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Institutional Aggression: Psychometric Development of a Predictive Risk Assessment Screening Tool

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INSTITUTIONAL AGGRESSION:

PSYCHOMETRIC DEVELOPMENT OF A PREDICTIVE RISK ASSESSMENT

SCREENING TOOL

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Dissertation Approval

This is to certify that the thesis presented to us by Lauren Spotts on the 14th day of May

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has been examined and is acceptable in both scholarship and literary quality.

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Abstract

Aggression among those with mental illnesses has been extensively reviewed. Research has shown that aggression within an intuitional or hospital setting, that is presently termed "Institutional Aggression," threatens the ability to provide a safe and therapeutic environment for both patients and staff. Although earlier measures have been designed to address this construct, the present study examines Institutional Aggression based on the parameters of the Overt Aggression Scale (OAS; Yudofsky, Silver, Jackson, Endicott, & Williams, 1986). The purpose of the current study was to determine the predictive relationship between clinical and sociodemographic factors and the rate of Institutional Aggression with the intention to create a risk assessment screening measure. Although significant predictive relationships were revealed, results offered little information about characteristics of those likely to commit acts of aggression due to small percentages of the variability accounted for by the model. Future research is necessary to further investigate the way in which static and dynamic variables interact with one another in order to develop a clearer picture of the reasons *why* individuals engage in aggression, both within and exterior to institutional settings. With a greater understanding of the aforementioned, targeted interventions may be developed to address the global concerns both of improving the therapeutic environment and of limiting aggressive behaviors.

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Chapter One: Introduction

Statement of the Problem

The prevalence and severity of mental illnesses has been reviewed extensively. According to the National Comorbidity Survey Replication, a nationally representative residential survey of the adult population in the United States, over half of Americans (50.8%) possess an estimated lifetime risk of meeting the criteria for a psychiatric disorder (Kessler, Berglund et al., 2005). Moreover, the annual prevalence estimate of mental illnesses in the United States is 26.2 percent of the adult population, with an estimated 59.6 percent of those classified with a disorder in the range of moderate to serious (Kessler, Chiu, Demler, Merikangas, & Walters, 2005).

Among this population, there is a subset of individuals with severe mental illnesses who require long-term, inpatient psychiatric care. In the United States, government-run psychiatric hospitals have served as the primary care facilities for these individuals during the first half of the 20th century (Fisher, Barreira, Geller, White, Lincoln, & Sudders, 2001; Fisher, Geller, & Pandiani, 2009). Through the year 2004, nearly 167,000 persons were receiving services from state psychiatric hospitals despite mandated efforts to deinstitutionalize patients and reduce the number of government-run facilities (US Department of Health and Human Services, 2006). Additionally, the growing number of forensic admissions have accounted for a larger percentage of hospital stays in the majority of states (National Association of State Mental Health Program Directors Research Institute, 2005). Between 1988 and 2008, admissions of

forensic patients in Pennsylvania increased by 379 percent according to the Northeast Mental Health Statistics Improvement Program (as cited in Fisher et al., 2009).

Among those with mental illnesses, research has also identified an increased risk of violence (Cocozza, Melick, & Steadman, 1978; Durbin, Paswark, & Albers, 1977; Grunberg, Klinger, & Grumet, 1977; Hiday, Swanson, Swarts, Borum, & Wagner, 2001; Link, Andrews, & Cullen, 1992; Rappeport & Lassen, 1965; Steadman, Cocozza, & Melick, 1978; Swanson et al., 2002). Results from large community studies have revealed that, comparatively, few people with psychiatric disorders engage in violent acts; however, those with SMI have a greater proclivity for violent behavior (Dorn, Volavka, & Johnson, 2012; Link et al., 1992; Swanson, Holzer, Ganju, & Jono, 1990). This remains a heavily disputed statement, because other studies have found that it is the presence of substance abuse that increases the prevalence of violence, and as such, violence among those with SMI who did not abuse substances was no more prevalent (Elbogen & Johnson, 2009; Steadman et al., 2000). Furthermore, amongst individuals with mental illnesses, the potential risk for violence is increased if substance abuse and poor medication adherence are present (Swartz et al., 1998). It is also paramount to consider the statement of the Institute of Medicine (2006), "Thus while there may be a causal relationship between mental illnesses and violence, the magnitude of the relationship is greatly exaggerated in the minds of the general population" (p. 103).

