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Suicidal Behavior in Incarcerated Men in the Pennsylvania Department of Corrections

Gregory John Estadt

Philadelphia College of Osteopathic Medicine, gregorye@pcom.edu

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Philadelphia College of Osteopathic Medicine

Department of Psychology

SUICIDAL BEHAVIOR IN INCARCERATED MEN IN THE PENNSYLVANIA
DEPARTMENT OF CORRECTIONS

By Gregory John Estadt

Submitted in Partial Fulfillment of the Requirements of the Degree of

Doctor of Psychology

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**PHILADELPHIA COLLEGE OF OSTEOPATHIC MEDICINE
DEPARTMENT OF PSYCHOLOGY**

Dissertation Approval

This is to certify that the thesis presented to us by Gregory J. Estadt on the 1st day of March, 2006, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

Committee Members' Signatures:

Robert A. DiTomasso, Ph.D., ABPP, Chairperson

Barbara A. Golden, Psy.D., ABPP

Lance Couturier, Ph.D.

Robert A. DiTomasso, Ph.D., ABPP, Chair, Department of Psychology

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Abstract

Suicide is a well-documented problem, ranking high in causes of death in the US and internationally. National and international programs have been designed to address the problem, as well as approaches targeting prison populations. Within these programs, knowledge of local risk factors is viewed as essential in identifying potential suicide completers. The current study expands existing knowledge of these risk factors in the Pennsylvania Department of Corrections by a) collecting descriptive data of completers and b) conducting a retrospective case control study. The descriptive data is utilized to create a profile of typical suicide completers in the PA DOC. The case control study is useful in distinguishing characteristics associated uniquely with completers and attempter relative to controls. The case control summary is also useful in identifying characteristics that distinguish suicide attempters and suicide completers from each other. Finally, a screening instrument is developed based on findings.

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Chapter 1: Introduction

Overview

The bulk of this chapter provides a context for the current proposed study. The first two sections outline suicide as an international and national health problem, and as a problem in U.S. prisons, respectively. The third and fourth sections examine strategies and interventions that have been developed 1) for the general population within a public health perspective and 2) specifically for prison populations. The fifth section of the chapter discusses the importance of local research and frames the current study in terms of what has been already reviewed. Finally, a specific rationale and hypotheses for the current study will be offered.

Suicide: An International and National Epidemic

The World Health Organization (WHO) (2005) has estimated that 873,000 people died from suicide worldwide in 2004. This represents an annual global mortality rate of about 14.5 per 100,000 people or one death about every 40 seconds. Worldwide, suicide is the 14th leading cause of death, and among those aged 15-44 years, it ranks 4th. Also according to WHO (2002), there were significantly more suicides (815,000) in 2000 than homicides (520,000) worldwide and almost as many suicides as combined homicides (520,000) and war-related deaths (310,000) (WHO, 2005).

WHO data, as of June 2004, has revealed that the U.S. suicide rate is 17.1 for males and 4.0 for females per 100,000 in 2000; this is within the average range for international rates. Many countries have rates that far exceed the U.S., however, such as Hungary, Lithuania, and Russia, which average 45.5, 12.2; 80.7, 13.1 and 69.3, 11.9 for men and women respectively per 100,000. Worldwide, suicide rates far exceed homicide rates in

Europe, Southeast Asia, and the Western Pacific. This trend is reversed in Africa and the Region of the Americas. Homicides exceed suicides only slightly in the Eastern Mediterranean. Suicide is significantly more prevalent among males than females in virtually every region in the world (WHO, 2005).

Most recently compiled US data reveals that 31,655 suicides were completed in 2002 (American Association of Suicidology, 2005, February 28). During the same year, suicide was the 11th cause of death in the US and the 3rd leading cause of death among youth (15-24 years old). There were 790,000 suicide attempts in 2002; approximately 5 million people living in the US attempted suicide, and about 4.47 million survivors were intimately affected by completed suicides (American Association of Suicidology, 2005, February 28).

Every day 80 Americans take their own lives; 1,500 more attempt to do so, and 90 percent of all people who die by suicide have a diagnosable psychiatric disorder at the time of their deaths (American Foundation for Suicide Prevention, February 2005). Suicide rates in the U.S. can best be characterized as generally stable over time with a slight tendency toward a decrease: after six consecutive years of decrease (from 12.1 per 100,000 in 1993 to 10.7 in 2000), there was an insignificant increase in 2001 (10.8) and 2002 (11.0) (AAS, 2005, February 28, USA).

Jail and Prison Suicide in the U.S.

When discussing suicide rates in jails and prisons, it is important to note that the former are local detention centers generally run by counties and cities, but the latter are long-term holding facilities, usually run by the state and federal government. An alarming rate of suicides was revealed in U.S. jails in Lindsay Hayes' 1981 landmark study, and in its 1986 replication (1981, 1986). The annual rate of suicide was found to be approximately 107

per 100,000 inmates, 9 times higher than the rate for the general population in the U.S.

Hayes (1995) also completed a national prison survey of suicides between 1984 and 1993. Wide variability in prison suicide rates was found across states, ranging from 88.3 to 7.1 per 100,000 inmates. It was also found that state suicide rates did not highly correlate with prison suicide rates, but that generally the smaller the state, the higher the suicide rates. Hayes attributes this to the relative lack of resources in smaller states in managing inmates. Pennsylvania's rate during that time (1984-1993) was 25.9. During the ten-year span of this survey, Hayes reported a downward trend in prison suicide rates, with an overall rate of 20.6 per 100,000 inmates annually (1995).

Perhaps this decrease which is described in Hayes' 1995 study can be explained by the implementation of policies researched during the 1970's and 80's (Lester and Danto, 1993), which were spurred by increasing litigation at the time (Bonner, 2000). Hayes' study also revealed that suicide rates in prison (long-term holding facilities - i.e. state, federal) from 1984 through 1993 were close to double the rate of the general population, yet significantly less than the suicide rate in U.S. jails (local detention centers - i.e. county and city). The difference between jails and prisons is generally attributed to the more intense adjustment and substance abuse issues associated with inmates in county and local facilities, because these individuals are usually incarcerated directly "off the street", in contrast to those in state and federal facilities, who are typically transferred from county/local facilities (Hayes, 1995).

Victim profile data for prison suicides were not assessed in Hayes' (1995) national survey. He did, however, review a number of local, state, and federal system studies and cited some common characteristics of prison suicide victims. Common characteristics

included significant mental illness, history of suicide attempts, older age, lengthy sentences, institution problems involving protective custody and immigration status, and segregated/isolated housing (also see Anno, 1985; Jones, 1986; Salive, Smith, & Brewer, 1989; White & Schimmel, 1995).

Since Hayes' 1995 study, no other such thorough national surveys have been conducted. There is evidence, however, that suicide rates have continued to decline in prisons. According to the 2004 Sourcebook of Criminal Justice Statistics, the 2001 suicide rate for state correctional institutions was 14 per 100,000, and for federal institutions, 12 per 100,000. Because females constitute only about 7% of all incarcerated individuals in U.S., (National Institute for Corrections, April 29, 2005), and that the 2000 rate of suicides for males is 17.1 and for females is 4.0 (WHO, June, 2004), both the state and federal suicide rates are probably very close to the rate for the general population.

The suicide rate in the Pennsylvania Department of Corrections, like most other jurisdictions, has varied over the years. From 1989 – 1994, the average was 20 per 100,000, but in 1995 the rate more than doubled to 46 per 100,000 (Couturier, 2001). Policy changes based on the results of this trend were implemented, and from 1996 to 2000, the rate averaged only 23 per 100,000 (Couturier, 2001).

The National Strategy for Suicide Prevention: Background and the Public Health

Approach

The National Strategy: Historical Context

Both international and national strategies have been developed to address the problem of suicide. The World Health Organization offered suggestions to develop national strategies in 1996. (United Nations/World Health Organization, 1996). Surgeon General

David Satcher released a national strategy for suicide prevention in the U.S. in 2001. The national strategy was developed largely as the result of efforts made by the Suicide Prevention Advocacy Network (SPAN USA), a grassroots advocacy organization, which includes suicide survivors, suicide attempt survivors, and community activists who have championed the WHO guidelines as a way to encourage development of a national suicide prevention strategy for the United States (U.S. Department of Health and Human Services, 2001). Work done by SPAN eventually generated Congressional Resolutions recognizing suicide as a national problem and suicide prevention as a national priority. SPAN also propelled the creation of a private/public partnership to jointly sponsor a National Suicide Prevention Conference in Reno, Nevada, in October 1998 (USDHHS, 2001). Conference participants, including researchers, health, mental health and substance abuse clinicians, policy makers, suicide survivors, consumers of mental health services, and community activists and leaders discussed eight background papers that were commissioned to summarize the evidence base for suicide prevention (Silverman, Davidson, & Potter, 2001). The conference offered many recommendations for action; these were shaped into a list of 81 by a panel of experts. Moving forward with the work of the Reno conference, the Surgeon General issued his *Call to Action to Prevent Suicide* in July 1999, emphasizing suicide as a serious public health problem (USPHS, 1999). This document introduced a blueprint for addressing suicide prevention in three parts: Awareness, Intervention, and Methodology, a.k.a. AIM. AIM describes 15 broad recommendations, containing goal statements, broad objectives, and recommendations for implementation consistent with a public health approach to suicide prevention. AIM also represents a consolidation of the highest-ranked recommendations developed through the

Reno Conference according to their scientific evidence, feasibility, and community support (UPHS, 1999).

Continuing attention to suicide prevention issues and the significant role of mental health and substance abuse services in suicide prevention is reflected in the landmark *Mental Health: A Report of the Surgeon General* (USDHHS, 1999) and in the nation's public health agenda, *Healthy People 2010* (USDHHS, 2000). The secretary of Health and Human Services officially established the National Strategy for Suicide Prevention Federal Steering Group (FSG) to "ensure resources identified ... for the purpose of completing the National Suicide Prevention Strategy" (USDHHS, 2001). In early 2000, the FSG reviewed the recommendations both of the Reno meeting and of the *Call to Action* (1999) with a view to developing a comprehensive plan outlining national goals and objectives that would stimulate the subsequent development of defined activities for local, state, and federal partners (USDHHS, 2001). At the present time, the National Strategy for Suicide Prevention: Goals and Objectives for Action remains, from a public health perspective, the most highly evolved, state-of-the-art approach to suicide prevention in the U.S..

The National Strategy: Content

The national strategy to prevent suicide is a comprehensive and integrated approach to reducing the loss and suffering from suicide and suicidal behaviors across the lifespan. It encompasses the promotion, coordination, and support of activities that should be implemented across the country as culturally appropriate, integrated programs for suicide prevention among Americans at national, regional, and community levels. A broad public/private partnership is essential for developing and implementing a national strategy.

Interwoven within a national strategy are three key ingredients for action to improve suicide prevention: a knowledge base, the public will to support change and generate resources, and a social strategy to accomplish change (USDHHS, 2001).

The National Strategy is divided into 11 broad goals:

1. Promote awareness that suicide is a public health problem that is preventable
2. Develop broad-based support for suicide prevention
3. Develop and implement strategies to reduce the stigma associated with being a consumer of mental health, substance abuse, and suicide prevention services
4. Develop and implement community-based suicide prevention programs
5. Promote efforts to reduce access to lethal means and methods of self-harm
6. Implement training for recognition of at-risk behavior and delivery of effective treatment
7. Develop and promote effective clinical and professional practices
8. Increase access to and community linkages with mental health and substance abuse services
9. Improve reporting and portrayals of suicidal behavior, mental illness, and substance abuse in the entertainment and news media
10. Promote and support research on suicide and suicide prevention
11. Improve and expand surveillance systems (USDHHS, 2001).

These 11 broad goals are accompanied by 68 objectives. Although a goal is a high level statement of general purpose, an objective narrows the goal by specifying the actual who, what, when, and where associated with obtaining the goal or it clarifies by how much, how many, or how often. Ideally, an objective offers measurable milestones or

targets, and is very specific – it clearly identifies what is to be achieved. Also listed through the National Strategy are activities, which are even more specific than objectives, as they specify how objectives will be reached. They are procedures that will be completed to ensure that the goals and objectives are met. Together, the goals, objectives, and activities form the blueprint of the National Strategy to reduce the number of suicides in the U.S. (USDHHS, 2001).

The public health approach to suicide prevention is reflected in the National Strategy, and represents a rational and organized way to marshal prevention efforts and to ensure that they are effective. In contrast with the clinical medical approach, that explores the history and health conditions which have the potential to lead to suicide in a single individual, the public health approach focuses on identifying patterns of suicide and suicidal behavior throughout a group or population. It involves five basic steps:

1. Define the problem; surveillance
2. Identify causes; risk and protective factor research
3. Develop and test interventions
4. Implement interventions
5. Evaluate effectiveness (USDHHS, 2001).

Drawing on previous research, the National Strategy addresses each of the five basic steps as follows:

Defining the problem

Collecting information about the rates of suicide and suicidal behavior is known as surveillance. Surveillance may also include a collection of information on the characteristics of individuals who die by suicide, the circumstances surrounding those

incidents, possible precipitating events, and the adequacy of social support and health services. Data has also been collected on the cost of suicide. Generally, surveillance helps a community to define the problem of suicide for that community. It documents the extent to which suicide is a burden for a community and how suicide rates vary by age groups, time, geographic region, or special populations (USDHHS, 2001).

