiencing suicidal thoughts, they replied in the affirmative to one of several choices given – they saw a mental health professional, received medication, or were hospitalized for their suicidal thoughts. Only nine coded instances of service use were cited as "most helpful" out of the 60 responses, though 30 of them had reported receiving services. There were five mentions of counselors, one of a psychiatrist, one of a "therapist" (coded as *service use-professional* since the response did not state if it was a

Table 34 – Coding results for initial thematic analysis of responses on the item (N = 60): "What did you find most helpful in resolving the suicide crisis?"

Code/Concept	No services no attempts	No services yes attempt	Services used no attempt	Services used yes attempt	TOTALS:
Breaking isolation	0	0	0	1	1
Change in routine	0	0	1	0	1
Change of setting	1	0	0	0	1
Coping behavior/skill	1	3	6	0	**10**
Distracting/enjoyable activities	1	1	3	2	7
Emotional catharsis	0	1	0	1	2
Kindness	0	0	0	1	1
Learning about self	3	2	0	0	5
Nothing	0	1	0	1	2
Possibility of other options	3	2	2	0	7
predictive – cognitive and attributional styles	4	2	0	0	6
predictive - depression	0	0	2	0	2
predictive - life event	0	1	0	0	1
predictive - perturbation	2	2	0	0	4
predictive – substance use	0	2	0	0	2
protective - loved ones	3	2	5	3	**13**
protective – moral objection	0	1	0	0	1
protective - religious belief	0	0	2	0	2
protective - social support	7	3	4	5	**19**
Self-medication as coping behavior	0	1	1	0	2
Sense of responsibility	1	1	2	0	4
service use - counselor	0	0	3	2	5
service use - medication	0	0	1	1	2
service use - professional	0	0	1	0	1
service use - psychiatrist	0	0	0	1	1
Social intervention	1	1	0	0	2
Time	1	0	0	2	3
Time for reflection	2	4	0	0	6
Uncertainty about future and afterlife	1	0	0	0	1
Unknown/unclear/unsure	0	1	0	1	2
Unwillingness to give up life	0	0	0	1	1
TOTALS:	31	31	33	22	117

Table 35 – Typical responses from the initial sample groups and corresponding codes

Code	Respondent type	Quote *[sic]*
protective – social support	No services, non-attempter	Talking to my mom *and friends* about my experiences. Discussing with my mom the core issues that were troubling me and in turn affecting all other areas of my life
	No services, non-attempter	My belief in myself *and my friends who i could call at times of crisis*
	No services, attempter	*Talking to my trusted friend*
	Services used, non-attempter	Praying*, talking about my problems, being nice to others and helping them talk out their problems*, talking to my boyfriends and best friend as well as my Mom
	Services used, attempter	*Talking with friends*, riding it out until it ends
protective – loved ones	No services, attempter	*My family.* Thinking about my decisions. Calming down Being rational
	Services used, non-attempter	*Telling my parents* and working through the problems by finding solutions
	Services used, non-attempter	Distractions, diversion*, family that knew what I was going through and wasn't going to let me slip into further depression.* Having a listening ear - not always a resolution to my problems, but at least a sounding board that would simply listen as I thought things out loud
	Services used, attempter	*My mom's support.*
coping behavior/skill	No services, attempter	Trying to work out the situation with my boyfriend and communicating more with each other, not worrying so much about school. And*, I started writing in my diary more and telling how I really feel about the loss of my brother*.
	No services, attempter	*Journaling.*
	Services used, non-attempter	*My own learned strategies*, my therapist is awesome. I have been seeing her for 7 years.
	Services used, non-attempter	*Finding steps and solutions to take to fix the problems that caused my depression.*

psychiatrist or counselor/psychologist), and one mention of medication use. The findings of the earlier quantitative analysis were that service use was correlated with a higher likelihood of suicide attempt because of the significant associations with thought severity and hospitalization. This suggests that for the most severely suicidal students, mental health services are limited in their ability to prevent a suicide attempt. As such, respondents to this survey were perhaps not likely to list health services as the *most* helpful element in dealing with their suicide crisis. Other phenomena that reduce the perturbation and distress caused by suicidal thoughts might be considered more helpful to the respondents, and therefore be reported more frequently in the open-ended responses.

There were a number of new codes assigned to the responses. *Distracting/enjoyable activities* was used seven times, and referred to instances where respondents described engaging in recreational or other activities as a way of distracting themselves from their suicidal thoughts. Another code was *possibility of other options*, which referred to descriptions of other activities, life plans, or goals that the respondent considered as alternatives to suicide. *Time for reflection* was used six times, and an example of that type of response (which was often coded with several other codes) was as follows (applicable section underlined):

"time will help much! when i thought of my family members,especially my mon,i knew i couldn't get suicide. I mean my boyf can live without me but my family can't cause i know how much mom love me."[P28 21091]

This was differentiated from the code for *time*, which was when a respondent simply referred to time passing without reference to the need to think or reflect on their thoughts, life, or other issues.

Predictive – cognitive and attributional styles applied to six responses, and in the first round of analysis this code applied to instances where the respondent spoke of how they processed thoughts and feelings, such as in the following response, when the respondent said the most helpful thing in resolving their crisis was:

"Reflection of reasonings for the thoughts."[P6 13877]

Learning about self was used for responses where the respondent described themselves trying to understand their thoughts or emotions and how they affected their level of distress, although in one case a respondent's entire response to the "most helpful" question was:

"learn more about myself." [P2 25177]

Sense of responsibility meant the respondent felt obligated to avoid suicide because of the role they played in life and in the lives of others, as in the following (applicable section underlined):

"religion, medication, counseling, support of family and friends, desire to achieve goals, be good example to my children and younger relatives" [P38 23623]

Some codes in the list, like *change in routine* and *breaking isolation* appeared once or twice each, and sometimes without much context or description, such as *kindness*, which was a single-

word response. These codes were kept in the analysis for fullness of reporting, and to suggest the likely variation that is to be expected from any one sample of cases from the main data set.

In the course of reviewing the initial sampled documents, it was observed that the responses to the adjacent question "*What did you find least helpful in resolving the suicide crisis?*" sometimes included mention of health services. Those responses often made frequent mention of the problems with inadequate social support. Before moving on to another sampling, it was decided to code the responses on the item *"What did you find least helpful in resolving the suicide crisis?*" with the initial 60 sampled cases, using the coding list above. Open coding was again employed, allowing room for additional themes to arise from the data. Table 36 shows the coding results for this survey item. As before, the list of codes includes those identified *a priori* and those that arose during open coding, the latter shown by bolded text in the table. Amongst the 60 responses on this item, 26 codes were used 71 times, including 15 new codes. Some of the new codes include *lack of support, failure to use coping behavior/skill,* and most notably, *feedback from others*. This latter code was by far the most frequent code, at 16 mentions, and its use differed across respondent type. It was cited by four of the no services non-attempters, eight of the no services attempters, one of the services used non-attempters, and three of the services used attempters. This concept captured instances of respondents describing feedback or comments that they received from others that were unhelpful, negative, or lacking in empathy, or the respondents' perception that others did not truly listen or care about what they had to say about their emotional well-being. In some cases, they described others as offering platitudes or unhelpful cheerfulness in the face of the respondents' emotional distress. Some sample responses for this concept are shown in Table 37, along with other responses for the most frequent codes.