Research has also identified that within hospital settings, few individuals are responsible for a large percentage of violent and aggressive incidents (Kraus & Sheitman, 2004; Lussier, Verdun-Jones, Deslauriers-Varin, Nicholls, & Brink, 2010).

However, Almvik and colleagues (2000) note that the prevalence of inpatient violence and aggression is difficult to estimate accurately due to methodological differences among studies regarding the nature of the patient setting, type of violence and/or aggression, information source, and duration of study. Furthermore, the lack of an established operational and standardized definition of violence and aggression has proven to be detrimental in determining prevalence rates. Whereas some studies include an outcome of physical violence only towards others, additional studies consider verbal and self-inflicted aggression as well (Lussier et al., 2010). Subsequently, prevalence rates range from 1.4% (Kraus & Sheitman, 2004) to 21.1% (Bjørkly, 1999) of individuals in inpatient settings who are involved in perpetrating episodes of violence and/or aggression.

The increased risk of violence and aggression in inpatient settings threatens the ability to establish a safe and therapeutic environment for patients and for staff. Prior research has identified factors in psychiatric patients that correlate with a greater proclivity for violence, specifically after discharge (Steadman, Mulvey, Monahan, Robbins, Appelbaum, Grisso et al., 1998). However, Daffern et al. (2007), suggest that aggressive behavior occurring among patients within inpatient treatment settings may show little relevance to the behavior of those with psychiatric disorders living in the community. Therefore, it may be inferred that a measure specific to aggression within inpatient settings, termed institutional aggression, is necessitated.   Despite the need, few risk assessment tools designed for institutional aggression exist (Almvik, Woods, & Rasmussen, 2000; Bjørkly, Hartvig, Heggen, Brauer, & Moger, 2009; McNiel & Binder, 1994; Ogloff & Daffern, 2006).

Furthermore, many of the available tools have limited generalizability to large government-run state hospital settings. Some tools measure aggression only in a dynamic manner (Almvik et al., 2000; Ogloff & Daffern, 2006), in acute settings (Bjørkly et al., 2009), or cannot be used in settings that are primarily composed of males with schizophrenia (McNiel & Binder, 1994). As a result, creating a profile based on static characteristics, such as sociodemographic and clinical factors, thus identifying individuals with a propensity for institutional aggression, may have implications both for the placement and for the treatment of those with serious mental illnesses within long-term inpatient facilitates.

Purpose of the Study

The present study will examine the predictive relationship between clinical and sociodemographic factors and the rate of institutional aggression at a long-term inpatient psychiatric facility. The goal of this study was to create a profile of those at risk to commit institutional aggression, based on the parameters outlined by the Overt Aggression Scale (OAS; Yudofsky, Silver, Jackson, Endicott, & Williams, 1986), and subsequently to develop a screening measure for inpatient populations with serious mental illnesses (SMI). This study expands the existing knowledge of violence risk factors for those with severe mental illnesses by 1) collecting descriptive data about those at risk for inpatient violence, and 2) conducting a retrospective case control study resulting in the psychometric analysis of a possible institutional aggression screening measure. The results of this study may provide additional information about characteristics of those likely to commit acts of aggression. This may better assist clinical personnel in placing individuals in a safe and appropriate therapeutic

environment that would be conducive to limiting adverse behaviors and violence

reduction. Awareness of those at risk may also aid in the development of methods

regarding violence risk reduction, prevention or mitigation.

Chapter Two: Review of the Literature

The Origin and History of the Psychiatric Treatment

Early Psychiatric Treatment

In the late 18th century, a flourishing economy and rapid colonial urbanization led to the sudden eruption of the need for psychiatric care for the mentally ill (Grob, 1994). Historical sources suggest that increases in life expectancy (Goldman, 1982), homelessness (Hall, 1944), and the economic burden of sick family members (Doll, 1976; Goldman, 1982; Grob, 1994; Kreisman & Joy, 1974) fueled the move from home care toward centralized facilities for those with mental illnesses. Although originally the responsibility of almshouses and pest houses, inadequate resources and lack of appropriate treatment necessitated new, specialized facilities dedicated to the care for the mentally ill (Grob, 1973).