Data on attempted suicides are much less complete than that on completed suicide. Suicide rates vary by age, gender, ethnicity, and other group composition. It is generally agreed that not all deaths that are suicides are accurately reported as suicides. Deaths may be misclassified as homicides or accidents; individuals have intended suicide by putting themselves in harm's way, but lack of evidence does not allow for classifying the death as suicide. Other suicides may be misclassified as accidental or as undetermined deaths in deference to community or family. Many studies suggest the actual suicide rate is much higher than recorded (Clark & Horton-Deutsch, 1992).

Suicide rates have changed over time, especially for certain subgroups. From 1980 to 1996, for example, the suicide rate among children between ages 10 and 14 doubled, and among African American males aged 15-19, the rate increased by 105 percent, more than double (Peters, 1998). Although no national database on suicide attempts exists, the Center for Disease Control (CDC) utilizes the Youth Risk Behavior Survey biennially to collect information on young people. This survey consistently finds that a large number of young people in grades 9-12 consider or attempt suicide (Brener, Krug, & Simon, 2000). Although estimates of the cost of suicide have been made, these analyses are based on certain assumptions, the accuracy of which cannot be assured. One analysis estimated that the 1995 cost of suicide was 111.3 billion dollars, which included medical expenses, work-

related losses, and quality of life costs (Miller, et al., 1999).

Although national data provide an overall view of the problem, state and local suicide rates vary considerably from national rates. Local data are key to effective prevention efforts (USDHHS, 2001).

Identifying causes

Risk factors may be thought of as leading to or being associated with suicide; that is, people “possessing” the risk factor are at greater potential for suicidal behavior (USDHHS, 2001). Protective factors, on the other hand, reduce the likelihood of suicide. They enhance resilience and may serve to counterbalance risk factors. Risk and protective factors may be biopsychosocial, environmental, or sociocultural in nature. Although this division is somewhat arbitrary, it provides the opportunity to consider these factors from different perspectives. Understanding not only the interactive relationship between risk and protective factors in suicidal behavior, but also how this interaction can be modified are challenges to suicide prevention (Moscicki, 1997).

The National Strategy for Suicide Prevention (USDHHS, 2001) outlines the key protective and risk factors for suicide. Protective factors include (a) Effective clinical care for mental, physical, and substance use disorders (b) Easy access to a variety of clinical interventions and support for help-seeking (c) Restricted access to highly lethal means of suicide (d) Strong connections to family and community support (e) Support through ongoing medical and mental health care relationships (f) Skills in problem solving, conflict resolution, and nonviolent handling of disputes and (g) Cultural and religious beliefs that discourage suicide and support self-preservation (2001).

Risk factors are divided into biopsychosocial, environmental, and sociocultural, as

mentioned above (USDHHS, 2001). Biopsychosocial risk factors include (a) Mental disorders, especially mood disorders, schizophrenia, anxiety disorders, and certain personality disorders (b) Alcohol or other substance abuse disorders (c) Hopelessness (d) Impulsive and/or aggressive tendencies (e) History of trauma or abuse (f) Major physical illness (g) Previous suicide attempt (h) Family history of suicide (USDHHS, 2001).

Environmental risk factors include (a) Job or financial loss (b) Relational or social loss (c) Easy access to lethal means (d) Local clusters of suicide that have a contagious influence (USDHHS, 2001). Sociocultural risk factors include (a) Lack of social support and sense of isolation (b) Stigma associated with help-seeking behavior (c) Barriers to accessing healthcare, especially mental health and substance abuse treatment (d) Certain cultural and religious beliefs (i.e. the belief that suicide is a noble resolution of a personal dilemma) (e) Exposure to, including through the media, and influence of others who have died by suicide (USDHHS, 2001).

Information about risk and protective factors for attempted suicide is more limited than that on completed suicide. One problem in studying nonlethal suicidal behaviors is a lack of consensus about what actually constitutes suicidal behavior (O'Carroll, et. al., 1996). The main issue has to do with intent. A question arises about whether or not self-injurious behavior that is not intended at ending one's life be classified as suicidal behavior? If intent does define suicidal behavior, how is it possible to quantify someone's intent to die? The lack of agreement on such issues makes valid research difficult to conduct.

Develop and test interventions

Suicide prevention efforts reduce risk and/or enhance protective factors. Like risk and protective factors, they may be characterized along biopsychosocial, environmental, and

sociocultural dimensions. Interventions have also been characterized as universal, selective, or indicated: a universal intervention is applied to everyone within a given population regardless of their risks for suicide; a selective approach is for subgroups at increased risk, for example due to age or ethnicity; and an indicated approach is designed for individuals who, on examination, have a risk factor or condition that puts them at very high risk, such as a recent suicide attempt (Gordon, 1983).

The intersections of the earlier mentioned dimensions in a matrix shows the intended mechanisms of action and the level of population addressed by interventions, as in the following table:

Table 1

Matrix of Interventions for Suicide Prevention

	Biopsychosocial	Environmental	Sociocultural
Level of Intervention			
Universal	Incorporate depression screening into primary care practices	Promote safe storage of firearms and ammunition	Teach conflict resolution skills to school children
Selective	Improve screening and treatment for depression of the elderly in primary care practices	Reduce the access to the means for self-harm in prisons	Develop programs to reduce despair for risk populations, such as Native Americans.
Indicated	Implement CBT immediately after patients have been evaluated for suicide attempt in ERs.	Teach caregivers to remove firearms from the home before suicidal patients are discharged	Develop pathways for law enforcement officers to receive MH treatment and return to full duty without prejudice.

Implement interventions

State and local organizations will often develop suicide prevention programs that consist of a broad mix of interventions (USDHHS, 2001). By selecting interventions from numerous cells in the matrix above, a more complete program can be developed.

Considerations for selecting the elements of a program include the local needs and an analysis of the cost versus potential benefits of different interventions (USDHHS, 2001).

Integrating into existing programs and strengthening collaboration should also be considered. Such comprehensive suicide prevention programs are believed to have a greater likelihood of reducing the suicide rate than are interventions that address only one risk or protective factor, particularly if the program incorporates a range of services and providers within a community. Comprehensive programs engage community leaders through coalitions that cut across traditionally separate sectors, such as health and mental health care, public health, justice and law enforcement, education, and social services. The coalitions include a range of groups, including faith communities, civic groups, and businesses (USDHHS, 2001).

Evaluate effectiveness

It is important to note that most interventions that are assumed to prevent suicide, including some that have been widely implemented, have yet to be evaluated (USDHHS, 2001). An ideal evidence-based intervention is one that has been evaluated and found to be safe, ethical, feasible, and effective. Evaluation can help to determine for whom a particular intervention is best fitted.

Controlled studies on the effectiveness of interventions in reducing suicidal behavior are sparse. Nonetheless, these interventions can be seen as falling into numerous broadly defined approaches. They include treatment approaches, behavioral approaches,

relationship approaches, community-based efforts, and societal approaches (WHO, 2002).

Treatment approaches focus on the treatment of mental disorders associated with suicide (WHO, 2002). There is copious literature supporting the fact that a number of mental disorders are significantly associated with suicide so that the early identification and appropriate treatment of these disorders is an important strategy for preventing suicide. Particularly relevant here are mood disorders, alcohol dependence, and abuse of other substances, schizophrenia, and certain types of personality disorder (WHO, 2002). Pharmacotherapy has been examined for its efficacy in working on neurobiological processes that underlie certain psychiatric conditions, including those related to suicidal behavior. Verkes (1998), for instance, showed that the substance paroxetine might be effective in reducing suicidal behavior. The results of this study showed that enhancing serotonin function with a selective serotonin reuptake inhibitor (SSRI), in this case, paroxetine, may reduce suicidal behavior in those patients with a history of suicide attempts, but not in those suffering from major depression (Verkes, 1998).

Although treatment approaches focus on targeting mental conditions associated with suicide in order to reduce suicide, numerous behavioral approaches that target suicide reduction directly have been developed and studied (WHO, 2002). In particular, controlled studies have been performed on the outcome of problem-solving interventions (Salkovis, Atha, and Storer, 1990; Linehan, Heard, Armstrong, 1993) and a therapy approach that focused on “deficits in positive future thinking” (MacLeod, 1998). Both studies that focused on problem solving found significant reductions in suicide attempts in six months; these reductions were found at one year in the group that received the problem-solving component in addition to standard interventions. The first study,

however, (Salkovis, Atha, & Storer, 1990), found no difference in the two groups after 18 months. The third study (MacLead, 1998) demonstrated that patients with a history of suicide attempts showed less hope and had fewer positive expectations for the future than the matched group of community controls. After the intervention, their expectations significantly improved, but those who received the standard treatment improved only marginally.

Several interventions that focus on enhancing social relationships in order to reduce suicidal behavior have also been developed, because it is known that the more social relationships a person has, the less, in general, he is susceptible to suicide (Litman & Wold, 1976). Litman and Wold investigated a particular outreach method known as “continuing relationship maintenance” (CRM). Utilizing this method, the counselor actively reaches out to the suicidal person and tries to maintain a constant relationship with him or her. A total of 400 people at high risk of suicide underwent this program for an average of 18 months, assigned either to the experimental or to the control group. Results showed that although the intervention did not result in a reduction of suicidal ideation, attempted suicide, or completed suicide, the experimental group did show improvement in numerous other areas, including reduced loneliness and depression, more satisfactory intimate relationships, and greater confidence in using community services. Gibbons (1978) compared the effectiveness of “task-centered casework” – a problem-solving method that emphasizes collaboration between a patient and a social worker over matters related to daily living – with standard treatments in patients who had made a previous suicide attempt. There was no significant difference in the rate of repeated suicide attempts between the two groups, but the group that received task-centered

casework showed a greater improvement than the control group in handling social problems. In a study by Hawthorne (1987), 80 patients who had taken an overdose received either outpatient counseling or received referrals to their general practitioners with recommendations for further care. Again, there were no statistical differences in the rate of repeated suicide attempts, but there did seem to be some degree of benefit for the outpatient group when they were assessed after four months.

Studies of community-based efforts have focused on the effects of having suicide prevention centers in the community. Dew (1987) conducted a quantitative literature review of the effectiveness of suicide prevention centers and found no overall effect, either positive or negative, on suicide rates. The authors did find that the proportion of suicides among clients attending prevention centers was greater than the proportion of suicides in the general population, and that individuals who completed suicide were more likely to have been clients at these centers. These findings suggest that the suicide prevention centers are at least attracting the high-risk population that they are supposed to be helping. Lester (1992) reviewed fourteen studies that examined the effectiveness of suicide prevention centers on suicide rates. Seven of these studies provided some evidence for a preventive effect. However, a study of suicide prevention centers involving 25 cities in Germany actually found an increase in suicide rates in three of the cities (Riehl, 1988).

Concerning societal approaches, an examination of the effect of restricting access to the means for suicide has been studied thoroughly. The literature has consistently found that restricting access to means of committing suicide significantly reduces actual suicides. Oliver and Hetzel first demonstrated this in 1972 in Australia, discovering a reduction in suicide rates when access to sedatives, mainly barbiturates, which are lethal in high doses,

was reduced (WHO, 2002). The reduction in suicide associated with greater control over pesticides, removal of carbon monoxide from domestic gas and from car exhausts, and limiting the possession of handguns has all been well supported in the literature (see Bowles, 1995; Lester, 1995; Carrington, 1994).

Current Approaches to Managing Prison Suicide

This section is divided into two parts. The first focuses on national standards for managing prison suicide. The second focuses on PA DOC policies related to suicide prevention.

National Standards of Suicide Prevention for Incarcerated Individuals

Based on suicide research findings and increasing litigation involving jail and prison suicides, several major suicide prevention standards have been developed to help correctional systems determine and meet acceptable standards of care (Danto, 1997). From this perspective, the incidence of suicides in jails and prisons was also identified as a major public health problem with common population and mental health status risk factors. Screening, identification, and various program interventions were viewed as necessary in reducing the rate of suicide. Failure to follow such established suicide prevention program protocols was regarded as creating liability under such legal dictates as deliberated indifference or cruel and unusual punishment (Danto, 1997).

The most widely recognized suicide prevention standard was developed by the American Correctional Association (ACA), initiated in 1981 and revised in 1991 (ACA, 1981, 1990). All that is required under the ACA standard is that correctional facilities maintain a suicide prevention program that includes procedures for staff training, identification, and supervision of suicidal inmates. Specificity is notably lacking in these

standards.

The other national standards for prison suicide prevention are from the National Commission on Correctional Health Care (NCCHC) (1996), and are much more specific. They include the following requirements: suicide prevention training for correctional, medical, and mental health staff; identification of suicide risk through intake screening; procedures for referral to mental health and/or medical personnel, with reassessment following a crisis period; effective communication between correctional, medical, and mental health staff when managing suicidal inmates; supervision and safe housing options for suicidal inmates; timely medical intervention following a suicide attempt; proper reporting procedures following incidents; and administrative and/or clinical reviews of suicide as well as availability of critical incident debriefing for staff and inmates (NCCHC, 1996).

Hayes (1996) notes that only 15 percent of all state Departments of Corrections have policies that contain either all or all but one critical suicide prevention component, as defined by the National Center on Institutions and Alternatives (NCIA). NCIA developed their standards by combining the requirements of ACA and NCCHC standards, and identifying the 6 most critical components in a suicide prevention plan: staff training, intake screening/assessment, housing, levels of supervision, intervention, and administrative review (Hayes, 1996). Hayes' study concludes that Pennsylvania is among these states, addressing five of the six critical components.