The next most frequently used code was an *a priori* variable, *cognitive and attributional styles*, with seven total mentions. Respondents would describe themselves as sometimes being unable to stop from ruminating on negative thoughts, memories, or emotions. Surprisingly, among the services used groups, it was the non-attempters who described this phenomenon most, with four mentions, versus none for the attempter group. Logic would dictate that the increased emotional distress that might accompany such cognitive tendencies would tend to increase suicide attempt risk, but this was not the case here. Table 37 shows some examples of responses for the most frequent codes for this survey item and this sample group. The specific relevant text is shown in italics in each example, with adjacent text to provide context.

The third most cited theme, with seven mentions, was *lack of social support*, a finding that at first glance would seem to fit in with the finding about the *feedback from others* theme. However, it was the group that was least likely to mention the *feedback from others* theme – the services used non-attempters – who were most likely to report a lack of social support as being a problem in and of itself. The respondents from that category mentioned it five times, compared to only once by one other group and not at all by two of the other groups. These initial findings seem to suggest that while this group may find themselves lacking social support (and simultaneously experiencing difficulty controlling and monitoring their cognitive and emotional states), they at least are not also suffering the ill effects of receiving negative social feedback. There seems to be a double-edged sword of the impact of social interaction on suicide risk; in that the presence of others can either signify support or be a source of unhelpful advice. These

initial results suggested some further direction for analysis into the phenomenon, and just how complex interpersonal communication may be for those who are experiencing suicidal ideation.

Table 36 – Coding results for first thematic analysis, on responses for the item: "What did you find least helpful in resolving the suicide crisis?"

	No services used; no attempt	No services used; attempt	Services used; no attempt	Services used; attempt	TOTALS:
Class attendance/normal work activities	2	0	1	0	3
Distracting/enjoyable activities	0	0	0	1	1
Effect of physical illness	1	0	0	0	1
Failure to use coping behavior/skill	1	1	0	0	2
Feedback from others	**4**	**8**	**1**	**3**	**16**
Geographic location/social setting	1	0	0	0	1
Inactivity	1	0	0	2	3
Isolation	0	0	2	2	4
Lack of support	**0**	**1**	**5**	**0**	**6**
Nothing	0	0	1	0	1
predictive – cognitive and attributional styles	**1**	**2**	**4**	**0**	**7**
predictive – hopelessness	0	2	0	0	2
predictive – thought severity and frequency	0	1	1	0	2
protective - loved ones	1	1	0	2	4
protective – moral objection	2	0	0	0	2
protective - social support	1	0	0	1	2
Self	0	1	0	0	1
Sense of responsibility	0	1	0	0	1
service use – counselor	0	0	1	1	2
service use – education about suicide	0	0	1	0	1
Service use - hospitalization	0	0	0	1	1
Service use – medication	0	0	1	1	2
Service use – psychiatrist	0	1	1	0	2
Stress	0	0	0	1	1
Triggers of sad or depressing affect	0	0	0	1	1
Unknown/unclear/unsure	1	0	0	1	2
TOTALS:					

For the remaining codes, most were mentioned only once or twice, including those for health services use. There were also descriptions of other types of interactions with loved ones and friends that were coded as *loved ones* and *social support*, except that here they had a negative impact on the respondent's situation, because they were in response to the survey item about what was least helpful. Isolation and inactivity were the main problems for some respondents, as well as attending class or dealing with stress. New codes were created to capture these themes.

Table 37 – Typical responses from the initial sample groups and corresponding codes; for the survey item: "What did you find least helpful in resolving the suicide crisis?"

Code	Respondent Type	Quote
Feedback from others	No services, non-attempter	*Hearing negative things from my parents* .
	Same	*Someone telling me I was beign dramatic, and I am PSYCHO, and not listening to me.* [sic]
	No services, attempter	*No one seems to care. People act like I'm stupid and selfish for my ill feelings.*
	Same	*The advise others give.* its hard to find those who actually listen.[sic]
	Services used, non-attempter	People that were *overly cheerful, didn't show signs of empathy and understanding*
	Services used, attempter	Trying to express my feelings and actions to others*...they just won't get it until they live it*
Predictive – cognitive and attributional styles	No services, attempter	*Feeling sorry for myself. Letting myself perpetuate these thoughts.* Putting myself in sad situations that would trigger those thoughts.
	Services used, non-attempter	*My guilt*, others (in my family, at work and friends) seeming not to care about me, being mean to me for no reason because I am nice.
	Services used, non-attempter	Being alone and lonely. At home *I had lots of time to reflect on how bad things are, and get myself worked up.*
Lack of support	No services, attempter	Talking to my present boyfriend, being told i need professsional help*, not having anyone*, being the backbone of my family [sic]
	Services used, non-attempter	*friends. They just didn't seem to give a damn about me.*
	Services used, non-attempter	*Lack of friends who I feel I can call, and feeling lonely.*

Second Round of Analysis – Refining the Themes on the "Most Helpful" Item

In order to confirm and extend the results of the first stage of analysis, an additional 15 cases were sampled from each of the four sub-groups, for 120 total cases. These 60 cases were coded using the list of codes developed from the initial coding session on both items, "*What did you find most helpful in resolving the suicide crisis?"* and "*What did you find least helpful in resolving the suicide* crisis?" The intent of this stage of coding was to refine the codes that arose during analysis of the first sample, and develop emerging themes. Table 38 below shows the updated code list on the "most helpful" survey item for all 120 cases. At this stage in the coding, as in the first stage, all codes are shown, even those for which only one response was present, such as the codes "*nature"* and *"reasoning"* which were created for single-word responses of the same. As previously stated, such inclusive coding was deemed important to maximize breadth and potential conceptual variation arising from the data. One goal of analysis was to consolidate the codes into a list of concepts that could be used to build variables and identify their domain and scope, and determine the extent to which the most common themes continued to be frequently mentioned, versus more infrequently mentioned themes, which might be considered to be akin to qualitative "outliers."

Code labels were changed at this stage to indicate whether the code was being applied to a response to the "most helpful" or "least helpful" survey item. This made later analysis easier given the structure of the data and the analytic capabilities of the software in use. Code labels are referred to by content name and then a hyphenated descriptor with "helpful" or "unhelpful," as seen in the results below. Many codes were found to arise in the data for only one of the questions, but a few, such as "*protective – moral objections*," arose in both, since some respondents described moral objections as helpful while others described them as unhelpful. This rendered the title of some codes, which included the word "protective" because of *a priori* description of that concept from suicide literature, counter-intuitive to what the respondents were actually reporting about the effects of that particular concept on resolving their suicidal crisis. For analytical clarity, code renaming was necessary, with either the word "helpful" or "unhelpful" added to the end of each code.

The 60 cases from the second sample were added to the first 60 cases sampled to produce a revised code list. For all 120 cases combined, on the "most helpful" item there were 35 codes applied in total, with 13 new codes arising after the addition of the second sample, six codes removed due to re-coding or combination of similar codes, and three codes converted into descriptive rather than analytic codes, because they were found to provide background and context about the respondent's experience (e.g., a history of drug use) but were not indicative of the most helpful thing in resolving the suicidal crisis. Descriptive codes are discussed at the end of this chapter. Most of the new codes from the second sample involved one case each, except for three codes which involved two cases each; therefore, the new codes did not appreciably add to the identification and elucidation of the most common themes under the "most helpful" item. All codes that were used were recorded and reported in full in Table 38 below. For responses in which the respondent gave only a single word or short answer, the corresponding code is shown in quotes, such as the code *"nature" – helpful.* In that instance the respondent only answered "nature" as their response to the survey item asking about the most helpful thing in resolving their suicide crisis. Interestingly, the non-service attempt group had the fewest different codes

Table 38 – Coding results for second thematic analysis, of 120 responses on the item: "What did you find most helpful in resolving the suicide crisis?"