Prior to the nineteenth century, treatment in early institutions was frequently a function of individual or administrative judgment and not directly related to the psychological or medical condition of the patient. Therefore, problems regarding the quality of care (Grob, 1973; Hall 1944; Hurd, 1916a), underfunding (Grob, 1994), and overcrowding (Grob, 1973; Kiesler & Sibulkin, 1987) were of critical importance. Because safety was paramount, cells or cages were often constructed to detain those with violent behaviors (Grob, 1973) and chains, handcuffs, crib beds, and fixed chairs were common forms of restraint to maintain control over unruly patients (Hall, 1944). Even in the late 1800s patients were subjected to methods of restraint and seclusion from the general population; identification of their violent and destructive natures was the

principal reason for employing such means as the standard measure to prevent suicide or homicide.

Hospitals in the 20th Century

In the United States, individuals with mental illnesses were primarily the responsibility of government-run psychiatric hospitals during the first half of the 20[th]century (Fisher et al., 2001; Fisher et al., 2009). In 1939, the average-sized state hospital had between 1,500 and 3,000 patients and accounted for 83% of all institutionalized persons. However, influential changes such as the discovery and general use of psychopharmacological drugs, stricter legal standards for involuntary commitment, and changes in fiscal policy led to a considerable increase in the rate of discharges of long-term psychiatric patients from state institutions (Kiesler & Sibulkin, 1987).

By the mid-20th century, the process, termed deinstitutionalization, significantly reduced the size of the state hospital population (Fisher et al., 2001). Kessler and Sibulkin (1987) estimated that the growing availability of community resources, coupled with the desire for less restrictive settings, led to a significant decline in state hospital population by nearly 90 percent. This abrupt release, however, overwhelmed the unprepared community resource centers (Goldman, Adams, & Taube, 1983). Consequently, deinstitutionalization led to increased arrest rates (Lamb, 1984; Markowitz, 2006; Pogrebin & Poole, 1987; Steadman, Monahan, Duffee, Hartstone, & Robbins, 1984) and widespread homelessness (Lamb, 1984; Markowitz, 2006) among former psychiatric patients.

Furthermore, despite substantial changes in U.S. mental health care provision, a number of individuals remained under state care; particularly those who continued to

exhibit behaviors that originally led to hospitalization such as high-risk violent behaviors and low levels of personal functioning (Fisher et al., 1996; Fisher et al., 2001). More specifically, elevated rates of assaultive and offensive behaviors or illegal sexual acts made patients difficult to place in community settings (Fisher et al., 2001). It can be suggested that the clinical environment of state hospitals subsequently endured a change in clientele towards a less heterogeneous, bifurcated population (i.e. high risk for aggression and low adaptive functioning).

The Current Picture of Psychiatric Hospitalization

Currently, subsets of individuals with severe mental illnesses who require long-term, inpatient psychiatric care remain in institutions. According to Manderscheid, Atay, and Crider (2009), hospital admission rates are on the rise. The continual decline in hospital admissions due to deinstitutionalization reversed course from 2002 to 2005 when overall rates inflated over 21 percent. It has been suggested that this change may be attributed to an increase in the numbers of forensic admissions (National Association of State Mental Health Program Directors Research Institute, 2005; Salzer, Kaplan, & Atay, 2006). In Pennsylvania alone, between 1988 and 2008, the admission rate of forensic patients increased by 379 percent (Northeast Mental Health Statistics Improvement Program). Moreover, with the decreasing number of community residential centers, particularly ones that permit judicial involvement, the numbers of people requiring treatment in psychiatric facilitates continues to increase (Manderscheid, Atay, & Crider, 2009).