Pennsylvania Department of Corrections Suicide Prevention Policies

The Pennsylvania Department of Corrections follows the broader ACA standards. Although the ACA standards are themselves broad, the PA DOC policies addressing

suicide are numerous and specific. Policies addressing the ACA standards are found primarily in three places within PA DOC policy: (a) 13.1.1, “Management and Administration of Health Care Procedures”, Section 9, “Inmate Deaths and Attempted Suicides”, (b) 13.8.1, “Access to Mental Health Care Procedures Manual”, Section 2, “Delivery of Mental Health Services”, Section H, “Dealing with Potentially Suicidal Inmates and Inmates who attempt Suicide” and (c) 5.1.1, “Staff Development and Training Manual”, section 2, “Minimum Training Criteria” and Section 9, “Instructor Certification” (PA DOC, 2004).

Policy 13.1.1 focuses on DOC activities after an inmate suicide. This includes a clinical review of the suicide by a clinical review team, “based upon an initial evaluation and written recommendation by the Chief Psychologist/designee to the Facility Manager” (PA DOC, 2004). The clinical review team is composed of the Deputy Superintendent for Facilities Management, the Chief Psychologist, the Correctional Health Care Administrator, the Unit Manager, and the attending physician and staff present at death or who were providing treatment prior to death. One goal of the team is to help “sensitize staff members to possible clues and situations that are present before such incidents may occur in these events”. The aim is to help all staff become more proficient at detecting preventable incidents before their occurrence. Policy also stipulates, “Within one week of the conclusion of the review, the chairperson of the clinical review team shall prepare a written confidential report and submit the report to the Facility Manager/designee along with recommendations concerning the incident” (PA DOC, 2004).

Policy 13.8.1, Section H, outlines in detail policies for dealing with potentially suicidal inmates and inmates who have attempted suicide. Section one of this policy addresses an

assessment of suicide risk. It states, "Suicide potential can be evaluated by using the criteria below. These criteria are intended to help staff formulate a plan of prevention and treatment" (PA DOC, 2004). These criteria involves (a) a specific suicide plan (the more specific the plan, greater the chance of committing suicide), (b) prior suicidal behavior, (c) stress, (d) prior suicidal behavior of a significant other, (e) symptoms, (f) personal resources (i.e. social support decreases likelihood of suicide), (g) acute vs. chronic aspects (if he has been dealing with problem for years, there is less likelihood to commit suicide), and (h), medical status (serious medical conditions increase likelihood) (PA DOC, 2004).

Both stress (c) and symptoms (e) have exhaustive lists. Stressors (c) include:

1. Difficulties in coping with legal problems
2. The loss of a loved one through death or divorce
3. The loss of valued employment
4. Anniversary of incarceration date or offense
5. Serious illnesses or diagnosis of terminal illness
6. Threats or perceived threats from peers
7. Sexual victimization, particularly after first submission
8. Placement in RHU/SMU/LTSU
9. Unexpected punishment
10. Cell restriction
11. Recent transfer from another state or county facility
12. Recently returned to prison due to a parole violation
13. Any movement to and from Level 5 Housing Unit
14. Long sentence coupled with poor external supports and/or minimal involvement in

facility supports

15. Somatic complaints of a vague nature that do not respond to treatment
16. History of violence toward others
17. Low IQ
18. Long sentence, including life
19. History of alcohol or drug abuse (PA DOC, 2004).

Symptoms (e) include:

1. Auditory or visual hallucinations, particularly command hallucinations ordering person to harm himself/herself
2. Delusions
3. Any change in an individual's sleep pattern
4. Any change from the individual's sleep pattern
5. Social withdrawal
6. Apathy
7. Despondency
8. Severe feelings of hopelessness and helplessness
9. General attitude of physical and emotional exhaustion
10. Agitation through such symptoms as tension, guilt, shame, poor impulse control, or feelings of rage, anger, hostility, or revenge
11. Giving away personal property
12. Removal of all visitors from visiting list
13. Sudden elevated mood
14. Psychic or somatic anxiety (PA DOC, 2004)

Section 2 of policy 13.8.1 focuses on screening and assessment of inmates for suicidality. The first stipulation is that “All contact employees shall receive training in suicide prevention ... If a staff member observes suicidal behavior, the Unit Manager will be notified and a referral shall be made to the Chief Psychologist/designee” (PA DOC, 2004). Also mentioned in this section is the use of the Suicide Risk Indicators Checklist for Restricted Housing Units/Special Management Units, a checklist that is administered to all parole violators and inmates sent to the Restricted Housing Unit (RHU). This is a simple “yes/no” checklist, consisting of 13 items, which largely overlap with the “stressors” and “symptoms”, noted above. Areas covered include whether or not the escorting officer has information that the inmate may harm himself, if the inmate is expressing suicidal thoughts, if he is showing signs of depression, if he is acting in a strange manner, if he is under the influence of drugs or alcohol, if there has been a recent family change, change in legal status, or if this is his first RHU placement. Also included, are whether or not he has been assaulted by another inmate, if he appears angry or hostile, anxious or afraid, displays signs of self-neglect or abuse, or if he is taking any psychiatric medication. If any of the first 8 items are checked, an immediate response is required from staff (Psychology and Nursing). If any of the last five are checked, a response within 24 hours is required (PA DOC, 2004).

Other sections in policy 13.8.1 cover levels of observation and housing, governing authority over the watches, use of psychiatric mechanical restraints, mental health commitment, discharge of inmates from psychiatric observation cells (POCs), treatment planning and responsibilities, and Mental Health Services Review Committee (PA DOC, 2004). Policy 5.1.1. focuses on employee training, as well as training for individuals who

teach suicide prevention (PA DOC, 2004). As mentioned above, Pennsylvania DOCs standards are among the most progressive in the country among departments of correction, because they are largely in accord with nationally recognized standards (Hayes, 1996). Also, Pennsylvania DOC's policies are in step with the National Strategy for Suicide Prevention (2001). Objective 8.6 of the National Strategy (2001) specifically states: "By 2005, for adult and juvenile incarcerated populations, define national guidelines for mental health screening, assessment, and treatment of suicidal individuals. Implement the guidelines in correctional institutions, jails and detention centers" (104).

The Current Study

The Importance of Local Trends and Controlled Studies in Prison

At many points throughout the literature on suicide and suicide prevention, awareness of local trends is emphasized as key to effective intervention. The National Strategy for Suicide Prevention (USDHHS, 2001), for example, emphasizes the fact that because state and local suicide rates vary considerably from national ones, local data are key to effective prevention efforts. Rowan and Hayes (1995) recommend that suicide victim profiles be developed for each jail facility, thus sensitizing staff to those suicide characteristics more descriptive of their local environment. The current study, then, proposes to create descriptive profiles of the last 60 completed suicides in the Pa. Department of Corrections.

Another important aspect of the current study is that it is a controlled study. Although profiles of completed suicides can be useful in sensitizing staff members, which is a key part of any suicide prevention program, it is even more helpful if the staff is aware of characteristics that distinguish the suicide completers from the noncompleters. Bonner (1992) rightly points out that suicide research in correctional institutions has rarely utilized

a control group, so that it remains unclear whether or not the sociodemographic/historical descriptors actually differentiate inmates who do commit suicide from inmates who do not commit suicide. The base rates for many of these characteristics are probably elevated for the inmate population in general (i.e. history of drug abuse); such variables, therefore, may be of limited utility in risk assessment and prediction (i.e. the statistical problem of false positives may be a factor.)

This researcher conducted a computerized search on both EBSCO Host and Proquest search engines for the terms “suicide and prison” and “suicide and inmates” as recently as August 30, 2005. EBSCO host’s database included academic search premier, the psychology and behavioral sciences collection, and psychbooks. The first of these (academic search premier) is a multidisciplinary database consisting of 4700 publications, including 3600 journals from 1975 - 2005. The second (psychology and behavioral sciences collection) provides coverage of more than 550 full text journals, including 550 peer-reviewed titles from 1965-2005. The third (psychbooks) is a database consisting of 10,000 chapters from over 600 books published by the American Psychological Association from 1953-2005. When all of these databases were searched using “suicide and prison” and “suicide and corrections”, hundreds of articles and chapters were identified. When the term “control group” was added, however, only one citation was found: Hans Toch’s *Mosaic of Despair* (1992). Toch’s book describes qualitative research interviews utilizing an experimental group of inmates who have engaged in self-harm, and a control group of randomly selected inmates. The main findings were that both those who engage in self harm and those who do not, experience extreme environmental stressors while in prison. Key differences seem to have to do with the

interpretation of the situation and the way one copes with issues like interpersonal loss, resentment, “self-victimization,” and self-management.

The Proquest database was also searched with similar results. Although there were not hundreds of articles found with “suicide and prison” and “suicide and inmates”, there were dozens found. When the term “control group” was added, again only one citation was found. This time, it was a dissertation entitled, *A personality profile comparison of intimate and stranger violent convicts* (Nesco, 1997). The Proquest search drew on several other databases, included psycharticles, psychology journals, and dissertation and theses. Psycharticles is composed of 50 full text psychology publications dated from 1988 through 2005. Psychology journals is composed of 400 psych-related publications dating from 1992-2005, and dissertations and these has over 2,000,000 entries dating from 1861-2005.

In 2000, Bonner again writes, “Similar to general risk assessment research and technology, jails and prisons also present different risk profiles where the presence and saliency (weighting) of different risk factors for different subgroups will need to be identified and refined” (p. 374). A controlled study will help accomplish this goal and make a unique contribution to the suicide literature.

Framing the Current Study Within the National Strategy and the Public Health Perspective

How does the current study help to achieve goals outlined in the national strategy? As mentioned earlier, the National Strategy to prevent suicide is a comprehensive and integrated approach to reducing the loss and suffering from suicide and from suicidal behaviors across the lifespan (USDHHS, 2001). The current study can be framed in terms

of the national study in two ways. First, the National Strategy is divided into 11 broad goals. The current study is most clearly related to goal number ten: promote and support research on suicide and suicide prevention. It is also related to goal seven: developing and promoting effective clinical and professional practices. The reason for this is that understanding correlates of suicide will enable more effective targeting of professional practices and interventions.

Second, the National Strategy utilizes the public health approach. This approach focuses on identifying patterns of suicide and suicidal behavior throughout a group or population, in contrast to the clinical medical approach, which explores the history and health conditions that could lead to suicide in a single individual. The public health approach involves five basic steps, and the current study can be framed within these steps, as well. The current study is associated both with step one and step two: 1) defining the problem/surveillance and 2) identifying causes/risk and protective factor research.

The current study is associated with defining the problem in so far as it includes “collection of information on the characteristics of individuals who die by suicide ...” (USDHHS, 2001, p. 30), such as age, ethnicity, etc. The study will also collect similar information on individuals who have attempted suicide; it is also associated with identifying causes because it will highlight characteristics associated with completed and attempted suicides in the PA Department of Corrections. That is, the design of the study will determine which associated characteristics of suicide distinguish completers from attempters and a control group.

Even more specifically, the current study can be related to specific risk factors already delineated in the national strategy. The national strategy broadly divides risk factors into

three groups: biopsychosocial, environmental, and sociocultural (USDHHS, 2001). The current study cuts across all of these groups, with particular emphasis in the biopsychosocial group. Within the biopsychosocial group, the current study examines mental disorders (measured by DSM-IV and ICD-10 diagnoses, and PAI scales), alcohol or other substance abuse disorders, hopelessness (measured by having a life or death sentence), impulsive or aggressive tendencies (measured by misconduct history and history of violent crime), major physical illness, and previous suicide attempt. Within the environmental group, relational or social loss is evaluated (as measured by RHU placement and by parole violator status). Within the sociocultural group, lack of social support and sense of isolation is evaluated (also measured by RHU placement and PV status). It is unclear how environmental, relational, or social loss (under the environmental category) differs from lack of social support and a sense of isolation (under the sociocultural category), except that the former seems to emphasize a loss connected to social isolation, but the latter emphasizes a fixed state of social isolation. Other factors measured by the current study, but not listed in the national strategy include race and age. It seems that these would probably fit best under the sociocultural group.

The current study, then, will not only shed light on suicide and suicidal behavior within the PA DOC, but will also contribute to the national strategy in the ways outlined above. The results of this study can also be used in furthering other parts of the national strategy, such as developing and testing suicide interventions, implementing interventions, and evaluating effectiveness of interventions.

The Selection of Specific Variables for the Current Study

The selection of independent variables in this study has been based on a review of

suicide literature generally, and prison suicide specifically. Correlates of suicide completion outlined in both the National Strategy for suicide prevention and the Pennsylvania DOCs policies are in accord with this literature. Because the National Strategy is based on extensive research by national experts, such agreement is not surprising. The National Strategy represents the state of the art in health policy related to suicide prevention, which includes the most current and clearest understanding of risk factors for suicide as discussed above. The PA DOCs recommendations, too, are in sync with the more specific correctional suicide prevention policies as discussed above.

The current study will utilize archival data as a part of a retrospective design. The availability of data, then, has also determined the variables selected in this study. Some relevant variables (i.e. level of social support), will not be examined directly in the current study because of limitations in the archive. There is generally wide agreement about the correlates of suicide both in and out of prison. This section briefly summarizes the literature as related to each variable in the current study nonetheless, and concludes with some thoughts about how the hypotheses of the current study may be affected by the fact that base rates of some variables among inmates are significantly different from those of the general population.