Code/Concept	No services used; no attempt	No services used; attempt	Services used; no attempt	Services used; attempt	TOTALS
Change of setting – helpful	1	1	1	1	4
Class attendance – i.e., normal activities – helpful	2	0	1	0	3
Coping behavior/skill – helpful	**7**	**5**	**10**	**6**	**28**
Cutting off family ties - helpful	0	0	0	1	1
Distracting/enjoyable activities - helpful	4	3	3	2	12
Emotional catharsis - helpful	0	1	0	2	3
Ending counselor use - helpful	0	0	0	1	1
Ending medication use - helpful	0	0	0	1	1
Ending psychiatrist use - helpful	0	0	0	1	1
Frightening experience with previous attempts – helpful	0	0	0	1	1
Ignoring/forgetting reasons for suicide - helpful	0	1	0	0	1
Kindness – helpful	0	0	0	1	1
"Nature" – helpful	0	0	0	1	1
Nothing - helpful	1	2	0	1	4
Possibility of other options - helpful	3	1	3	0	7
predictive - cognitive and attributional styles - helpful	6	2	0	2	10
protective - loved ones - helpful	**5**	**3**	**9**	**6**	**23**
protective - moral objection - helpful	1	2	2	1	6
protective - religious belief – helpful	0	0	3	0	3
protective - social support - helpful	**13**	**8**	**12**	**9**	**42**
"Reasoning" – helpful	0	1	0	0	1
Reducing substance use - helpful	0	1	0	1	2
Reduction in physical abuse - helpful	0	2	0	0	2
Self-harm as a coping behavior - helpful	1	1	0	0	2
Sense of responsibility - helpful	1	1	4	0	5
service use - counselor - helpful	0	0	6	5	11
service use - hospitalization - helpful	0	0	0	1	1
service use - medication – helpful	0	0	3	4	7
service use – professional - helpful	0	0	1	0	1
service use - psychiatrist – helpful	0	0	1	1	2
Substance use as self-medication - helpful	0	2	1	0	3
Time – helpful	2	2	2	3	9
Uncertainty about future and afterlife - helpful	1	0	0	0	1
Unknown/unclear/unsure - helpful	0	1	0	1	2
TOTALS:	48	39	61	53	201

applied to its responses, whereas in the first wave of cases, it was the service-use attempters who had the fewest different codes. Both these observations may be a reflection of attempters generally having fewer things they believe are helpful during a suicidal crisis.

As before in the first round of coding, the most frequently used code was *protective – social support – helpful*, with 42 total uses on the "most helpful" survey item. Also as seen before, within the two non-service use groups, the non-attempters were still more likely to cite the importance of friends, at 13 versus eight mentions. The service-use groups shifted on this variable in that the non-attempters cited social support 12 times, compared to the attempters at nine times. The trends on the variable of loved ones remained the same as in the first stage of analysis, with non-attempters of both service-use types citing the importance of loved ones more often than attempters.

Whereas in the first round the loved ones code had been second most cited, in the second round *coping behavior/skill – helpful* became the second most frequent code, with 28 total mentions, followed by *protective – loved ones – helpful* at 23 mentions. These two codes and the code for social support were found to overlap somewhat; out of 29 responses that were coded for coping behavior (of any sort), 14 were also coded with social support and eight with the loved ones code. To elucidate this conceptual relationship further, a refined definition of the coping behavior concept was developed. It was decided that a coping behavior or skill was any active behavior that a respondent described undertaking to help resolve their suicide crisis, to deal with problems leading to the crisis, or address other problems related to their emotional state and/or life circumstances. Table 35 earlier gave examples of coping behaviors such as journaling and problem-solving, but another type of behavior that many respondents cited as very important in resolving their crises was the act of talking, with loved ones and friends especially. Not all respondents who mentioned the importance of loved ones and friends said it was important to talk things over with them, but for those who did, talking over their problems was very important to them, as shown in the following responses (applicable section underlined):

"Talking to my mom and friends about my experiences. Discussing with my mom the core issues that were troubling me and in turn affecting all other areas of my life." [P3 6852]

"Praying, talking about my problems, being nice to others and helping them talk out thier problems, talking to my boyfriends and best friend as well as my Mom."[P36 31626]

"I thought I could figure out my emotions myself, but it really helped me in the end to talk more openly with my mother, boyfriend (who is also a close friend), and going to see a counsler." [P118 7984]

"Friends and the way they helped me to figure things out and help myself without telling me what to do." [P84 23639]

The last quote in particular, in which the respondent says that friends help "without telling me what to do," is suggestive about the importance of nonjudgmental or directive feedback. This theme complements the theme *unhelpful feedback from others* which arose in the responses to the second item about what was least helpful for respondents, as discussed further below.

For most helpful things, the theme of "coping through talking" was important enough to warrant closer analysis by sub-group. Table 39 shows how many respondents in each type of group reported talking with either loved ones or other members of their social support network as one of the most helpful things they did to resolve their crisis. For the non-service use attempters, they were less likely to have utilized friends and loved ones for talking through their problems, with two total mentions, versus eight for the non-service use non-attempters, seven for the service use attempters, and seven for the service use non-attempters. This pattern suggests that this behavior was protective against suicide attempt, but only for the non-service users. Service users did not display a difference in how often they cited this behavior based on whether they were in the suicide attempt group or not. It may be that service users, as "high reactors," required additional protective factors against risk of suicide attempt, or that something about service use interacts with the potential benefits of engaging in this behavior.

Table 39 – Co-occurrence of concept of "coping behavior" with codes "loved ones"* and "social support"**

Coping behavior (through talking) AND	No services; no attempt	No services; attempt	Services used; no attempt	Services used; attempt	Total
……..protective - loved ones	2	1	2	2	7
……..protective - social support	6	1	5	5	17
TOTAL	8	2	7	7	24

* *"Protective - loved ones - helpful"* was used as a code any time the respondent mentioned a family member or partner (spouse, girlfriend, etc.) as being among the most helpful elements in resolving their suicide crisis.

** *"Protective - social support - helpful"* was used any time a respondent mentioned the importance of friends or other non-family, non-partner acquaintances as being helpful in resolving their suicide crisis.

The second round of coding also allowed for further distinction to be made between coping behavior and the code for *predictive - cognitive and attributional styles – helpful*, which as previously noted, referred to how respondents processed or understood emotions, thoughts, memories, and other cognitive tasks that affected their mental and emotional state. There were 9 total uses of the cognitive and attributional styles code, 6 of them in the non-service use, non-attempter group. An example of a respondent describing how their cognitive and attributional style was helpful in resolving their suicide crisis is the following:

"A better understanding of things, an emotional/mental relief by getting suppressed memory off my chest." [P17 12248]

Most examples of the use of this code were fairly brief responses, in which respondents said they needed to calm down, be rational, or control the nature of their thoughts. There was one response that was coded both for this concept and for *coping behavior/skill – helpful*, because both types of behavior (along with several other concepts) were described (applicable section underlined):

"Talking!!!!!!!!!! I talked to my friends and/or family everyday and explained what I

was feeling. Even if they could not relate, they were understanding. Negative emotions are like poison and must be expelled from the body, whether through talking, writing, playing music, whatever works. You find out who your real friends are in times like these. You see a side of your friends and family in times of crises in how they handle things. It actually brought us closer and I appreciate them more than ever."[P120 14341]

In the first round of analysis, the code *learning about self* had been created; in the second stage, this code was removed as those quotations were found to better fit into other themes, such as *coping behavior/skill – helpful*. An example of a quotation from the first 60 sampled cases that was re-coded thus is the following (applicable section underlined):

"DUI classes, changed my drinking habits, being more conscious to my needs" [P27 27056]

This particular response was also originally coded with *predictive – substance abuse*, but this was then decided to be somewhat misleading, because while it is true substance abuse was an issue, the respondent was not suggesting that substance use was the most helpful thing in resolving their crisis. For analytical purposes, a new code, *reducing substance use – helpful*, was created and applied to this response. There were three cases out of the 120 in which this concept arose, all in the non-service use attempters group.