The Prevalence of Mental Illnesses in the U.S

The prevalence and severity of mental illnesses has been reviewed extensively. According to the National Comorbidity Survey Replication, a nationally representative residential survey of English speaking adults in the United States, over half of Americans (50.8%) possess an estimated lifetime risk meeting the criteria for a psychiatric disorder (Kessler, Berglund et al., 2005). Moreover, the annual prevalence estimate of mental illnesses in the United States is 26.2 percent of the adult population with an estimated 59.6 percent of those classified with a disorder in the range of moderate to serious (Kessler, Chiu et al., 2005). Additional data from the National Comorbidity Survey, and a subsequent replication study, indicated that the prevalence rate of mental illnesses remained relatively consistent over the period of a decade; however, a significant increase in the number of individuals receiving treatment was noticed. During the 1990s the rate of providing psychiatric treatment increased to approximately one third of the population; yet today a large number of those with mental illnesses are not receiving treatment (Kessler, Demler et al., 2005). Many barriers that continue to exist include a lack of self-recognition concerning the need for treatment, situational barriers, financial barriers, system barriers, and the perception of lack of effectiveness (Kessler et al., 2001). Additionally, stigma plays a large role in derailing those with mental illnesses to seek out, or participate in, treatment in order to avoid being labeled (Corrigan, 2004).

Civil Commitment

The Basis for Civil Commitment

Historical sources suggest that in the 1800s, an admission to a psychiatric hospital was customarily involuntary; a process by which a person was committed by a poor-

officer or relative, was typically due to precipitating factors such as the threat or incidence of violence or suicidal actions (Grob, 1994). Currently, although criteria vary between states, civil commitment is the process by which the state institutionalizes individuals who have been found to have mental disorder and meet the requirements of having the inability to care for himself or herself, or are a danger to self or others (Sadoff, 1988). The intention behind this type of commitment is not retributive, but rather humanitarian, in order to provide resources for individuals in need of rehabilitation. Commitment to a psychiatric facility is conventionally called "civil" as opposed to criminal in nature, but these cases can, and do, result in a deprivation of liberty. It was written as far back as 1880 that,

> "In the present state of psychiatry in America, to be pronounced insane by physicians, by a judge, or by a jury, means imprisonment for months, for years, or for life. To put it another way, there is a disease which reduces its victims to a level with persons accused of crime, and exposes them to the loss of liberty, property and [to] unhappiness" (Seguin, p. 166).

Therefore, Melton and colleagues (2007) characterize these proceedings as quasi-criminal, because those who undergo civil commitment proceedings may not have performed a crime but may be subject to a loss of liberty and, subsequently, are entitled to the same type of adversarial hearing as an adult criminal defendant.

Traditionally, the state operates under two doctrines as criteria for commitment: *parens patriae* and police power. The *parens patriae* criterion asserts that the state is obligated to protect citizens who have a mental disorder and who are unable to care for themselves. This doctrine is employed to restrict behavior that may be harmful, but not

unlawful. Conversely, police power asserts that the state is obligated to protect the health and safety of all its citizens and is premised on the possible danger to self or others that those with mental disorders may demonstrate. In 1972, the outcome of the case of *Lessard v. Schmidt* changed the sole and major criteria for involuntary hospitalization from *parens patriae* to include the police power concept and consequently, the concept of dangerousness became a key aspect in involuntary civil commitment (Sadoff, 1988).

Defining Criteria for Commitment

In examining the criteria for commitment, dangerousness has undergone countless criticisms in mental health literature (Livermore, Malmquist, Meehl, 1968; Melton, Lyons, & Spaulding, 1998; Melton, Petrila, Poythress, & Slobogin, 2007). Livermore et al. (1968) suggest that the term *dangerousness* is an elastic concept and its broad definition is, equally, as ambiguous as it is limitless. Because of this, any act ranging from minimally offensive to one that poses a serious risk to one's wellbeing or property can be determined dangerous. Accordingly, there has been no constitutional limit placed on what qualifies as dangerousness. The use of such an ambiguous term makes it difficult to determine exactly *what* acts should qualify an individual for commitment.

Furthermore, it may be difficult to determine *when* one may qualify for commitment. In contrast to the criminal justice system, civil commitment is not retribution for an act previously committed; it can be a preemptive action which considers the risk of future dangerousness. It has been argued that commitment for dangerousness is "preventative detention" and therefore encompasses a punitive role rather than one that is rehabilitative (Melton et al., 1998, p. 108). In this context,

however, dangerousness is used to narrow the scope of commitment by adding another criterion for consideration. Melton and colleagues (2007) write that,

> "Dangerousness is best conceptualized as a multifactor construct, involving the nature of the anticipated harm, its probability of occurrence, and the frequency with which it may occur, in addition to its imminence" (p. 342).