The first variable to be examined in the current study is mental health history. The literature resoundingly agrees that diagnosis of a major mental disorder is correlated with increased risk of completing and attempting suicide. Primary diagnoses that are seen as risk factors include Bipolar I Disorder, Major Depressive Disorder, and Schizophrenia (see Jamison, 1999; Cavanaugh, Carson, Sharpe, and Lawrie, 2003; Hall, Platt, & Hall, 1999; Harvard Mental Health Letter, 2000; Reid, 1998; Roose, Glassman, Walsh,

Woodring, and Vital, 1983). There is also support in the literature that certain personality disorders are correlated with suicidality (see Chioqueta and Stiles, 2004; Verona, Patrick, and Joiner, 2001). Because personality disorders are so seldomly diagnosed in the PA DOC, this study will examine only the role of Axis I disorders.

The second variable is substance abuse history. The literature overwhelmingly agrees in this area, also, that substance abuse is correlated with suicide attempts (see Aharonovich, Xinnua, Nones, Hasin, 2002; Alcohol, Drug Abuse, and Mental Health Administration, 1989, Pirkola, Suominen, Isomtsa, 2004; USDHHS, 2001). The third variable is race. Worldwide, Asians have a much higher rate of suicide than any other group (WHO, 2002). Because there is such a small Asian population in the PA DOC, however, this may not be detected, even if it is the case within the PA DOC as well. Although the rate for African American men has increased significantly in recent years (Burr, Krug, & Simon, 1999; USDHHS, 2001), the rate for Caucasian men is still significantly higher (USDHHS, 2001). Additionally, profiles created for “typical” prison (and jail) suicides in the US state that the most likely completer would be Caucasian (Hayes and Rowan, 1988).

Social isolation is a well-known correlate of suicidal behavior (Bonner, 1992, Couturier, 2001, Hazler & Denham, 2002, Jamison, 1999, USDHHS, 2001). In a prison setting, this could be measured in many ways, including the number of visitors on visiting list, frequency of visits, participation in activities, and RHU placement. The current study will use RHU placement as the only measure of social isolation because of limitations in data collection abilities related to the other measures. Within the prison suicide literature in particular, placement within isolated housing has been noted as a risk factor (Bonner, 1992, Couturier, 2001).

Advanced age is also associated with increased suicide risk (USDHHS, 2001).

Although the public's attention is often on youth suicide, perhaps because it is the 3rd cause of death for ages 15-24, the rate of suicide actually increases significantly for men over 65 years of age (USDHHS, 2001).

The literature on jail and prison suicide clearly supports the fact that there is a greater risk of suicide in jail (see Hayes, 1988). This is thought to be due to the more intense adjustment issues faced by incarcerated individuals coming into a facility directly from free society (Hayes & Kajdin, 1981; Hayes & Rowan, 1988). Often these individuals are also intoxicated on drugs and/or alcohol, which can increase the suicide risk. Individuals who are parole violators are also coming into a facility directly from the "street." For this reason they are also acknowledged as having increased risk even though they are going into prisons instead of jails (Couturier, 2001). For them, the prison is essentially a jail because most of the parole violators will remain at that particular prison for only a temporary stay before being sent to the home institution where they will serve their time for violating parole. Parole violation status can also be viewed as a measure of social isolation and loss, which also can increase risk of suicide, as discussed above.

Jamison (1999) points out that a prior suicide attempt or prior attempts are the single greatest correlates of completed suicides. The association between prior attempts is generally well supported throughout the literature (see Zahl, 2004). Incidents of self-harm also are strong predictors of a completed suicide, even if the intent of ending one's life was not the key motivator (Dear, Thompson, & Hills, 2000).

The number of misconducts during previous year can be viewed as a measure of impulsivity. The literature supports a strong association between impulsivity and

suicidality (Simon, Swann, Powell, & Potter, 2001). From a theoretical standpoint this seems to make sense, too: if one is experiencing great pain, and is impulsive, one may simply act to end one's life before thinking of the consequences.

Terminal illness, too, has been associated with suicide (Hem, Loge, Haldorsin, & Ekeberg, 2004; Jamison, 1999). Illnesses which have been most often associated with suicide in the literature include AIDS, cancer, MS, and Huntington's disease (Jamison, 1999). These, as well as COPD, Hepatitis C, and leukemia, then, will constitute the operational definition of terminal illness for this study. Facing a terminal illness can also be a rough measure of hopelessness, the existence of which has also been strongly associated with suicide (Beck, 1986). This study also examines the association between chronic illness and suicide. Theoretically, having a chronic illness should increase the risk of suicide because of the associated discomfort and stress. Chronic illness has been operationally defined for this study as arthritis, diabetes, HIV, sleep apnea, Krone's Disease, asthma, and migraine/tension headaches.

The Personality Assessment Inventory (PAI) is a relatively new self-report instrument that has become popular in correctional and forensic settings in recent years (Douglas, Hart, Kropp, 2001), including the Pennsylvania DOC. Studies of its validity in forensic settings have been completed since its inception, and have generally supported the use of the instrument. Douglass, Hart, and Kropp (2001) found moderate support for the validity of the PAI. Their study specifically examined domains of "violent/nonviolent, psychotic/nonpsychotic, and personality disordered/nonpersonality disordered" (p. 183). Wang, Rogers, Giles, Diamond, Herrington-Wand, and Taylor (1997) performed a pilot study of the PAI that focused particularly on malingering, suicidal threats, and

aggressiveness. They utilized criterion related validity by comparing selected PAI scales to (a) evidence of malingering on the Structured Interview of Reported Symptoms (SIRS), (b) actual suicidal threats and gestures, and (c) ratings of aggressiveness on the Overt Aggressiveness Scale (OAS). The current study, then, will also strive to correlate increased scores on PAI scales with increased suicidal completions, as well as attempts (b above). It is theorized that the malingering scale will help to distinguish completed suicides from attempters.

Having a life sentence or death sentence is listed as a risk factor in the work of Lindsay Hayes (1981, 1988) and in PA DOC policy that lists risk factors. Having a death sentence also places inmates in an isolated setting, which could contribute to suicidality. Either sentence could contribute to hopelessness, which is associated with suicidality (Beck, 1987). Being convicted of a violent crime is also listed as a risk factor in PA DOC policy and elsewhere, and will also be examined in the current study.

It is also well documented that the rate of mental health diagnoses in prisons is significantly higher than in the general public (National Institute of Justice, 2005). The rate of some of the aforementioned factors is also significantly higher than in the general population, including substance abuse/addiction, and previous suicide attempts (National Institute of Justice, 2005). Because of the high rate of mental health diagnoses and substance abuse among inmates in general, these factors may not be more significantly associated with suicide attempters and completers than with the control group, despite the hypotheses that they will be associated.

Another thing to consider is that many of the factors examined in this study are unique to prison populations, so not only are the rates higher than in the general population, but

the general population is extremely unlikely ever to experience things like RHU placements, being on PV status, misconducts, having a life/death sentence, or being convicted of a violent crime. Although these factors are unique stressors to a prison population, it seems likely that they will be more closely associated with completers and attempters than with a control group within prison.

Research Hypotheses for the Current Study

1. Completers and attempters are expected to have a significantly higher incidence of MH history than the control group ($p < .05$).
2. Completers and attempters are expected to have a significantly higher probability of drug abuse history than the control group ($p < .05$).
3. Completers and attempters are expected to have a significantly higher probability of being Caucasian than the inmates in the control group ($p < .05$).
4. Completers and attempters are expected to have a significantly higher probability of RHU placement than control subjects at the time control subject files are reviewed ($p < .05$).
5. Completers and attempters are expected to have a significantly higher probability of being age 65 or above ($p < .05$). Both completers and attempters are expected to have a significantly higher average (mean) age than the control group ($p < .05$).
There will be a significant negative correlation between age and misconducts for all groups (completers, attempters, controls).
6. Both completers and attempters are expected to have a significantly higher probability of having been on parole violation status during their completion/most recent attempt than the control group during the time of file review ($p < .05$).

7. Both completers and attempters are expected to have a significantly higher probability of prior suicide attempts than a control group ($p < .05$).
8. Both completer and attempter groups are expected to have a significantly higher average (mean) number of misconducts over the previous year than the control group ($p < .05$).
9. Both completers and attempters are expected to have a significantly higher frequency of diagnosis of a terminal illness than the control group ($p < .05$).
10. It is expected that both completers and attempters will have a significantly higher scores ($t \geq 65$) on the following PAI scales: anxiety (ANX), anxiety-related disorders (ARD), depression (DEP), mania (MAN), paranoia (PAR), schizophrenia (SCZ), borderline (BOR), antisocial (ANT), alcohol (ALC), drug (DRG), aggression (AGG), suicide (SUI), stress (STR) and nonsupport (NON) ($p < .05$).
11. It is expected that attempters will have a significantly higher score than both completers and a control group on the negative impression management (NIM) scale of the Personality Assessment Inventory ($p < .05$).
12. Both completers and attempters are expected to have a significantly higher frequency of a life or death sentence than control subjects ($p < .05$).
13. Both completers and attempters are expected to have a significantly higher frequency of conviction of a violent crime than control subjects ($p < .05$).

Chapter 2: Methods

Overview

This study will examine associations between numerous factors as related to a control group, suicide completer group, and suicide attempter group in the Pennsylvania Department of Corrections from the years 1998 through 2004. This study is unique in several regards. First, it is the only controlled study of its kind in the Pennsylvania Department of Corrections and one of few such studies performed in correctional settings in general. This methodology will highlight differences between individuals exhibiting suicidal behaviors and those not exhibiting suicidal behaviors *in correctional settings*. Second, it will examine the relationship between scales and indices from the Personality Assessment Inventory and suicide in a correctional setting, which has previously received minimal attention in the literature. Finally, because this study focuses on the unique population of the PA DOC, data obtained from this study may be especially useful in informing the Pennsylvania Department of Correction's suicide prevention policy. Results may, therefore, result in increased quality of care for at-risk inmates, as well as a reduction in the litigation that often accompanies completed suicides.

Participants

Three groups will be used in this study. The first will be men who completed suicides while incarcerated in the PA Department of Corrections. The second group will be men who have made suicide attempts while incarcerated in the PA Department of Corrections at the State Correctional Institution at Graterford. The third group will be men who have been randomly selected while incarcerated in the PA Department of Corrections at the State Correctional Institution at Graterford but who have not made attempts. Because all

groups consist of convicted felons, they should be closely matched on most characteristics, such as socioeconomic class, race, educational background, and developmental history. Mean age of the sample is expected to be 40 years, and the age range is expected to be between 18 and 85. Race breakdown is anticipated as being approximately 75% African American, 10% Caucasian, 10% Latino and 5% "other."

Measures

Numerous measures will be utilized in carrying out this study. They will include the following:

1. mental illness (Y/N), including diagnosis
2. drug and alcohol abuse/dependence, current or by history (Y/N)
3. race (Caucasian, African American, Latino, Other)
4. RHU placement during last suicide attempt or during file review (for control group)
5. age (greater than 65: Y/N), and specific age
6. parole violation status at time of most recent suicide attempt or time of file review (control group)
7. prior suicide attempts (Y/N)
8. number of misconducts over last year
9. terminal illness (Y/N), including specific illness
10. Personality Assessment Inventory (PAI): Clinical and Treatment consideration scales
11. PAI negative impression management (NIM) scale
12. Life or death sentence (Y/N)

13. Convicted of a violent crime (Y/N)

Table 2

Study Variables, Definition, and Means of Collection

Variable	Definition	Means of Collection
Mental Illness	DSM-IV axis 1 or 2 disorder	mainframe computer, hard copies of files as needed
Drug/alcohol abuse/dep	Defined by DSM-IV	mainframe computer, hard copies of files as needed
Race	Caucasion, Afr. Amr., Latino, Other	mainframe computer, hard copies of files as needed
RHU placement	During last attempt or file review	mainframe computer, hard copies of files as needed
Age	> 65? Y/N, age in years	mainframe computer, hard copies of files as needed
PV status	Y or N	mainframe computer, hard copies of files as needed
Prior suicide Attempts	Y or N	mainframe computer, hard copies of files as needed
Misconducts	Over previous year	mainframe computer, hard copies of files as needed
Terminal Illness	Y/N (AIDS, Cancer, MS, Hep- atitis C)	See previous
PAI Scales	All clinical and treat. Scale t scores	Hard copy of record.
Life of death sentence	Y or N	mainframe computer, hard copies of files as needed
Violent Crime	Y or N	mainframe computer, Hard copies of files as needed

Recruitment

Data on inmates who have completed suicide are maintained at the central office of the Pennsylvania Department of Corrections located in Camp Hill, Pennsylvania. Data for all other inmates in the Department of Corrections is located at the institution where they are housed. All of the aforementioned information is archival and can, therefore, be gathered by examining physical files, as well as computer records that are maintained on the Department of Correction's Intranet. This investigator will gather data on completed suicides both through direct examinations of physical files and through Intranet computer records. Data on the control and the attemptor's group will be gathered from samples of inmates housed at the State Correctional Institution at Graterford.