As before, some of the new codes in the list, like *frightening experience with previous attempts – helpful,* and "*nature" - helpful*, appeared once each. Some respondents described seemingly harmful behaviors that they found helpful, coded as *substance use as self-medication - helpful*, and *self-harm – helpful*. For the latter category there were two respondents, one who engaged in starvation and another who burned him/herself:

"Not-so-ironically, self-mutilation helped me wonders. Burning myself definitely took the attention away from suicide and disarmed the situation when I felt most helpless."[P61, 13693]

Two codes, *sense of responsibility – helpful*, and *protective – moral objection – helpful*, differed in character and were thus distinguished as separate concepts. In the former, respondents talked about the importance of being good examples for or taking care of children, or needing to hold themselves accountable and responsible for dealing with their problems. An example of this code was:

"Just the thought that I couldn't quit on my life." [P51, 23101]

For the moral objection code, respondents discussed the negative impact their suicide would have on loved ones and friends, and how they felt they could not inflict such pain:

"Time will help much! when i thought of my family members, especially my mon, i knew i couldn't get suicide. I mean my boyf can live without me but my family can't cause i know how much mom love me." [sic] [P28, 29091]

The two time codes from the first analysis were collapsed into *time – helpful*, and could mean having time for reflection, or simply waiting for the crisis to pass. There were also responses

about discontinuing some type of mental health service as being the most helpful thing they did, including stopping seeing a counselor, psychiatrist, or medication. Ending medication use was different from ending substance use, the latter of which referred to alcohol or drug use. *Reduction in abuse – helpful* referred to respondents who ended or escaped an abusive relationship, and one respondent said they benefitted by cutting off relations with their parents, hence the code *cutting off family ties – helpful*.

Some codes from the first stage of analysis were revised. *Breaking isolation* was re-coded to be included under *coping behavior/skill – helpful*, and the one case that was previously coded *change in routine* was re-coded for coping behavior as well as *distracting/enjoyable activities – helpful(applicable words for this code are underlined)*:

"Reading.Showing much much.. more interest in academics.Kepping myself busy in things like music,sleeping,cooking and Not letting negative thoughts to come.Smoking. Getting up Early in the day helped too." [P45 22727]

Distracting and enjoyable activities were often described in the same response as social support, particularly in the following responses:

"Telling someone--I told my best friend here, and she has been very helpful to me in dealing with the stresses of Grad School. She takes me out and de-stresses me regularly, and we've started going to school events like basketball games to relax." [P65 14297]

"Food,tv, and being around friends" [P4 8932]

The second response above is an example of one that was coded with the social support theme but not with coping behavior vis-à-vis talking, since the respondent did not describe any behavior beyond being "around" friends.

Emotional catharsis – helpful was applied to several responses in which the respondent described crying or some other emotional release that was beneficial to them. *Protective – religious belief – helpful* was used whenever a respondent mentioned prayer, religion, God, or any other religious theme as helpful to them:

"I remembered who I am and whose I am. My religious beliefs really helped me. I remembered that God has a plan and a purpose for my life. I remembered that I am loved and was purchased at a high price (the cruxifiction of Christ). I remembered that I am never truly alone." [P100 9250]

Finally, as in the first round, health service use was mentioned infrequently, though a few more service types were added with the additional cases. Of the combined 120 cases, there were 11 respondents who found using a counselor helpful, one who cited hospitalization, seven who used medication, and two who saw psychiatrists. All 60 of the service-use sample cases received some kind of services, according to their responses to other parts of the survey, but their responses on this particular question indicated what they found most helpful in resolving their suicide crisis, which was not necessarily the services they accessed. All mentions of service use appeared within the survey-identified groups for such, lending additional validity to the data. Interestingly,

there were no appreciable differences between non-attempters and attempters in how many found particular service types to be helpful. For example, with counselor use, six service-use non-attempters said seeing a counselor was one of the most helpful things for resolving their crisis, compared to five service-use attempters.

Second Round of Analysis – Refining the Themes on the "Least Helpful" Item

In the second round of coding for the least helpful response, there were 36 codes applied, with 10 new codes, none removed, and five codes renamed for clarity's sake. An example of the latter was renaming the code *protective – social support,* when used in the least helpful response, to *friends – unhelpful*. *Feedback from others* was changed to *unhelpful feedback from others* and only used for responses under the "least helpful" survey item.

Table 40 shows the results of the second coding of all 120 cases on the "least helpful" item. As before, *unhelpful feedback from others* is by far the most frequently cited theme, at 27 mentions, and more often cited by the non-service users. Non-service use non-attempters mentioned this theme eight times, non-service use attempters 11 times, service-use non-attempters three times, and service-use attempters five times. This pattern repeats that seen in the first round of analysis, again suggesting that for students who do not access services, unhelpful feedback has a stronger negative impact than for those who do use services. Some sample responses that capture this theme are:

"Hearing negative things from my parents" [P5 7240]

"Noone seems to care. People act like I'm stupid and selfish for my ill feelings." [P22 6230]

"Having people make me feel guilty for the attempt." [P106 12725]

"friends that say the everyday thing oh you'll be ok, because it's so half hearted that it really makes things worse then better" [P17 12248]

The second most frequently mentioned theme was *isolation – unhelpful*, which referred to specific instances of respondents avoiding others, being alone or feeling lonely, and not talking to others. This was more frequently cited by the service-use groups, at six mentions each, than the non-service use groups, at two mentions each. This perhaps makes sense given that the opposite pattern prevailed for the unhelpful feedback code – if respondents isolate themselves from others, then they are less able to receive feedback of any kind.