Dangerousness, when broken down into contributing factors, can provide a formula for clinicians to consider during an evaluation.

The Process of Commitment

According to the Pennsylvania Code Title 50 - Mental Health, voluntary and involuntary treatment is to be made available "where the need is great and its absence could result in serious harm to the mentally ill person or to others." In accordance with this act, individuals who are determined to be in need of treatment may be funded in whole or in part by public funds, because treatment serves the individuals as well as the community. When considering voluntary treatment in the Commonwealth of Pennsylvania, any person 14 years of age or older, who has the capacity to understand, and is in agreement to treatment, may submit him or herself to an examination. Accordingly, a parent or guardian acting in the best interest of a child may subject an individual under the age of 14 to an examination. When considering involuntary treatment, a person who is mentally ill and in need of immediate treatment may be subject to an evaluation. The code defines, "a person is severely mentally disabled when, as a result of mental illness, his capacity to exercise self-control, judgment and discretion in the conduct of his affairs and social relations or to care for his own personal needs is so lessened that he poses a clear and present danger of harm to others or to himself."

Title 50 further outlines the criteria for the determination of "clear and present danger." It indicates that this danger is established if a person has, or has attempted to, cause serious bodily harm on an individual within a period of 30 days, excluding those who have been found incompetent or acquitted for lack of criminal responsibility, for which the limitation of time may be waived. Danger is also accounted for if a person has made threats of harm and has participated in acts of furtherance of the threat. Clear and present danger may also be established if the danger is determined to be towards oneself so that, within a period of 30 days, a person has made threats and acts of furtherance to, or attempted suicide, engaged in or attempted self-mutilation, or demonstrated an inability, "without care, supervision and the continued assistance of others, to satisfy his need for nourishment, personal or medical care, shelter, or self-protection and safety, and that there is a reasonable probability that death, serious bodily injury or serious physical debilitation."

An emergency evaluation may be conducted if a physician has determined the need, if a warrant is issued, or by application by a physician or authorized person who has witnessed acts that would substantiate the need for an evaluation. Pursuant to the section outlined in the code to which an individual applies, the duration of treatment is determined and the patient will be discharged if treatment is no longer necessary or in within the time outlined by the involuntary commitment (i.e. 72 hours vs. 120 hours). If it is determined to continue treatment beyond the scope of the period of commitment, one would be subject either to a voluntary commitment or to a certification for extended involuntary emergency treatment. The duration of these commitments establishes a

timeline in which the individual's case must be reviewed for recommitment, thus

contributing to the placement of the individual.

Violence and Severe Mental Illness

The Relationship between Violence and Severe Mental Illness

The perception that violence occurs among those with mental illnesses is

ingrained into the treatment of those with mental illnesses via the legal basis for civil

commitment. It also results from research that can profoundly drive both the awareness

of the general public and the awareness of professionals working in the field.

Historically, studies identified the fact that violence was no more prevalent among those

with mental illnesses than among the general population (Cohen & Freeman, 1945;

Pollock, 1938); however, later research revealed that violence among former psychiatric

patients living in the community exhibited significantly higher arrest rates (Durbin et al.,

1977; Grunberg et al., 1977; Rappeport & Lassen, 1965; Steadman et al., 1978) and a

greater prevalence of violence (Cocozza et al., 1978; Hiday et al., 2001; Link et al., 1992;

Swanson et al., 2002) compared with those in the general population.

Nearing the end of the 20th century a number influential research studies surfaced

examining the co-occurrence of violence and severe mental illnesses; specifically, a

federally sponsored large-scale epidemiological research study (Robins & Regier, 1991),

and a comprehensive independent study of mental illness and community violence

(Monahan et al., 2001). An analysis of the data from the National Institute of Mental

Health's Epidemiological Catchment Area Study (ECA; Robins & Regier, 1991) found

that among a representative sample of adult household resident populations, those

holding a psychiatric diagnosis were significantly more likely to engage in acts of violent

behavior. More specifically, researchers indicated that more than half (55.5%) of participants meeting criteria for mental disorder self-reported violent behaviors, compared with less than twenty percent (19.6%) of non-violent reporters (Swanson, Holzer, Ganju, & Jono, 1990).