Inmates who will be used in the study will be assigned numbers sequentially, starting with one. These numbers will be placed on the data collection form in Appendix A for each inmate. A list connecting these numbers with the inmate department of corrections numbers will be maintained on the intranet under this investigator's account number until the completion of the study. Access to the Intranet is not possible outside the DOC, and this user's account number is protected by several passwords. This list will not pass outside of the DOC. Any temporary lists that are kept by this investigator while collecting data shall be shredded prior to leaving the DOC facility at which the data collection took place, after entering identifying information in the intranet. Upon completion of the data collection phase, this list will be destroyed.

Suicide Completers

Inclusion criterion

There must be records supporting the fact that the subject completed suicide while a

male inmate in PA DOC custody between the years 1998 and 2004 inclusive to be assigned to the suicide completers group. This investigator will go back as far as needed in order to collect the most recent 60 completions.

Exclusion criterion

There must be no DOC records supporting the fact that the subject committed suicide to be excluded from the group who has committed suicide. That the subject committed suicide while in DOC custody prior to 1998 or after 2004 is also exclusionary.

Suicide Attempters

Inclusion criterion

A suicide attempt must be documented in the records of the subject to be assigned to the group that is composed of suicide attempters. It is not necessary that this attempt had been made during a time that the inmate was incarcerated in the PA DOC. Because of limitations in data collection resources, the subject must also be housed at the State Correctional Institution at Graterford during the time of data collection.

Exclusion criterion

There must be no documentation of a suicide attempt in the records of the subject to be assigned to the group that is composed of suicide attempters. If the inmate is housed at an institution other than SCI-Graterford, he will also be excluded from this group.

Control

Inclusion criterion

The subject must be a male inmate in the Pennsylvania DOC at the time of data collection to be assigned to the control group. The subject must also be housed at the State Correctional Facility at Graterford because of limitations in data collection

resources. Subjects will be chosen randomly.

Exclusion criterion

There are numerous exclusionary criteria for the control group. Among them are a) not being a PA DOC male inmate at the time of data collection and b) not being housed at the State Correctional Institution at Graterford at the time of data collection. Further, if an individual randomly selected for the control group has a history of suicide attempts, he will be excluded from the control group.

Design

This is a retrospective case control study. Two experimental and control group will be utilized to highlight differences between completed suicides, attempted suicides, and a randomly selected control group. Statistics used include chi-square, ANOVA, MANOVA, and Pearson correlation. More specifically, chi-squares will be used to analyze all hypotheses except for numbers eight, ten, and eleven. Eight will utilize ANOVA, ten will utilize MANOVA, and eleven will utilize ANOVA. Additionally, hypothesis number five will utilize ANOVA and a Pearson correlation in addition to chi-square.

The sample size required for a medium effect size of .30, 95% power, and 2 degrees of freedom will be 172 subjects for chi square analyses ($p < .05$). For correlations, a sample of only 111 subjects will be required for a medium effect size of .30 ($p < .05$). For an ANOVA with three levels of an independent variable and a medium effect size of .30, 190 subjects (the actual sample size) results in 87% power.

Procedures

Data will be collected on each inmate by utilizing the data collection form in Appendix

A. The inmate will be assigned a code. The list connecting the codes to inmate names will be kept on this investigator's DOC computer account, which is safeguarded by several passwords, as discussed above. After all data is collected, this list will be destroyed.

Chapter 3: Results

Overview

This section is divided into two main parts. The first will review descriptive statistics of the sample. The second will review statistics designed to test hypotheses. As will be shown, results support some hypotheses, partially support others, yet do not at all support others. At the end of the second section, tables will be presented that summarize the data discussed in that section.

Descriptive Statistics

The sample contains 190 subjects. The control group has 62 subjects, the attempter group has 60 subjects, and the completer group has 68 subjects. 34.2% of all subjects have documented mental health histories. Of these, 26% are diagnosed with Depression (Major Depression & Depression NOS), 15% with Schizophrenia (all types), 11% with Bipolar Disorder, and 8% with Schizoaffective Disorder. Other diagnoses include Delusional Disorder, Nonorganic Psychosis, Anxiety Disorders, Adjustment Disorders, and Unspecified Mental or Behavioral problems. It should be noted that for the purposes of the study, all substance abuse disorders are classified separately. Of the entire sample, 72% had a diagnosis of alcohol or substance abuse/dependence.

Fifteen percent of all subjects were either in the RHU during their last suicide attempts, or during the time that their files were reviewed (depending on which group they were in). 10% of all subjects were on parole violation status. The mean age of the sample was 39 years, with a 10-year standard deviation. The mean number of misconducts over the previous year was .94, with a standard deviation of 2.6. 66% of the sample had no misconducts over the previous year; 91% had 3 or less; and 98% had 5 or less. 53% of all

subjects had a prior suicide attempt.

11% of all subjects were diagnosed with a terminal illness (AIDS, COPD, Hep. C, Cancer, Leukemia). 9% of all subjects were diagnosed with a chronic illness (HIV, arthritis, asthma, and sleep apnea, tension headaches, seizures, or diabetes). 30% of inmates had a life sentence or death sentence and 75% were convicted of a violent crime (nonviolent crimes consist primarily of drug offenses, DUI, Larceny, Theft, Receiving Stolen Property, and Burglary of an Unoccupied Structure. Just about every other crime is considered violent). 39% of all subjects were Caucasian, 55%, African American, and 6%, Hispanic. Other ethnicity represented less than 1% of the sample.

Analyses of Hypotheses

Next, analysis of outcome related to each hypothesis will be examined.

1. *Completers & attempters are expected to have a significantly higher incidence of MH history than the control group ($p < .05$).* Chi square analysis supported this hypothesis: 63% of completers, 100% of attempters, and 35% of controls had mental health histories. Utilizing chi square analysis with all groups yielded a chi-square of 56.697 and a p of $< .001$. Further chi square analyses were conducted between a) controls and attempters, b) completers and attempters, and c) controls and completers utilizing the Bonferroni Method for control of type I errors. All comparisons were significant and are summarized in Table 5.

2. *Completers & attempters are expected to have a significantly higher probability of drug abuse history than the control group ($p < .05$).* Chi square analysis partially supports this hypothesis. 69% of controls, 88% of attempters, and 60% of completers have substance abuse histories. Chi-square with all groups was 12.805, with a $p = .002$.

Further analyses were conducted utilizing the Bonferroni Method. Analyzing only controls and attempters, yields significant results in the direction of the hypothesis (attempters have a *higher* probability of drug abuse history). Utilizing chi square analysis with controls and completers only, results are not significant, and in the opposite direction of the hypothesis (completers have a *lower* probability of drug abuse history). The most significant difference related to drug abuse history utilizing chi-square analysis is found between completers and attempters, in which chi square was 27.413 ($p < .001$).

3. *Completers and attempters are expected to have a significantly higher probability of being Caucasian than the inmates in the control group ($p \geq .05$).* Chi square testing supports this claim. In the control group African Americans constitute 82% of the population, Caucasians, 12%, and Hispanics, 6% (other groups are <1%). Among attempters, African Americans constitute 43%, Caucasians, 48%, and Hispanics, 8%, and in the completers group African Americans constitute 41%, Caucasians, 54%, and Hispanics, 3%. When using chi square on all groups (controls, attempters, and completers, as well as all ethnic groups), chi-square was 32.856, significant at $p < .001$. Utilizing the Bonferroni Method, further chi square analyses were conducted, revealing significant differences between a) controls and attempters (chi-square = 21.128, $p < .001$), and b) controls and completers (chi-square = 28.029, $p < .001$), but not between c) attempters and completers (chi-square = 11.838, $p = .417$). Further analyses were conducted on a) and b), utilizing the Bonferonni method once again. These results reveal that both for African American and for Caucasian inmates, the differences between a) controls and completers and b) controls and attempters are significant, all at $p < .001$. For African Americans, chi-square for controls and completers was 22.509, and for

controls and attempters, it was 18.703. For Caucasians, chi-square for controls and completers was 25.416, and for controls and attempters it was 20.115. Additionally, differences for both a) and b) were found to not be significant for Hispanic inmates.

4. *Completers and attempters are expected to have a significantly higher probability of RHU placements (during time of completion or most recent attempt) than control subjects at the time control subject files are reviewed ($p < .05$).* Chi-square testing does not support this hypothesis. 15% of control group subjects were in the RHU during the time of file review, 3% of attempters during their most recent attempt, and 25% of completers when they completed suicide. Utilizing chi-square for all groups, chi-square was 11.912, significant at $p = .003$. Additional pairwise comparisons of groups utilizing the Bonferroni method yielded significant results between attempters and completers only, with chi-square = 11.838, significant at $p < .001$. Comparisons between controls and attempters (chi-square = 4.648, $p = .031$), and controls and completers (chi-square = 2.228, $p = .137$) were not significant. Further, even though a significant difference between controls and attempters was not revealed, the difference was in the opposite direction of what was predicted: there were actually a greater percentage of controls in the RHU than there were attempters. Although there was a greater percentage of completers than of controls in the RHU (as hypothesized), this difference was not significant, as already discussed.

5. *Completers and attempters are expected to have a significantly higher probability of being age 65 or above ($p < .05$). Both completers and attempters are expected to have a significantly higher average (mean) age than the control group ($p < .05$). There will be a significant negative correlation between age and misconducts for all groups*

(*completers, attempters, controls*). Chi square analysis does not support the first or second part of this hypothesis, but the third part is supported via a Pearson correlation. Chi-square analysis for all groups yielded a chi-square of 4.526, and a p of .104, precluding further pairwise comparisons. ANOVA was utilized to determine if there were significant differences related to age between the groups. Here, too, results were not significant ($p = .758$). Mean age for the control group was 37.9 years, for the completers, 39.3 years, and for attempters, 38.8 years. Finally, a Pearson correlation was performed, utilizing age and misconducts on all subjects combined. This supported the second part of the hypothesis, revealing a correlation of $-.198$ between age and misconducts, significant at the .01 level.

6. *Both completers and attempters are expected to have a significantly higher probability of having been on parole violation status during their completion/most recent attempt than the control group during the time of file review ($p < .05$).* Chi square analysis does not support this hypothesis. 18% of the control group was on PV status during the time when their files were reviewed, 2% of attempters were on PV status during their most recent attempts, and 10% of completers were on PV status at the time of completion. Chi square analysis with all groups revealed a chi-square of 8.732 with significant differences at $p = .013$. Further analysis revealed a significant difference between controls and attempters, but not between attempters and completers or controls and completers. Although there was a significant difference between controls and attempters (chi-square = 8.885, $p = .003$), the difference was the opposite of what was hypothesized: controls had a higher rate of PV status than attempters did. Although results between controls and completers were not significant, outcome here, too, resulted in the opposite of what was hypothesized: there were a higher percentage of controls than

of completers on PV status

7. *Both completers and attempters are expected to have a significantly higher probability of prior suicide attempts than a control group ($p < .05$).* Chi Square analysis supports this hypothesis. Comparing all three groups yields $p < .001$. Further pairwise comparisons yield significant results in all cases, as reflected in Table 5.

8. *Both completer and attempter groups are expected to have a significantly higher average (mean) number of misconducts over the previous year than the control group ($p < .05$).* This hypothesis was not supported by ANOVA analysis. Mean number of misconducts for the control group was .68, for attempters, 1.27, and for completers, .86. Results of ANOVA analysis were not significant, yielding $p = .454$.

9. *Both completers and attempters are expected to have a significantly higher frequency of terminal or chronic illness than the control group ($p < .05$).* This hypothesis is not supported by chi-square analysis. 5% of controls have a terminal illness, 10% of attempters have terminal illnesses, as do 16% of completers. Chi-square analysis on all groups (controls, attempters, completers) for inmates with terminal, chronic, and no illnesses (as separate groups) yielded a chi-square of 8.365, with $p = .079$, precluding further pairwise comparisons. It should be noted that chi-square analysis on all groups for inmates with a) terminal illness vs. no terminal illness and b) chronic illness vs. no chronic illness also yields insignificant results.

10. *It is expected that both completers and attempters will have a significantly higher scores ($t \geq 65$) on the following PAI scales: anxiety (ANX), anxiety-related disorders (ARD), depression (DEP), mania (MAN), paranoia (PAR), schizophrenia (SCZ), borderline (BOR), antisocial (ANT), alcohol (ALC), drug (DRG), aggression*

(AGG), suicide (SUI), stress (STR) and nonsupport (NON) ($p < .05$). This hypothesis could not be evaluated because the relevant data could not be collected.

11. *It is expected that attempters will have a significantly higher mean score than both completers and a control group on the negative impression management (NIM) scale of the Personality Assessment Inventory ($p < .05$). This hypothesis could not be evaluated because the relevant data could not be collected.*

12. *Both completers and attempters are expected to have a significantly higher frequency of a life sentence or death sentence than control subjects ($p < .05$). Chi Square testing does not support this hypothesis. 24% of controls have a life or death sentence, 38% of attempters, and 27% of completers. Analysis between all groups revealed a chi square of 3.392, and no significant differences ($p = .183$).*

13. *Both completers and attempters are expected to have a significantly higher frequency of conviction of a violent crime than control subjects ($p < .05$). Chi Square Analysis does not support this hypothesis. 70% of controls have been convicted of a violent crime, 82% of attempters, and 75% of completers. Analysis of all groups revealed a chi-square of 2.487 and no significant differences ($p = .288$).*

Table 3

Within Group Percentage (or Mean) for All Risk Factors

	Controls	Completers	Attempters
MH History	35%	63%	100%*
Drug Abuse History	69%	60%	88%
Ethnicity: Caucasian	12%	54%	48%
African American	82%	41%	43%
Hispanic	7%	3%	8%
Restricted Housing	15%	25%	3%
Mean Age	37.9	39.3	38.8
Greater than 65 years	2%	6%	0%
Parole Violator Status	18%	10%	2%
Prior Suicide Attempt	10%	43%	100%*
Mean Misconducts (prior year)	.68	.88	1.27
Terminal Illness	5%	16%	10%
Chronic Illness	13%	3%	12%
Life or Death Sentence	24%	27%	38%
Violent Crime	70%	75%	82%

* Due to data collection methods, both of these numbers are 100%.