Table 40 – Coding results for second thematic analysis, of 120 responses on the item: *"What did you find least helpful in resolving the suicide crisis?"*

Code/Concept	No services; no attempt	No services; attempt	Services used; no attempt	Services used; attempt	TOTALS
Class attendance - i.e., normal activities-unhelpful	2	0	1	0	3
Distracting/enjoyable activities – unhelpful	0	0	1	0	1
Effect of physical illness – unhelpful	1	0	0	0	1
Failure to use coping behavior/skill – unhelpful	1	2	0	0	3
Friends – unhelpful	0	0	0	1	1
Geographic location/social setting – unhelpful	1	0	0	0	1
Inactivity – unhelpful	1	0	1	1	3
Isolation – unhelpful	**2**	**2**	**6**	**6**	**16**
Lack of support – unhelpful	**1**	**3**	**5**	**2**	**11**
Loved ones – unhelpful	3	1	1	2	7
Moral objections - unhelpful	2	0	0	1	3
"Myself" – unhelpful	0	2	0	0	2
Nothing - unhelpful	0	1	1	0	2
Ongoing problems - unhelpful	0	1	0	0	1
predictive - cognitive and attributional styles - unhelpful	4	2	4	0	10
predictive - hopelessness - unhelpful	0	1	4	0	5
predictive - substance use - unhelpful	0	0	1	0	1
predictive - thought severity and frequency - unhelpful	3	0	2	0	5
School and financial stressors - unhelpful	1	1	1	0	3
Self-pity - unhelpful	0	1	0	0	1
Self-reliance - unhelpful	0	0	0	1	1
Sense of responsibility - unhelpful	0	1	0	0	1
service use - trying to access counselor - unhelpful	0	0	0	1	1
service use - counselor - unhelpful	0	0	2	2	4
Service use – pamphlet about suicide - unhelpful	0	0	1	0	1
service use - hospitalization - unhelpful	0	0	0	2	2
service use - medication - unhelpful	0	0	2	3	5
Service use - primary care - unhelpful	0	0	0	2	2
service use - professionals seen - unhelpful	0	0	0	1	1
service use - psychiatrist - unhelpful	0	1	1	1	3
Social problems - unhelpful	0	0	1	0	1
Stress - unhelpful	1	0	1	1	3
"Talking" - unhelpful	0	1	0	0	1
Triggers of sad or depressing affect - unhelpful	0	1	0	1	2
Unhelpful feedback from others	**8**	**11**	**3**	**5**	**27**

Unknown/unclear/unsure – unhelpful	1	2	0	2	5
TOTALS:	32	35	41	35	143

Some quotes that captured the theme of isolation were:

"Being alone and lonely. At home I had lots of time to reflect on how bad things are, and get myself worked up" [P32 25871]

"Withdrawel from others. I stayed away from friends and family. I isolated myself. This made the loneliness and dispair much worse." [P100 9250]

The third most frequent theme was *lack of support – unhelpful*, with 11 total mentions, seven of them in the service-use groups. As was the case in the first round of coding, the service-use non-attempters had the most mentions of this theme, with five, followed by three of the non-service use attempters, two of the service-use attempters, and one non-service use non-attempter. This theme was different from the isolation theme in that respondents specifically discussed the lack of concern or caring on the part of others. Some examples of responses that were coded with *lack of support – unhelpful* were:

"friends. They just didn't seem to give a damn about me." [P34 16693]

"Trying to seek out people who care at this school." [P99 9764]

Whereas moral objections were sometimes helpful for respondents in resolving a suicide crisis, as seen under the "most helpful" item, they could be unhelpful for others. The code *moral objections – unhelpful* was created to reflect this, and was used three times on the responses to the "least helpful" item. An example of such a response was:

"making me feel more guilty by saying how much harm I will do people if I die" [P109 13835]

There were other codes that were "reverse" of themes that had been helpful for other respondents, such as *distracting/enjoyable activities – unhelpful*, *sense of responsibility – unhelpful*, and *normal activities – i.e., class attendances – unhelpful*. There were also seven responses that described how cognitive and attributional styles were unhelpful to resolving the suicide crises, as shown in these examples:

"Constantly thinking and reflecting on the situation." [P69 5298]

"At home I had lots of time to reflect on how bad things are, and get myself worked up" [P32 25871]

As with the new codes added to the most helpful responses in the second round of coding, the majority of the new codes that arose in the responses to the least helpful item were used only once, such as *social problems – unhelpful*, *ongoing problems – unhelpful*, and *predictive - thought severity and frequency - unhelpful*. Only one new code, *school and financial stressors - unhelpful*, had more than one use, with three mentions. The code *"myself,"* which like *"nature"*

referred to a single-word response of the same, was renamed from "*self,*" and grew by one response, making for two total mentions in both rounds.

With the additional 60 cases, several more service types were mentioned under the least helpful category: *service use - trying to access counselor - unhelpful*, *service use - primary care – unhelpful*, and *service use - professionals seen – unhelpful,* with one mention each. In the case of the latter code, it was undetermined what type of professional the respondent was discussing, but their fear of having a negative experience with mental health services was clear from their response:

"Talking to a professional--I'm afraid that even having a thought and telling someone in some position of authority will result in me being hospitalized-which I have had very bad experiences with." [P112 26473]

Five respondents reported that using medication was one of the least helpful things for their suicide crisis, as seen in the following responses:

"being on medication that triggered suicidal episodes" [P48 29594]

"Probably my medication - I don't know that it's ever made a serious impact to my thoughts, just sort of a balancer" [P96 16394]

Four responses mentioned seeing a counselor as a "least helpful" activity, as shown in the following:

"Counseling. Frustrated me as they asked me questions that I couldn't answer and I didn't see the association to what I was going through. And just such a strong professional stance that I couldn't ever really feel comfortable with them." [P99 9764]

"Doctors and psychologists with whom I had spoken in the past. It has always been so easy to convince them I was better, but they never helped to alleve the feelings." [P105 9087]

"my friends and the counseling services at [college]"[P52 4244]

Finally, three responses cited psychiatrists under the "least helpful" item, as seen here:

"I didnt want to go talk to a psychiatrist, I would rather talk to someone that I know, like my best friend." [P18 22323]

Descriptive codes

Some codes, such as substance abuse or a significant life event, were converted or designated as descriptive rather than analytic codes, because those concepts were mentioned as causative or part of the suicide crisis but not something that was helpful or unhelpful in resolving the crisis. The codes that fell into this category are shown in Table 41. Out of the 120 cases, there were seven codes of this type, with no more than four total mentions of any one code. No particular

pattern in these codes by sub-group emerged, except that depression, which was an *a priori* variable, was mentioned by four respondents from the service-use non-attempters, and not at all by the other three groups. A sample quotation in which the code *predictive - depression – descriptive* was applied is as follows (applicable section underlined):

> *"Distractions, diversion, family that knew what I was going through and wasn't going to let me slip into further depression."[P39, 12763]*

A response in which the student described his/her level of mental distress, which Shneidman called perturbation (Shneidman, 1993), was as follows (applicable section underlined):

> *"It just seems to end on its own. But usually coincides with an extended period at home. Also really considering how much pain I would cause people I know and serve, that they wouldn't understand and I would possible cause them the pain that I desperately want to end." [P99 9764]*

Table 41 – Descriptive codes that arose in responses for both survey items for entire sample (N = 120)

Codes/Concepts	No services; no attempt	No services; attempt	Services used; no attempt	Services used; attempt	TOTALS:
Failed attempt and explanation given – descriptive	0	0	0	1	1
Family problems – descriptive	0	0	0	1	1
Heightened risk for LGBT – descriptive	1	0	0	0	1
Predictive - life event - descriptive	0	2	1	0	3
Predictive - substance use – descriptive	0	2	0	1	3
Predictive - depression – descriptive	1	0	4	0	4
Predictive - perturbation – descriptive	0	0	1	0	1
TOTALS:	2	4	6	3	14

Summary

Respondents cited social support as the most helpful thing for resolving their suicidal crises, and this differed by group: non-attempters were more likely to report the importance of social support than attempters, regardless of health service use. The second most common theme was coping behavior and skills, which could take several forms. One of those was "coping through talking," and this theme often overlapped with either social support or loved ones, which was the third most commonly cited theme. The pattern across groups for loved ones was similar to that found for social support in that non-attempters were more likely to mention it than attempters, but one difference was that service users in general cited this theme more often than non-service users. This may have been indicative of greater family involvement when a student accessed health services, possibly due to encouragement on the part of medical providers. Best practices

for suicide risk assessment and treatment include identifying supportive people in the patient's life. Both social support and loved ones were themes supported by prior research, but coping was a new theme that arose from these data.