Additionally, findings from the MacArthur Violence Risk Assessment Study (Monahan et al., 2001), arguably the largest and most comprehensive study of violence and aggression among those with mental illnesses to date, revealed substantial findings. Sampling 1,136 participants from three acute inpatient psychiatric facilities, the authors utilized direct interview, collateral information, and official arrest and hospital records to determine the incidence and extent of violence of former psychiatric patients in the community. According to the results, researchers found a significant difference in the rate of violence among former patients, compared with persons living in the same neighborhood who had never been diagnosed with mental illness. Specifically, the rate of violence was more than double among those with mental disorder than community counter parts (11.5% and 4.6%, respectively) and nearly one fifth of participants (18.7%) committed at least one violent act in the following 20 weeks after discharge. However, results were mediated by the presence of symptoms of co-occurring substance abuse; yet symptoms of substance abuse were more prevalent in the patient population (Steadman et al., 2000).

Last, Link and colleagues (1992) found that when controlling for sociodemographic variables, a significantly greater percentage of former psychiatric patients had been arrested for violent crimes, as well as self-reporting engagement in violent acts, when compared with non-patients living in the same community. The

aforementioned results suggest the existence of a relationship between violence and severe mental illnesses; however, it is also clear that this relationship it not attributable to mental illnesses in isolation, and questions about causal factors remain.

Risk Factors for Violence among those with SMI

Regarding civil commitment, Monahan and Wexler (1978) ascertain that a prediction of dangerousness is precipitated by three conditions. First, the individual being evaluated has certain characteristics; second, the characteristics that the individual holds are associated with a certain probability of violence propensity, and third, the probability of violence justifies an intervention. A substantial body of literature has examined possible risk factors for violence among those with severe mental illnesses. However, determining these factors may be difficult, due, not only to the multitude of variables present, but also to the way in which the outcome is measured.

According to Monahan and Steadman (1994), risk factors for violence are certain characteristics, or variables, associated with an increased proclivity for violent behavior. The variables are classified into subgroups which include personal, historical, clinical, and contextual factors. Personal factors consist of demographic and personality variables. Historical factors are past events that may increase the present potential for violence such as prior criminal convictions or the presence of a mental disorder, whereas clinical factors include specific diagnoses and symptoms. Last, contextual factors include the existence and quality of social support and support networks. Heilbrun (1997) further categorized the research in two distinct ways: static factors or those variables that cannot or typically do not change (e.g., demographic characteristics), and

dynamic factors, or those that are amenable to change (e.g., clinical symptomology and environmental factors).

However, Klassen and O'Connor (1996) advise caution to those interpreting research in regard to violence among those with mental illnesses, specifically when evaluating personal and historical factors as contributing to predictability. The researchers suggest the consideration of several assumptions when evaluating violence. First, violence as an outcome measure is not fixed, and therefore, may be distributed unequally throughout the population studied. Second, violence is "heterogeneous," and therefore, may result in differing types and patterns of violent behaviors (p. 229). Third, independent variables are also distributed throughout the population and may affect violence as an outcome measure. Last, violence as an outcome measure may be affected by interactions among independent variables within the sample. Therefore, determining the cause and the predictability of violence is difficult.

In view of the aforementioned concerns, a complex relationship exists. Research has identified a number of personal variables that correlate with violence among those with mental illnesses. According to the current body of literature, the male gender is significantly correlated with a higher frequency of violence (Monahan et al., 2001; Otto, 2000; Swanson et al., 1990) in community samples; however, Hiday and colleagues (1998) isolated individuals who were recently admitted or discharged from treatment centers and found that males were no more likely than females to have higher rates of violence. Inconsistencies in the literature may be indicative of flawed methodology; Sirotich (2008) suggests that community studies may use official arrest records as a measure for violence and men may be more likely than women to get arrested due to the

seriousness of the injury. Other research suggests that young adults in their late teens and early twenties (Swanson et al., 1990) and those identifying as African-American (Grisso, Davis, Vesselinov, & Appelbaum, 2000; Hiday, Swartz, Swanson, Borum, & Wagner, 1998; Otto, 2000; Swartz et al., 1998) are at greater risk for the propensity for violent behaviors. However, a number of studies found, when controlling for socioeconomic status, that race was not related to violence (Swanson et al., 1990; Monahan et al., 2001).