Table 4

Results of Comparisons between Attempters, Completers, and Controls using Chi Square and ANOVA

Chi Square Analyses

Comparison	Pearson chi-square	p value (Alpha)
Mental Health History	56.697	< .001*
Substance Abuse History	12.805	.002*
Ethnicity	32.856	< .001*
RHU Placement	11.912	.003*
Greater than age 65	4.526	.104
Parole Violation Status	8.732	.013*
Prior Suicide Attempts	123.204	< .001*
Diagnosis of Terminal or Chronic Illness	8.365	.079
Life/Death Sentence	3.392	.183
Convicted of Violent Crime	2.487	.288

ANOVA Analyses

Comparison	Sum of Squares	Between Group Significance
Mean Age	60.514	.758
Mean Number of Misconducts	10.902	.452

* = statistically significant

Table 5

Further Analyses for Significant Comparisons utilizing Holm's Sequential Bonferroni Method for Control of Type I Error for All Pairwise Comparisons

Comparison	Pearson chi-square	p value (Alpha)
Mental Health History		
Controls vs. Attempters	57.552	<.001 (.017)*
Completers vs. Attempters	27.413	<.001 (.025)*
Controls vs. Completers	9.991	.002 (.05)*
Substance Abuse History		
Completers vs. Attempters	12.847	<.001 (.017)*
Controls vs. Attempters	6.549	.01 (.025)*
Controls vs. Completers	1.164	.281 (.05)
Ethnicity		
Controls vs. Completers	28.029	<.001 (.017)*
Controls vs. Attempters	21.128	<.001 (.025)*
Attempters Vs. Completers	2.841	.417 (.05)
RHU Placement		
Attempters vs. Completers	11.838	<.001 (.017)*
Controls vs. Attmptrs.	4.648	.031 (.025)
Controls vs. Completers	2.228	.137 (.05)

* = statistically significant

Table 5 (cont.)

Comparison	Pearson Chi-Square	p value (Alpha)
Parole Violator Status		
Controls vs. Attempters	8.885	.003 (.017)*
Attempters vs. Completers	4.135	.042 (.025)
Controls vs. Completers	1.427	.232 (.05)
Prior Suicide Attempts		
Controls vs. Completers	122	<.001 (.017)*
Attempters vs. Completers	49.491	<.001 (.025)*
Controls vs. Completers	34.033	.001 (.05)*

* = *statistically significant*

Table 6

Additional Analyses of Ethnicity for Significant Comparisons utilizing Holm's Bonferroni Method for Control of Type I Error for All Pairwise Comparisons

Comparison	Pearson chi-square	p value (Alpha)
African American		
Controls vs. Completers	22.509	< .001 (.05)*
Controls vs. Attempters	18.073	< .001 (.05)*
Caucasian		
Controls vs. Completers	25.416	< .001 (.05)*
Controls vs. Attempters	20.115	< .001 (.05)*
Hispanic		
Controls vs. Completers	.908	.341 (.05)
Controls vs. Attempters	.158	.691 (.05)

* = statistically significant

Table 7

Summary of Group Comparisons for All Risk Factors

	Cntl&Cmp	Cntl&Att	Cmp&Att
MH History	Cntrl<Cmp	Cnt<Att*	Cmp<Att *
Drug Abuse History		Cnt<Att	Cmp<Att
Ethnicity: Caucasian	Cntl<Cmp	Cnt<Att	
African American	Cntl>Cmp	Cnt>Att	
Hispanic			
Restricted Housing			Cmp>Att #
Mean Age			
Greater than 65 years			
Parole Violator Status		Cntl>Att	
Prior Suicide Attempt	Cntl<Cmp	Cnt<Att ^	Cmp<Att ^
Mean Misconducts (prior year)			
Terminal Illness			
Chronic Illness			
Life or Death Sentence			
Violent Crime			

Relationship is Significant at $p < .05$ where a comparison (< or >) is made; blank = Not Significant

* = All attempters were designated as having m.h. history due to data collection method. Results should be interpreted with caution.

= Results should be viewed with caution due to problems with data collection. See discussion section.

^ = Due to data collection method, all attempters have prior suicide attempt. Results should be interpreted with caution.

Summary

This section was divided into two main parts. The first section reviewed descriptive statistics of the sample and the second reviewed statistics designed to test hypotheses. Results supported some hypotheses, partially support others, yet did not at all support others. These results suggest that there are some trends unique within the PA DOC related to suicidal behavior.

Chapter 4: Discussion

Overview

This section is divided into three main parts. The first will review the results of hypothesis analysis (as presented in the previous section), incorporating literature relevant to the results. The second will discuss the implications of these results for clinical practice. The third section will address areas of potential further research.

Results of Hypotheses

This section will review the hypotheses offered in this study. Results will be discussed in relation to relevant literature. Although all of the hypotheses are written in a way consistent with what the literature suggests, specific sources will be reiterated. It should also be noted that although the hypotheses make statements about both suicide completers and attempters, most of the literature related to risk factors focuses on connections to completions only. Because a prior attempt is typically seen as the greatest single risk factor for a completed suicide (i.e. Jamison, 1999), it is reasonable that a risk factor for completion will likely also be a risk factor for an attempt. Unless stated otherwise, though, the literature which is discussed focuses primarily on risk factors for completed suicide.

The first hypothesis states that completers and attempters are expected to have significantly higher incidence of MH history than the control group ($p < .05$). The literature is very consistent in supporting this point: diagnosis of a mental health disorder is correlated with increased risk of completing and attempting suicide. Primary diagnoses that are risk factors include Bipolar I Disorder, Major Depressive Disorder, and Schizophrenia (Jamison, 1999; Cavanaugh, Carson, Sharpe, and Lawrie, 2003; Hall, Platt,

and Hall, 1999; Harvard Mental Health Letter, 2000; Reid, 1998). There is also support in the literature that certain personality disorders are correlated with suicidality, especially Borderline Personality Disorder (Chioqueta and Stiles, 2004; Verona, Patrick, and Joiner, 2001). Because personality disorders are so seldomly diagnosed in the Pennsylvania Department of Corrections, this study examined only the role of axis I disorders.

Results were consistent with the literature: both attempters and completers had significantly higher incidence of mental health histories than controls. It is noteworthy that many other disorders were included in addition to the aforementioned Bipolar I, Major Depressive Disorder, and Schizophrenia in assigning cases the mental health history designation. These included Schizoaffective Disorder, Delusional Disorder, Nonorganic Psychosis, Anxiety Disorders (various), Adjustment Disorders, and Unspecified Mental or Behavioral Problems. It is also noteworthy that Depression (Major Depression and Depression NOS), Schizophrenia (all types), Bipolar Disorder, and Schizoaffective disorder constituted 60% of all inmates given a mental health diagnosis in the sample.

Most importantly, however, it should be noted that 100% of attempters had a mental health history due to methodological issues related to data collection. In order to generate a list of attempters, the mental health rosters were searched using a random process. The rationale was that every inmate who attempts suicide should be placed on the mental health roster and given a diagnosis. Because of the way in which attempters were identified, and the way the DOC (should) assign mental health diagnosis to suicide attempters, the comparisons utilizing attempters are not valid. Therefore, the sole conclusion that can be drawn in examining the data related to this hypothesis is that there is a significantly higher incidence of mental health history among suicide completers than

among controls.

The second hypothesis states that completers and attempters are expected to have a significantly higher probability of drug abuse history than the control group. The literature overwhelmingly supports this hypothesis too (Aharonvich, Xinua, Nones, Hasin, 2002; Alcohol, Drug Abuse, and Mental Health Administration, 1989; Pirkola, Suominen, Isomtsa, 2004; USDHHS, 2001).

Results in this area were not entirely consistent with the literature. First, controls have a higher rate of substance abuse history (69%) than do completers (60%), in contrast to what the literature generally suggests. Although drug abuse history is certainly higher among inmates than among the general population, it is still surprising that the rate is higher among controls than among completers. The difference, however, is not significant ($p = .281$), revealing that substance abuse history is not useful in distinguishing completers from controls.

Significant differences were found between controls and attempters, and attempters and completers, however. 88% of attempters had a substance abuse history, and the difference between them and controls was significant ($p = .01$). The most significant difference was found between completers and attempters, which was significant at $p < .001$. These results suggest that substance abuse history can be utilized to distinguish suicide attempters from controls and suicide attempters from completers.

The third hypothesis states that completers and attempters are expected to have a significantly higher probability of being Caucasian than inmates in the control group. Although worldwide, Asians have a much higher rate of suicide than other ethnic groups (WHO, 2002), there is such a small Asian population in the Pennsylvania Department of

Corrections, that this result would likely not be detected even if it were true in this population. Although the rate of suicide for African American men has increased significantly in recent years (Burr, Krug, and Simon, 1999; USDHHS, 2001), the rate for Caucasian men is still significantly higher (USDHHS, 2001). Further, profiles created for typical prison and jail suicides in the U.S. state that Caucasians are the most likely completers of suicide than any other race (Hayes and Rowan, 1988).

Results support this hypothesis completely: African Americans constitute 82% of the control group, but only 43% of attempters and 41% of completers. Caucasians constitute 12% of controls, but 48% of attempters and 54% of completers. When comparing controls of both groups to attempters and completers, results are highly significant. It is also noteworthy that there are no significant differences between any groups for Hispanics, and no significant differences between completers and attempters for any ethnic group. Results suggest that ethnicity can be useful in distinguishing attempters and completers from controls. Specifically, being Caucasian is significantly more closely associated both with attempting and with completing suicide, and being African American is significantly less closely associated both with attempting and with completing suicide.

The fourth hypothesis states that both completers and attempters are expected to have a significantly higher probability of RHU placement than control subjects at the time when control subject files are reviewed. Social isolation is a well-supported correlate of suicidal behavior (Bonner, 1992; Couturier, 2001; Hazler and Denham, 2002; Jamison, 1999; USDHHS, 2001). In prison settings, this could be measured in many ways, including number of visitors on visiting list, frequency of visits, participation in activities, and RHU placement. Because of limitations in the ability to collect data in other areas, only RHU

placement was used to measure social isolation in this study. Within the prison suicide literature in particular, placement within isolated housing has been noted as a risk factor (Bonner, 1992; Couturier, 2001).

Results of the current study do not support this claim. 15% of control subjects were in the RHU during the time of their file reviews, 3% of attempters during their most recent attempts, and 25% of completers when they completed suicide. Consistent with the hypothesis, there was a greater percentage of completers than of controls in the RHU. This difference was not significant, however. Inconsistent with the hypothesis, there were significantly fewer suicide attempters than controls. It should be kept in mind that inmate location during the last attempt frequently could not be found for subjects in the attempter group. The reason for this is that after an attempt was verified on the DOC mainframe computer, the date of the attempt often could not be located either via computer search or examination of the physical file. In these cases, it was assumed that the attempt had occurred prior to incarceration, and also, by default, outside of the RHU. It is possible, however, that the attempt was made in prison (and in the RHU) but not recorded in the record. For this reason, it seems that conclusions related to attempters on this dimension should be viewed with caution. Data on location of completed suicide or most recent attempt for completers and controls was much more accessible.

The fifth hypothesis states that completers and attempters are expected to have a significantly higher probability of being age 65 or above ($p < .05$); both completers and attempters are expected to have a significantly higher average (mean) age than the control group ($p < .05$), and there will be a significant negative correlation between age and misconducts for all groups (completers, attempters, controls). Advanced age is associated

with increased suicide risk, a claim that is well supported in the literature (USDHHS, 2001). In particular, the rate of suicide actually increases significantly for men over 65 years of age (USDHHS, 2001).

The first two parts of this hypothesis are not supported by the current study, but the final part is. Although both completers and attempters have a higher average age than do controls, neither chi square analysis nor ANOVA reveal significant differences between groups. There is, however, a significant negative correlation ($p < .01$) between age and misconducts for all subjects ($r = -.198$).

The sixth hypothesis states that both completers and attempters are expected to have a significantly higher probability of having been on parole violation status during their completion/most recent attempt than the control group during the time of file review ($p < .05$). The literature on jail and prison suicide clearly supports the idea that there is a greater risk of suicide in jail (Hayes, 1988; Hayes and Kajdin, 1981; Hayes and Rowan, 1988). This is thought to be due to the more intense adjustment issues faced by individuals entering a facility directly from a free society. Often these individuals are also intoxicated on drugs and/or alcohol, which is also associated with an increased risk of suicide. Individuals who are parole violators in the PA DOC are also coming into a correctional facility directly from a free society. For this reason, they are also acknowledged as having increased risk even though they are going into prisons instead of jails (Couturier, 2001). Parole violation status can also be viewed as a measure of social isolation and loss, which also increases the risk of suicide.