Under the least helpful item, the most commonly cited theme was unhelpful feedback from others, followed by isolation and then lack of support from others. Unhelpful feedback was mentioned more frequently by non-service users than service users, and it was also associated with greater likelihood of suicide attempt. Isolation was raised more often by service users. Accessing services in general was associated with fewer social interactions, except for the support of loved ones as a helpful thing, as described above. Social interaction was clearly of great importance to respondents, but with a caveat – the interaction had to be positive and supportive. Negative feedback in the form of minimizing, judgment, or criticism, or being made to "feel crazy," could cause real harm to a respondent in suicidal crisis.

Chapter 7 – Discussion; Qualitative Analysis

The original purpose of the qualitative investigation was to generate some understanding of what it was that college students found most helpful when they were facing suicidal crises. The earlier quantitative analysis had indicated that those students who accessed mental health services after realizing they were experiencing suicidal ideation were also more likely to report having made a suicide attempt, particularly if they were hospitalized for their suicidal ideation. This suggested that for students whose suicidal ideation is severe enough, they do sometimes self-identify and seek help from mental health professionals. They are perhaps correctly recognizing their heightened risk of suicidal behavior. If accurate, this conclusion is an encouraging finding because it means that mental health services are reaching some of the students with the greatest need. As mentioned in Chapter 4, some researchers believe that treatment lowers the rate of suicide for suicidal clients to one-sixth of what it might otherwise be (Schwartz, 2006a).

Still, it must be noted students who were hospitalized in the sub-group only accounted for 25 of the 173 suicide attempts. Of the 1,321 respondents, 581 reported seeing a health professional – fewer than half. Many students in the data set did not access any services. The 2000 NCHA survey cited in Chapter 1 found that fewer than 20% of students who reported ideation also used services (Kisch et al., 2005). Similarly, Garlow et al. (2008) found that of students who were both depressed and experiencing suicidal ideation, 85% had not accessed services (Garlow et al., 2008). If students suffer suicidal ideation and do not access services, they may turn to other means of coping and support.

As follow-up to the limited findings of the quantitative analysis, a qualitative analysis was performed of students' open-ended descriptions of what they said was most and least helpful in resolving their suicidal crises. These could include health services or other non-service factors. It was thought that student responses might offer some feedback on what specifically was helpful about services if they received them, or what was unhelpful. One important caveat to these responses was that it was also possible that some students who benefited mentally and physically from services received, such as hospitalization, did not express these benefits in the open-ended response. This was a weakness of using self-report for these analyses.

For students who did not access services, it was hoped that some of their responses might shed light into any barriers to access. Also, health services research that uses only known variables may not capture all the factors that affect a person's experience in the healthcare setting, nor the many phenomena, be they social, individual, or physical that influence health outcomes. Sometimes the right research questions have not been asked because the relevant variables have not yet been identified, be they directly related to service use or not. The findings of the qualitative analysis of what factors were important to students' experiences, such as support from loved ones, might also serve as intervention points for campus mental health professionals.

Key Findings

By far the most common theme that students cited as being helpful for resolving their suicidal crises was social support, in the form of friends and other acquaintances, accounting for one-

third (42 out of 120) of the entire sample. Previous research had indicated the beneficial effect of social support in the context of protective religious and spiritual factors (Nock et al., 2008). In this analysis, the importance of social support differed across the variable of 12-month attempt but not service use; the non-attempter groups were about 50% more likely to report having social support as the attempter groups. Another important theme was the support of loved ones, defined in this study as family members or partners (e.g. boyfriends, wives), which accounted for one-fifth of the sample (23 out of 120). Again, the variation in numbers on this theme was found by attempt status but not service use: non-attempters were again 50% as likely to report the helpfulness of loved ones as were the attempters. It would seem, unsurprisingly perhaps, that both kinds of support were strong protective factors for students – a finding reported in previous research (Simon, 2006). The fact that service users were more likely to cite social support as an important factor highlights the value of involving supportive family and friends whenever possible in a suicidal student's treatment plan, which is also a best practice (Reinecke & Franklin-Scott, 2004).

The case for the importance of social support seems obvious at face value – many people would say that it is important to support a loved one or friend when they are faced with a suicidal crisis. These data show a more complex picture when it comes to the impact of social interactions, somewhat in line with prior findings about the importance of *perceived* social and family support being a protective factor (Nock et al., 2008). When asked what was least helpful in resolving their suicidal crises, 27 of the 120 respondents discussed the theme of unhelpful feedback from others. This took many forms: being shamed for suicidal feelings, having their distress minimized, being made to feel guilty after a suicide attempt, and sensing a lack of caring on the part of others. The effect of unhelpful feedback differed by sub-group; non-service users reported its negative impact more often than service users, and attempters in both groups were more likely to report receiving unhelpful feedback than non-attempters. It is possible that when students do not access mental health services, they are more likely to try to get support from others, but this may not always be a good thing, despite the findings about social support in general. Not everyone knows how to show support to someone in suicidal crises, and may inadvertently say things that are invalidating or insensitive. These results suggest that if students share their suicidal thoughts and feelings with the wrong people, some real harm might result.

Sometimes respondents specifically described how important it was to talk through their problems with their loved ones or friends, which was clearly a useful coping behavior. This accounted for less than half of the occasions that loved ones (7 out of 23) or friends (17 out of 42) were mentioned, otherwise, simply their presence was listed as being helpful with no further description of their interactions. "Coping through talking" was one of several behaviors that were captured by the second most common theme, coping behaviors and skills, which appeared in 28 of the 120 responses. This theme was not an *a priori* construct like social support and loved ones; it rose inductively from the data. It differed across sub-groups; amongst both the service-use and non-service use groups, the non-attempters were more likely to report using some type of coping behavior than the attempters. The actual effectiveness of these behaviors could only be assessed by the description the respondents gave in their responses, as no other items on the survey addressed this domain of behaviors. In qualitative research, particularly when it is inductive and theory-generating in nature, the investigator may accept at face value the knowledge and "truthfulness" of the wisdom imparted by the social group that is under study. If

students say that certain skills such as talking with members of their social group, journaling, problem-solving, addressing their needs, or making changes to their life are things that helped resolve their suicidal crises, or helped with the negative emotional states that contributed to the crises, then these should be considered as potential points of intervention and assistance for future mental health services delivery.

Prior research on adolescents that examined the effect of religious coping behavior on suicidal behaviors found that while self-directed coping was associated with negative mental health and suicidal behaviors, collaborative coping had a protective effect (Molock et al., 2006). The current study extends this research by suggesting other types of coping behaviors that are helpful to students, especially outside of religious settings. The prior research on self-directed vs. collaborative coping is also consistent with the findings here that isolation and negative social interactions were detrimental to students whereas positive interactions such as "coping through talking" were beneficial. More research in this area is needed, especially to help determine what specific interventions would be most helpful as mental health professionals assist students in coping with suicidal ideation and other emotional problems.

Undergraduate students in particular are new to adult life, and may benefit from assistance in problem-solving in a number of areas in their lives that may be contributing to mental and emotional distress. Finding ways to decrease stress in a student's life by taking active steps is akin to Shneidman's (1993) suggestion that a suicidal crisis can be partly addressed by decreasing the perturbation the person is experiencing in the current moment (Shneidman, 1993). For some students, suicidal crises will be short-lived and based mostly on the distress of current circumstances. This was probably reflected somewhat by the nine cases in these data that cited the helpfulness of time - whether for reflection or just time passing - in resolving their crises. The short-term model of counseling in use at most college mental health centers may be appropriate for crises such as these that are fairly temporary in nature.

As noted earlier, the most common theme cited for the "least helpful" question was unhelpful feedback. The second most common theme cited by respondents as least helpful in resolving their suicidal crises was isolation, at 16 mentions out of the 120 cases. This was stronger for those who accessed services than those who did not, with no differences between attempters and non-attempters of either of the service groups. This finding suggests that students who access services may be less likely to reach out to members of their social network, since they also reported fewer problems with unhelpful feedback. However, on the most helpful survey item there was mixed support for this phenomenon - while the service users cited social support from friends less often, they cited support from loved ones (i.e., family or partners) more often as important to resolving their crises. Perhaps there is some interaction effect, in that people who are "high reactors" and likely to seek mental health services – a concept introduced at the end of the quantitative analysis – are somewhat more likely to involve their family members in their mental heath care, compared to students who avoid services and depend on a wider social network for their support.

The third most common theme for the least helpful item was, perhaps unsurprisingly, lack of support, with 13 mentions. This theme was exemplified by descriptions of feeling like no one cared or was willing to make an effort to help the respondent, such as friends or work colleagues.

It differed from the isolation theme, which focused more on avoidance of other people. The lack of support theme was cited most often by the service-use non-attempters, at five mentions, with one to three mentions each for the other groups. It is difficult to draw any inferences from these results, but it reinforces the notion that respondents find social interaction to be important when they are provided in a supportive, non-judgmental way. This theme complements the most-cited theme for the "most helpful" item – social support – suggesting that people want and need positive social interactions to help resolve their crises. As mentioned previously, counselors may wish to use this as a point of intervention for student clients, assisting them in recruiting appropriate social support. One challenge for suicidal clients, especially those suffering co-morbid depression, hopelessness, and other mental illnesses, is that others may avoid them if they are perceived to be negative in their overall emotional state and attitude and anti-social, tending to isolate from others.

The fourth most common theme under the "least helpful" things that respondents named in resolving their suicidal crises was cognitive and attributional styles. This is one of the *a priori* variables this study began with that was predictive of suicide risk, and correlates with the finding of the earlier quantitative analysis that severity of thought was a strong predictor of suicide attempt for this study group. Other *a priori* variables that predict suicide risk were also identified in the responses to both questions, but as descriptive codes rather than analytic codes. This approach to coding was deemed analytically appropriate since the phenomena in question were described by the respondents as background or context for their crises rather than answers to the question of what was most or least helpful in resolving the crises. The descriptive themes identified during analysis described such phenomena as: negative life events (two cases), substance use (three cases), depression (four cases), perturbation[32] (one case), and a prior failed suicide attempt (one case). One case also exemplified heightened risk for LGBT youth (lesbian, gay, bisexual, transgender), a known risk factor (Garcia, Adams, Friedman, & East, 2002; Hershberger et al., 1997).

Mental Health Services Use

No more than 10% of respondents reported any type of mental health service as being one of the most helpful things they used for resolving their suicidal crises. However, given that two of the groups were selected purposely for not having used services for their suicidal ideation, as indicated by their responses on earlier items of the survey, the maximum number for any one type of service use should not have been expected to exceed 60 cases. Based on a maximum of 60, there were 11 respondents (18%) who found using a counselor to be the most helpful thing they did, seven (12%) who said the same for using medication, two (3%) for seeing a psychiatrist, and one (2%) who was hospitalized. There were no obvious differences between non-attempters and attempters in how often these themes arose.

Data from other parts of the survey indicated that for the students who reported using services of any kind for their suicidal thoughts, 36% saw a counselor, 18% saw a psychiatrist, 27% used medication, and 3.5% were hospitalized. The difference between these figures and the frequencies with which students mentioned these services in their responses to the "most

[32] Heightened state of distress, as described by Shneidman (Shneidman, 1993).

helpful" question suggests that even though students may access these services, they may not perceive them as most helpful. More investigation is needed into what happens during the interaction between students and their campus counseling centers, mental health professionals, and other mental health service providers, as well as their level of satisfaction with those interactions.

Dissatisfaction with mental health services was expressed to a limited degree in the responses to the "least helpful" item, and only in the sub-groups that received services of any kind, according to other items on the survey. Of the 60 cases, five (8%) said that medication use was one of the least helpful things they did for resolving their suicidal crisis, four (7%) cited seeing a counselor, three (5%) cited seeing a psychiatrist, two (3%) mentioned receiving primary care, and two (3%) being hospitalized. Unfortunately, responses on these themes tended to be brief, often only listing the service type. A few students described the professional environment as too formal or not relevant to their immediate needs, and one student feared being hospitalized if they sought help. While this fear is understandable, and likely few people enjoy being hospitalized, it may be vital in lowering suicide risk, whether they realize it or not.

Suicide risk among college students has many costs. Kitzrow (2003) noted that campuses whose students suffer poor mental health have to deal with impaired academic performance, students prematurely ending their education, and risk management issues (particularly in the form of legal liability) (Kitzrow, 2003). When a suicide occurs, a whole community is affected, and adolescents in particular are susceptible to contagion effects (Ash, 2006). Those who have lived or worked with a student who attempted or completed suicide can easily be traumatized by the experience.

In the qualitative analysis, some of the students did report benefiting from mental health services. Others said services were difficult to access, too formal, or unapproachable. Unfortunately few students overall mentioned health services, in spite of the fact that half of the respondents, or 60 responses, had reported receiving professional health services in an earlier section of the survey. Still, not much could be learned from the quantitative data as to what these services looked like, except that the average number of sessions considerably exceeded the usual "brief therapy model" of five to six sessions reported by counseling centers, and many of the providers that students saw were not affiliated with their campus. This suggests that they saw providers off-campus rather than at their campus counseling center. There could be several reasons for this: convenience, familiarity, discretion, or because they received an off-campus referral from their counseling center. As described in Chapter 1, referrals are often an option when counseling centers cannot provide long-term therapy or access to a psychiatrist. When student demand for services increases faster than new staff hires, off-campus referrals can be a way to shorten waiting lists and avoid having to space out appointments by long periods of time.

These findings suggest that students need and use their friends and loved ones for support in times of crisis, and this is an avenue of intervention that deserves some focus. Young adults may not yet have the skills to recruit people into their social network who are good at being supportive during difficult times, or times of crisis. Part of the college experience is learning new interpersonal skills. These data suggest that if a student interacts with the wrong friend, who provides unhelpful feedback (perhaps not knowing much him/herself about how to deal with

poor mental health), the result can be increased mental distress. Students could benefit from education about how to find and be the kind of support that is most effective to someone suffering a crisis. Reinecke and Franklin-Scott (2004) have recommended peer training where students are taught how to be "good observers and interveners, and… how to be friends and caretakers for their friends and peers." This includes how to be calm, nonjudgmental, supportive, and to identify the appropriate time to suggest a referral for campus mental health services (Reinecke & Franklin-Scott, 2004). Silverman (2004) wrote that goals developed in therapy might include improving the client's social interactions and building a supportive social network (Silverman, 2004).