This hypothesis is not supported however. 18% of controls were on parole violation status during the time of file review, 2% of attempters during their most recent attempts,

and 10% of completers during the time of suicide completions. Results are the opposite of what was hypothesized: the percentage of controls on parole violation status was greater than both attempters and completers. The difference between controls and attempters was significant, but between controls and completers it was not significant. It is possible that these results were confounded by the length of time that subjects were on parole violation status. Although this status was meant to capture the degree to which an individual may be stressed by adjustment issues, an individual on parole violation status for 3 years will likely have less adjustment stress than an individual who was on parole violation status for only a month. Data on the length of time an individual was on parole violation status was not collected. There is no reason to believe that these potential differences in length of time as a parole violator were unevenly distributed between groups however. Results should be viewed with some caution nonetheless.

The seventh hypothesis states that both completers and attempters are expected to have a significantly higher probability of prior suicide attempts than a control group ($p < .05$). Jamison (1999) points out that one or more prior suicide attempt is the single greatest correlate of completed suicides. This association is well supported in the literature (Zahl, 2004; Dear Thompson, and Hills, 2000).

As discussed previously, suicide attempters were selected from the mental health roster because of methodological issues, resulting in 100% of attempters having a mental health history. In a similar manner (and also due to methodological problems with data collection), 100% of attempters are labeled as having a prior suicide attempt. The reason for this is that the computerized data system was the primary method of determining whether or not a prior suicide attempt had been made. The same data that was used to

determine prior attempts for controls and for completers was used for attempters, but in the case of attempters, this was the same data utilized in identify attempters as members of the attempter group. Hence, 100% of attempters are labeled as having a prior suicide attempt. For this reason, legitimate comparisons cannot be made between attempters and other groups related to this hypothesis. Otherwise, the comparison between completers is significant; however: 43% of completers and 10% of controls had prior suicide attempts, yielding a highly significant difference at $p = .001$.

The eighth hypothesis states that both completer and attempter groups are expected to have a significantly higher average (mean) number of misconducts over the previous year than the control group ($p < .05$). In this study, misconducts are viewed as a rough measure of impulsivity. The literature supports a positive association between impulsivity and suicidality (Simon, Swann, Powell, & Potter, 2001). From a theoretical standpoint this also seems to make sense: if one is experiencing great pain and is impulsive, one may act to end one's life before fully considering the consequences.

This hypothesis is not supported at all, however. The mean number of misconducts for the control group was .68, for attempters, 1.27, and for completers, .86. No significant differences were found between any of the groups: controls and attempters resulted in p of .430; control and completers resulted in p of .897; completers and attempters resulted in $p = .686$.

The ninth hypothesis states that completers and attempters are expected to have a significantly higher frequency of diagnosis of a terminal illness than the control group ($p < .05$). This connection has been strongly supported in the literature (Hem, Loge, Haldorsin, & Ekeberg, 2004; Jamison, 1999). Illnesses that have been most closely

associated with suicide include AIDS, cancer (all diagnoses), MS, and Huntington's disease (Jamison, 1999). These, as well as COPD, Hepatitis C, and leukemia have constituted the operational definition of terminal illness for this study. Facing a terminal illness can also be a rough measure of hopelessness, the existence of which has also been strongly associated with suicide (Beck, 1986). This study also examines the association between chronic illness and suicide. Theoretically, having a chronic illness should increase the risk of suicide because of the associated discomfort and stress. Chronic illness has been operationally defined for this study as arthritis, diabetes, HIV, sleep apnea, Chron's Disease, asthma, and migraine/tension headaches.

This hypothesis is not supported by chi-square analysis. 5% of controls, 10% of attempters, and 16% of completers have a terminal illness. 13% of controls, 3% of completers, and 12% of attempters have a chronic illness. Chi square analysis of all groups combined did not yield significant results, however ($p = .183$). Additionally, analyses of terminal illness only and chronic illness only were conducted with all groups (controls, attempters, and completers). Neither of these analyses was significant either.

The tenth hypothesis states that it is expected that both completers and attempters will have a significantly higher scores ($t \geq 65$) on the following PAI scales: anxiety (ANX), anxiety-related disorders (ARD), depression (DEP), mania (MAN), paranoia (PAR), schizophrenia (SCZ), borderline (BOR), antisocial (ANT), alcohol (ALC), drug (DRG), aggression (AGG), suicide (SUI), stress (STR) and nonsupport (NON) ($p < .05$). The eleventh hypothesis states that it is expected that attempters will have a significantly higher score than both completers and a control group on the negative impression management (NIM) scale of the Personality Assessment Inventory ($p < .05$). Unfortunately, neither

hypothesis ten nor eleven could be evaluated because during data collection, it was discovered that the PA DOC saves PAI results in very few cases. Although the vast majority of incoming inmates are administered the PAI, this researcher was informed that results are saved only if they are considered clinically relevant by the administering psychologist.

The twelfth hypothesis states that both completers and attempters are expected to have a significantly higher frequency of a life sentence or death sentence than control subjects ($p < .05$). Having a life sentence or death sentence is cited as a risk factor in the work of Lindsay Hayes (1981, 1988) and in PA DOC policy that lists risk factors. Having a death sentence also places inmates in an isolated setting (the Restricted Housing Unit), which could increase the risk of suicidality. Either sentence could contribute to feelings of hopelessness, which is also associated with an increased risk of suicide (Beck, 1987).

This hypothesis is not supported at all in the current study. 24% of controls have a life sentence or death sentence, 38% of attempters, and 27% of completers. Chi square analysis of all groups resulted in $p = .183$.

The thirteenth (and final) hypothesis states that both completers and attempters are expected to have a significantly higher frequency of conviction of a violent crime than control subjects ($p < .05$). Having been convicted of a violent crime is listed as a risk factor in PA DOC policy. Chi Square analysis does not support this hypothesis at all. 70% of controls have been convicted of a violent crime, 82% of attempters, and 75% of completers. Chi square analysis of all groups resulted in $p = .288$.

Applications in Clinical Practice

The current study has utilized the public health approach in attempting to gain

understanding of suicidal behavior in incarcerated men in the Pennsylvania Department of Corrections. This approach focuses on identifying patterns of suicide and suicidal behavior throughout a group or population, in contrast to the clinical medical approach, which explores the history and health conditions that could lead to suicide in a particular individual (USDHHS, 2001). A key step in the public health approach involves engaging in risk and in protective factor research. The current study has produced profiles of risk characteristics for suicide completers, attempters, and controls in the Pennsylvania Department of Corrections. More importantly, the current study has determined the differences between groups that are significant, revealing characteristics distinguishing groups from each other. This information can be used to target high-risk individuals for further treatment and intervention.

Perhaps the most useful group comparison made in the current study is between controls and completers. This comparison illuminates characteristics that distinguish suicide completers from inmates who have neither completed nor attempted suicide. By revisiting table 7 (reproduced below), it can be seen the characteristics that are helpful in making this distinction. Specifically, it can be concluded that suicide completers have a significantly higher likelihood of having a mental health history, of being Caucasian, and of having made a prior suicide attempt. Although completers have a higher percentage of other risk factors than controls have (Restricted Housing Unit Placement, greater mean age and number of misconducts, terminal illness, Life or Death Sentence, Violent Crime), these factors do not constitute significant differences. A significant protective factor is in being African American. Controls have a significantly greater percentage than completers do on this factor.

Significant differences between controls and attempters also exist. Attempters had a significantly higher likelihood of having a drug abuse history, of being Caucasian, of having a mental health history, and of having a prior suicide attempt. It should be kept in mind, however, that when comparing controls and attempters, the significance of mental health history and of prior suicide attempts should be viewed with caution because of difficulties in data collection, as discussed earlier. Protective factors (meaning there is a significantly higher likelihood that controls have these characteristics than attempters) for attempting suicide include being African American, and being on parole violation status.

Significant differences are also revealed between completers and attempters. These differences could be helpful in answering a common question in corrections: Is this inmate who is threatening suicide genuine in his threat, or is this more of a manipulation for a desired outcome (i.e. social attention, desired housing placement, etc.)? Results indicate that if the inmate is located in the Restricted Housing Unit, he is more likely commit suicide. This result must be interpreted with some caution, however, because of difficulties with data collection as discussed above. If he has a drug abuse history, mental health history, or prior suicide attempt he is more likely to be manipulating. The latter two results should be interpreted with caution, however, for reasons discussed above. Significant differences exist in all of these areas between the two groups. It should be noted that drug abuse history is highly significant in distinguishing attempters from completers ($p < .001$).

Table 7 (reproduced)

Summary of Group Comparisons for All Risk Factors

	Cntl&Cmp	Cntl&Att	Cmp&Att
MH History	Cntl<Cmp	Cnt<Att*	Cmp<Att *
Drug Abuse History		Cnt<Att	Cmp<Att
Ethnicity: Caucasian	Cntl<Cmp	Cnt<Att	
African American	Cntl>Cmp	Cnt>Att	
Hispanic			
Restricted Housing			Cmp>Att #
Mean Age			
Greater than 65 years			
Parole Violator Status		Cnt >Att	
Prior Suicide Attempt	Cntl<Cmp	Cnt<Att ^	Cmp<Att ^
Mean Misconducts (prior year)			
Terminal Illness			
Chronic Illness			
Life or Death Sentence			
Violent Crime			

Relationship is Significant at $p < .05$ where a comparison (< or >) is made; blank = Not Significant

** = All attempters were designated as having m.h. history due to data collection method. Results should be interpreted with caution.*

= Results should be viewed with caution due to problems with data collection. See discussion section.

^ = Due to data collection method, all attempters have prior suicide attempt. Results should be

interpreted with caution.

The PA DOC can perhaps utilize this information most effectively by incorporating it into existing DOC policies related to suicide. Policy 13.1.1 focuses on activities after an inmate suicide (PA DOC, 2004). One goal of this activity stated within the policy is to help “sensitize staff members to possible clues and situations that are present before such incidents may occur in these events.” Although it seems that this particular policy would not benefit from modification based on the findings of the current study, it does express the benefits that may be derived from this work. Examining other DOC policies related to suicide may reveal how this is possible.

Policy 13.8.1, Section H, outlines in detail policies for dealing with potentially suicidal inmates and inmates who attempt suicide. In subsection one of this policy, the assessment of suicide risk is addressed. It states, “Suicide potential can be evaluated by using the criteria below. These criteria are intended to help staff formulate a plan of prevention and treatment” (PA DOC, 2004). These criteria involve (a) a specific suicide plan (the more specific the plan, greater the chance of committing suicide), (b) prior suicidal behavior, (c) stress, (d) prior suicidal behavior of a significant other, (e) symptoms, (f) personal resources (i.e. social support decreases likelihood of suicide), (g) acute vs. chronic aspects (if he has been dealing with problem for years, less likely to commit suicide), and (h) medical status (serious medical conditions increase likelihood) (PA DOC, 2004).

Both stress (c) and symptoms (e), have exhaustive lists. Stressors (c) include:

1. Difficulties in coping with legal problems
2. The loss of a loved one through death or divorce
3. The loss of valued employment
4. Anniversary of incarceration date or offense

5. Serious illnesses or diagnosis of terminal illness
6. Threats or perceived threats from peers
7. Sexual victimization, particularly after first submission
8. Placement in RHU/SMU/LTSU
9. Unexpected punishment
10. Cell restriction
11. Recent transfer from another state or county facility
12. Recently returned to prison due to a parole violation
13. Any movement to and from Level 5 Housing Unit
14. Long sentence coupled with poor external supports and/or minimal involvement in facility supports
15. Somatic complaints of a vague nature that do not respond to treatment
16. History of violence toward others
17. Low IQ,
18. Long sentence, including life
19. History of alcohol or drug abuse (PA DOC, 2004).

Symptoms (e) include

1. Auditory or visual hallucinations, particularly command hallucinations ordering person to harm himself/herself
2. Delusions
3. Any change in an individual's sleep pattern
4. Any change from the individual's sleep pattern
5. Social withdrawal

6. Apathy
7. Despondency
8. Severe feelings of hopelessness and helplessness
9. General attitude of physical and emotional exhaustion
10. Agitation through such symptoms as tension, guilt, shame, poor impulse control, or feelings of rage, anger, hostility, or revenge
11. Giving away personal property
12. Removal of all visitors from visiting list
13. Sudden elevated mood
14. Psychic or somatic anxiety (PA DOC, 2004)

It is evident in examining this policy, that the current study has explored certain aspects of it, but has ignored others. Specifically, the current study has examined prior suicidal behavior, medical status (serious illnesses: terminal & chronic), RHU placement, parole violation status, length of sentence, history of violence, drug and alcohol abuse history, and mental health history. In addition, the current study has examined the effect of ethnicity, age, and number of misconducts (as a rough measure of impulsivity). If policy 13.8.1 were slightly revised in light of the current study's findings, it would likely be improved. Specifically, emphasis should be placed on the importance of 1) mental health history, (especially Depression, Schizophrenia, Bipolar Disorder, and Schizoaffective Disorder, and associated symptoms) 2) ethnicity (Caucasians are at higher risk), 3) prior suicide attempt, and 4) terminal illness in increasing the risk of suicide completion (even though this was not quite statistically significant). Protective factors that could be highlighted in the policy include being African American, and having a chronic illness.