Future research should delve further into the crisis and care experience faced by the suicidal student, particularly focusing on the social aspect, seen as so prominent and important here. In-depth, semi-structured interviews could help elucidate these findings to further develop the themes of interpersonal dialogue and support that were important to students. Additionally, more detail on student perception of mental health services, why they would or would not use them, and previous experiences with services might help explain why so few students cited services as being helpful in this study. One challenge is checking the accuracy of student self-report of services received. One study controlled for this by prospectively following every case of a student in suicidal crisis or at risk of suicide who presented to one campus' counseling center over the course of a year. The researchers were able to collect highly detailed descriptions of assessments and treatments (Meilman, Pattis, & Kraus-Zeilmann, 1994). Another avenue of future research would be to focus on different types of respondents, who have different preferences for coping strategies such as socialization. Information gathered could be used to create profiles of student-client types, informing the development of targeted interventions.

Limitations

Some of the limitations of the quantitative analysis were already discussed in the results section for that portion of the study. The response rate for the survey was 24% and 25% for undergraduates and graduate students respectively, a low rate by most standards but not so surprising for suicide surveys. Suicide is a stigmatized topic and may be off-putting to potential survey-takers. There is a possibility that students who were uncomfortable taking a survey on suicide were also less likely to report using professional assistance for suicidal crises, thereby possibly increasing their suicide risk. As reported in Chapter 1, research has shown that personal stigma has a negative effect on help-seeking behaviors (Eisenber et al., 2009; Givens & Tija, 2002). On the other hand, it is possible that "high reactors" are more likely to respond to a survey on suicide. Also of course, students who died by suicide were not included in this respondent group. Respondents were disproportionately female, and compared to male respondents, they had higher rates of suicide attempt. This suggests that females at risk may have been somewhat less averse to taking the survey.

Another major limitation of the qualitative analysis was the shortness of the open-ended responses. Qualitative methodology is often more powerful when it focuses on depth rather than breadth. While it was possible to sample 120 cases in this study, richness and depth were

lacking, which could have brought more background and context to each student's response. Given limited time and space, the respondents may not have had time to list all of the things they found helpful or unhelpful. The absence of some phenomena in their responses, such as health services, does not necessarily mean they were not important. Longer, in-depth interviews with students that examine their entire crisis experiences could elicit more detail on health service use.

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Appendix I

Table 42 - All respondents – lifetime use for no mental health services ever used, by region, chi-square, N=26,122

Mental Health Services Use	Region				
	Midwest	Northeast	South	West	TOTAL
No	3,463 (44%)	2,027 (47%)	3,885 (46%)	2,477 (46%)	11,852
Yes	4,404 (56%)	2,291 (53%)	4,634 (54%)	2,941 (54%)	14,270
TOTAL	7,867	4,318	8,519	5,418	26,122

Pearson chi-square = 10.5540, p = 0.014

Table 43 - All respondents – lifetime use for college counseling center, by region, chi-square, N=26,122

Counseling Center Use	Region				
	Midwest	Northeast	South	West	TOTAL
Yes	1,555 (20%)	877 (20%)	1,555 (18%)	1,205 (22%)	5,192
No	6,278 (80%)	3,424 (80%)	6,929 (82%)	4,189 (78%)	20,820
TOTAL	7,867	4,318	8,519	5,418	26,012

Pearson chi-square = 33.8087, p < 0.001

Table 44 - All respondents – lifetime use of medicine for mental illness, by region, vhi-square, N=26,122

Medicine Use	Region				
	Midwest	Northeast	South	West	TOTAL
Yes	1,429 (18%)	763 (18%)	1,786 (21%)	987 (18%)	4,965
No	6,408 (82%)	3,531 (82%)	6,687 (79%)	4,407 (82%)	21,033
TOTAL	7,867	4,294	8,473	5,394	25,998

Pearson chi-square = 32.4441, p < 0.001

Table 45 - All respondents – lifetime hospitalization for mental illness, by region, chi-square, N=26,122

Hospitalization	Region				
	Midwest	Northeast	South	West	TOTAL
Yes	229 (3%)	152 (4%)	278 (3%)	142 (3%)	801
No	7,595 (97%)	4,140 (96%)	8,191 (97%)	5,250 (97%)	25,176
TOTAL	7,824	4,292	8,469	5,392	25,977

Pearson chi-square = 8.4306, p = 0.038

Table 46 - All respondents – lifetime use of never seeing a mental health professional, by funding status of college/university, chi-square, N=26,122

Never Used Mental Health...	Funding Status		
	Private	Public	TOTAL
No	3,968 (45%)	7,884 (46%)	11,852
Yes	4,866 (55%)	9,404 (54%)	14,270
TOTAL	8,834	17,288	26,122

Pearson chi-square = 1.1117, p = 0.292

Table 47 - All respondents – lifetime use of never seeing a mental health professional, by size of campus, N = 25,363

Never Accessed Mental Health Professional	Size			
	Large	Medium	Small	TOTAL
No	6,634 (45%)	3,857 (45%)	1,046 (48%)	11,537
Yes	8.047 (55%)	4,660 (55%)	1,119 (52%)	13,826
TOTAL	14,681	8,517	2,165	25,363

Pearson chi-square = 7.6477, p = 0.022

Table 48 - ANOVA of number of lifetime periods of suicide consideration, by campus size, N=6,074

Campus size	Mean	Std Dev	Freq
Large	2.77	1.19	2,439
Medium	2.81	1.19	1,379
Small	2.93	1.27	407
TOTAL	2.80	1.20	4,225
Source	SS	MS	F-test
Between Groups	9.40	4.70	0.0381
Within Groups	6,064.39	1.44	
TOTAL	6,074	1.44	

Bartlett's Test for Equal Variances: Chi-square = 3.37, p = 0.185

Table 49 - All respondents – t-test of number of lifetime suicide attempts, by ever having received services from a psychologist/counselor/social worker, N=26,122

Group	Number of Observations	Mean Lifetime Suicide Attempts (S.E.)	Std. Dev.	Conf. Interval
None	16,509	0.06 (0.003)	0.44	0.05, 0.06
Services from Psychologist, etc	9,613	0.23 (0.014)	1.37	0.21, 0.26

p-value for equal means < 0.001

Table 50 - All respondents – t-test of number of lifetime suicide attempts, by ever having received services from a psychiatrist, N=26,122

Group	Number of Observations	Mean Lifetime Suicide Attempts (S.E.)	Std. Dev.	Conf. Interval
None	22,940	0.08 (0.006)	0.86	0.07, 0.09
Services Received from a Psychiatrist	3,182	0.40 (0.020)	1.15	0.36, 0.44

p-value for equal means < 0.001

Table 51 - All respondents – t-test of number of lifetime suicide attempts, by having received services from a general medicine practitioner, N=26,122

Group	Number of Observations	Mean Lifetime Suicide Attempts (S.E.)	Std. Dev.	Conf. Interval
None	23,425	0.10 (0.006)	0.88	0.09, 0.11
Services from General Medicine Practitioner	2,697	0.32 (0.021)	1.07	0.28, 0.36

p-value for equal means < 0.001

Table 52 - All respondents – t-test of number of lifetime suicide attempts, by having never received mental health services, N=26,122

Group	Number of Observations	Mean Lifetime Suicide Attempts (S.E.)	Std. Dev.	Conf. Interval
None	11,852	0.21 (0.011)	1.25	0.18, 0.23
Never Receiving Mental Health Services	14,270	0.05 (0.004)	0.43	0.04, 0.06

p-value for equal means < 0.001