Key elements in policy that were not examined by the current study include the specificity of a suicide plan (if any), stress, prior suicidal behavior of significant others, personal resources (i.e. social supports), and whether associated environmental stressors were acute or were chronic. Although these areas may be highly significant in distinguishing completers from noncompleters, they have not been demonstrated by the current study. Therefore, no modification of policy can be recommended on the basis of empirically supported findings.

The second subsection of policy 13.8.1, section H, focuses on screening and assessment of inmates for suicidality. The first stipulation here is that “All contact employees shall receive training in suicide prevention...” In accord with the aforementioned policy modifications, training, too, would be improved if it reflected the results of the current study. Specifically, during training it is recommended that an emphasis be placed on the increased risk for suicide completion associated with 1) mental health history, (especially Depression, Schizophrenia, Bipolar Disorder, and Schizoaffective Disorder, and associated symptoms) 2) ethnicity (Caucasians are at higher risk), 3) prior suicide attempt, and 4) terminal illness in increasing the risk of suicide completion.

Although the current study has demonstrated that being African American and having a chronic illness (the latter, not quite significantly) actually decrease the risk of suicide completion, it seems that this should not be emphasized in training. The reason for this is that contact staff may minimize suicide risk for inmates who are African American or who have a chronic illness, despite those inmates clearly having significant other risk factors. For this reason, it seems that it might be prudent to share protective factors revealed in

this study only with mental health professionals who can better place them in the context of a complete clinical picture for an individual inmate. Policy 5.1.1 also addresses training issues, and could also be improved by making modifications suggested in this section.

The Suicide Risk Indicators Checklist is also discussed in policy 13.8.1. This is a simple “yes/no” checklist consisting of 13 items. Areas covered include whether or not the escorting officer has information that the inmate may harm himself, whether or not the inmate is expressing suicidal thoughts, whether or not he is showing signs of depression, whether or not he is acting in a strange manner, if he is under the influence of drugs or alcohol, if there has been a recent family change, change in legal status, or if this is his first RHU placement. Items also included are whether or not he has been assaulted by another inmate, if he appears angry/hostile, anxious or afraid, displays signs of self-neglect or abuse, or if he is taking any psychiatric medication. If any of the first eight items are checked, an immediate response is required from staff (Psychology and Nursing). If any of the last five are checked, a response within 24 hours is required (PA DOC, 2004). In light of results of the current study, it seems that adding prior suicide attempts and terminal illnesses to this checklist would be prudent.

Being Caucasian has been shown to be associated with significantly higher risk of suicide completion than other ethnic groups; however, it seems that this should not be added to the Suicide Risk Indicators Checklist. The reason for this that roughly 12% of the general population in the PA DOC is Caucasian (estimated based on the randomly selected control sample). If being Caucasian were a risk factor on the checklist, all of this 12% would have to be checked in the RHU, which would be an inefficient use of resources. Although it is probably true that the percentage of inmates who display any of

the individual risk factors on the checklist actually complete suicide is very low, it is also likely the case that any one of these risk factors represents far less than 12% of all the inmates taken to the RHU.

Other findings of the study would be most useful if shared with personnel who deal with suicidal inmates on a regular basis. This would include psychology, psychiatry, nursing, and certain correctional officers (those working on special units). Distinctions between controls and attempters, and attempters and completers are somewhat subtle distinctions, and may confuse or mislead contact staff not familiar with mental health and suicidal inmates.

Finally, the development of a screening tool to help identify suicide risk based on the findings of this study may be useful, particularly in a circumstance in which little else is known about the individual being assessed. This is often the case when new inmates enter the prison, and are initially interviewed by staff in the assessment unit. Although an immediate risk factor (i.e. the inmate is intoxicated, just lost a loved one, etc.) should not be ignored, administering an instrument based on the findings of the current study could further help to identify risk in cases in which it is unclear. A potentially useful screening tool has been developed; a copy of it is in appendix B. As can be seen, the instrument consists of only four questions, three of which are risk factors for completing suicide (prior suicide attempt, mental health history, being Caucasian), one of which is a protective factor (being African American). Scores can range from 0 through 4. Results of chi square analysis on all groups result in $p < .001$. Further analyses of this instrument on controls, attempters, and completers are presented below in tables eight and nine.

Table 8

Percentage of completers, attempters, and controls for different scores on the screening instrument for suicide risk

	Controls	Completers	Attempters
<i>score</i>			
0	52%	16%	3%
1	34%	13%	0%
2	6%	26%	37%
3	8%	28%	10%
4	0%	16%	50%

Table 9

Analyses of Pairwise Comparisons for scores on Suicide Risk Questionnaire utilizing Holm's Sequential Bonferroni Method for Control of Type I Error.

Comparison	Pearson chi square	p value (Alpha)
Controls vs. Attempters	90.014	< .001 (.017)*
Completers vs. Controls	42.946	< .001 (.025)*
Completers vs. Attempters	30.816	< .001 (.05)*

* = significant

It should be kept in mind that results involving the attempter group should be viewed with some caution, because of data collection problems with attempters related to prior attempts, as discussed previously. Because previous suicide attempt is an item on the screening instrument, results related to attempters should be viewed with some caution. Despite this shortcoming, it is clear that this instrument distinguishes controls, attempters, and completers from each other. This instrument should be used primarily to determine whether or not an individual presents a genuine risk of suicide, because the comparison between controls and completers is not affected by the aforementioned confound. Table ten, below, summarizes a way in which the Suicide Screening Instrument could be potentially useful in distinguishing high, medium, and low suicide risk inmates from each other.

Table 10

Suggested Risk Levels with Percentage of Controls and Completers in Each Group

Risk Level	Percentage of Controls	Percentage of Completers
Low Risk Score 0-1	86%	29%
Moderate Risk Score 2	6%	26%
High Risk Score 3-4	5%	44%

As discussed earlier, substance abuse history was found to be highly significant in distinguishing suicide completers from suicide attempters. For this reason, the following

table presents the percentage of completers and attempters with and without substance abuse history. Attempters have a significantly higher ($p < .001$) likelihood of having a substance abuse history, which could be useful in helping to answer the question of whether or not a particular inmate presenting as suicidal is more likely to complete suicide or not. It should be noted that in either case, all threats need to be taken seriously.

Table 11

Percentage of Completers and Attempters with Substance Abuse History

Substance Abuse History	Completers	Attempters
Yes	60%	88%
No	40%	60%

Further Research Directions

There are numerous limitations to the current study, all of which suggest areas of further study. First, the generalizability of results will be limited because the sample consists only of inmates in the Pennsylvania Department of Corrections. This suggests a need for additional studies with larger sample sizes. If a study drawing samples from across U.S. prisons could be made, for example, results could apply to a broader range of prisons. Of course, there would also be a trade-off: although results would be more generalizable, they would also be less reflective of the nuances of the PA DOC.

Second, the study examines only male inmates, so generalizability to women will not be possible. A broader sample that included women could also increase generalizability. Because women constitute such a small percentage of the overall inmate population,

however, it would make more sense to research female prison suicide independently. Otherwise the unique trends that may exist among women could be lost to the cause of greater generalized results.

Third, although the completer group is drawn from the more than twenty institutions across the state, the control and attempter group is drawn only from SCI-Graterford due to practical considerations. This may have resulted in comparisons between groups that are different in important ways. For example, Graterford is a maximum-security facility although most other prisons in the DOC are not. This means that the inmate population at Graterford has committed more serious and violent crimes than inmates in most other institutions overall. Violence and impulsivity could increase the risk of suicide attempts and completions (Simon, Swann, Powell, & Potter, 2001); this fact this suggests, therefore, that the control group may be more similar to experimental groups in the current study if a control group more representative of the entire DOC were used.

Graterford also houses a Mental Health Unit (MHU) and a Special Needs Unit (SNU) to help manage inmates with mental health challenges. Many other institutions do not have a MHU or a SNU. This suggests that Graterford has a higher percentage of inmates with mental health problems than other institutions. Because mental health diagnoses are strongly correlated with suicide attempts and completions (Jamison, 1999; Cavanaugh, Carson, Sharpe, and Lawrie, 2003; Hall, Platt, & Hall, 1999; Harvard Mental Health Letter, 2000; Reid, 1998; Roose, Glassman, Walsh, Woodring, and Vital, 1983), this also suggests that the control group may be more similar to experimental groups in the current study than it would have been in a study with a more representative sample.

Based both on the higher rates of inmates with violent crime and on mental health

diagnoses at Graterford, the current study likely underemphasizes differences between controls and the experimental groups (completers and attempter) as discussed above. Additional research that draws all groups from the entire state would likely have greater validity overall, and be less susceptible to confounds. It would also likely highlight additional significant differences between controls and experimental groups.

Fourth, the current study assumes that any record of self-harm is a suicide attempt. This is not necessarily the case in reality, however, because suicidal intent cannot be measured by behavior alone. Although measuring intent is difficult, research that addresses this may yield results that more accurately reflect truly suicidal behavior.

Fifth, some of the data utilized in this study may be inaccurate. It is possible that psychiatric diagnoses made within the PA DOC are not made as carefully as they would be in a controlled research study. Some of these diagnoses utilized in the current study, therefore, may be inaccurate. Additionally, attempts to collect mental health history and prior suicide attempt data for the attempter group presented problems in the current study as previously discussed. Further research that could more effectively obtain this data could help illuminate relevant issues.

Sixth, the current study did not examine numerous factors typically associated with suicidal behavior. These include the specificity of a suicide plan (if any), stress, prior suicidal behavior of significant others, personal resources (i.e. social supports), and whether or not associated environmental stressors were acute or chronic. Although these areas may be highly significant in distinguishing controls, completers, and attempters, they have not been demonstrated to be so by the current study. Future study in these areas could potentially be very fruitful.

Seventh, the current study was limited by the fact that scores from the Personality Assessment Inventory were not available. This could have been particularly useful in several ways if the information had been available. First, the association of the Negative Impression scores with controls, completers, and attempters could have been measured through an Analysis of Variance. Although the Negative Impression scale is only a rough measure of malingering (Morey, 2003), it could have been useful in distinguishing attempters from completers. The reason for this is that a good percentage of attempters in the PA DOC have engaged in acts of self-harm as means of gaining something, such as a placement in the mental health unit.

Additionally, if PAI scores had been available, ANOVA could have been used to analyze the connections between a) the Suicide Ideation Scale (SUI) and the Suicidal Potential Index (SPI) and b) controls, completers, and attempters. The content of the SUI scale is directly related to thoughts of suicide and related behaviors (Morey, 2003). The SPI consists of 20 features of the PAI profile that tap those areas that are described as key risk factors for completed suicide in the suicidality literature (Morey). These include psychic anxiety, poor impulse control, hopelessness, and worthlessness (Morey).

Finally, if PAI scales could be made available in the future, analyses between various clinical scales and controls, completers, and attempters could be made utilizing MANOVA. These scales include Somatic Complaints, Anxiety, Anxiety Related Disorders, Depression, Mania, Schizophrenia, Borderline Features, Antisocial Features, Alcohol Problems, and Drug Problems (Morey, 2003).

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APPENDIX A

Data Collection Sheet

Inmate # _____

1) Mental Health History: Y _____ N _____ Diagnosis: _____

2) History of Substance Abuse/Dependence: Y _____ N _____

3) Race: Caucasian _____ African-American _____ Latino _____ Other _____

4) *For control group:* in RHU when file examined? Y _____ N _____*For completors/attemptors only:* RHU placement during last attempt? Y _____ N _____

5) Age >65 Y _____ N _____ Age _____

6) *For control group:* on parole violation status when file examined? Y _____ N _____*For completors/attemptors only:* PV status during last attempt? Y _____ N _____

7) Prior suicide attempts? Y _____ N _____

8) Rate of misconducts for current sentence: # misconducts _____ / # years _____ =
rate for current sentence _____

9) Terminal illness: Y _____ N _____ Illness _____

10) Personality Assessment Inventory. Ever taken? Y _____ N _____

Validity scales > 65 t for any? Y _____ N _____

ICN _____ INF _____ NIM _____ PIM _____

Clinical scales

Scale	> 65t	Score	Scale	>65t	Score
ANX	_____	_____	SCZ	_____	_____
ARD	_____	_____	BOR	_____	_____
DEP	_____	_____	ANT	_____	_____
MAN	_____	_____	ALC	_____	_____
PAR	_____	_____	DRG	_____	_____

Treatment Consideration Scales

Scale	> 65t	Score	Scale	>65t	Score
AGG	_____	_____	STR	_____	_____
SUI	_____	_____	NON	_____	_____

11) Personality Assessment Inventory. NIM >= 65? Y _____ N _____

12) Life/Death Sentence: Y _____ N _____

13) Convicted of a violent crime: Y _____ N _____

APPENDIX B

Suicide Risk Questionnaire*

Inmate Name: _____

Inmate Number: _____

- | | | |
|--------------------------|---|----|
| 1) Mental Health History | Y | 1 |
| | N | 0 |
| 2) Prior Suicide Attempt | Y | 1 |
| | N | 0 |
| 3) Caucasian | Y | 1 |
| | N | 0 |
| 4) African American | Y | -1 |
| | N | 0 |

Add Numbers

Total = _____ + 1 = _____ Final Score

Risk Level :

- | | |
|---------------|-----|
| Low Risk | 0-1 |
| Moderate Risk | 2 |
| High Risk | 3-4 |

*Instrument to be used in combination with other clinically relevant data in determining appropriate action in placing inmate.