Historical factors contributing to an increase in violent behavior have been shown to include, to a great degree, a co-occurring diagnosis of substance abuse (Elbogen & Johnson, 2009; Elbogen, Van Dorn, Swanson, Swartz, & Monahan, 2006; Grisso et al., 2000; Monahan et al., 2001; Mulvey et al., 2006; Swanson et al., 1990; Swanson et al., 1997) because this likely disinhibits aggressive impulses and increases impulsivity, generates interpersonal conflict, and exposes one to dangerous environments (Swanson et al., 2002). In addition, a history of prior incidence of violence (Monahan et al., 2001) and juvenile detention (Elbogen & Johnson, 2009) were strongly associated with future violence. Last, a number of factors attributable to early childhood experiences have been found significant; these include childhood physical abuse, witnessing domestic violence, or parental criminal history (Elbogen & Johnson, 2009).

Clinical variables must also be considered. Originally, research suggested that then-current psychotic symptoms, such as hallucinations or delusions, were significant factors in increased rates of violence (Link et al., 1992; Swanson et al., 1997; Teplin, 1994). Results from additional studies have suggested that the presence of delusions or hallucinations alone does not significantly increase the rate of violence; however, general suspiciousness, specific command hallucinations regarding violence, and violent thoughts

may increase the predicative rate of violence (Monahan et al., 2001). Accordingly, violent thoughts have been found to be present in a significantly greater proportion of those with mental illnesses than those in the general population (Grisso et al., 2000). Yet others have proposed that specific personality dimensions can account for increased risk of violence among those with mental illnesses (Nestor, 2002).

Although multiple studies exist regarding potential risk factors for violence in those with mental illnesses, heeding the advice of aforementioned researchers, a vast multitude of factors and their potential interactions must be considered when evaluating and predicting the rate of violence. For example, although Link et al. (1992) suggested that psychosis elevated rates of violence, it was also suggested that inappropriate reactions from others may have instigated the potential underlying behaviors. Furthermore, research has found that, in combination, a history of violent victimization, the presence of violence in the surrounding communities, and substance abuse demonstrated a cumulative association with risk of violent behavior (Swanson et al., 2002). Thus, the interaction with contextual and social factors in the environment is paramount in the consideration of violence risk.

Inpatient Aggression

Institutional Violence / Aggression

Although there is a large body of literature examining the prevalence of violence and aggression among former psychiatric patients, some researchers have felt that violence occurring within a hospital setting is inherently different from that which occurs outside the hospital setting. Consequently, results from such research may not be generalizable across populations (Cocozza & Steadman, 1974; Daffern et al., 2007).

Research focused on violence within institutions is also substantial; this is important for

the current study (Daffern, Howells, Ogloff, & Lee, 2005; Ehmann et al., 2001; Grassi et

al., 2006; James, Fineberg, Shah, & Priest, 1990; Krüger, & Rosema, 2010; Noble &

Rodger, 1989; Owen, Tarantello, Jones, & Tennant, 1998; Quanbeck, McDermott, Lam,

Eisenstark, Sokolov, & Scott, 2007). However, rates of inpatient violence and aggression

vary among studies. Some researchers have found that nearly two thirds of patients are

aggressive towards others (Ehmann et al., 2001), whereas others suggest that the rate is

less (23% of the sample population), yet much higher in comparison with the prevalence

of violence among the general public (2%; Swanson et al., 1990).

Results from Daffern et al. (2005), conducted within a forensic psychiatric

hospital, indicated that nearly half (45.26%) of the overall population was aggressive on

at least one occasion and over one third of those (36.2%) were aggressive on more than

one occasion. It must be noted, however, that eight individuals from the sample were

aggressive on more than 15 occasions and therefore were responsible for nearly half

(43.03%) of the total number of aggressive incidents (Daffern et al., 2005). Although

outliers may skew the perception of the pervasiveness of inpatient violence, this outcome

supports previous findings that the majority of violent or aggressive acts are perpetrated

by a small number of people (Kraus & Sheitman, 2004; Owen et al., 1998; Quanbeck et

al., 2007; Tardiff, 1983).

Furthermore, research has identified the fact that some psychiatric patients have

an increased propensity to harm clinical professionals as well as other health care

workers (Carmel & Hunter, 1989; Flannery, Hanson, & Penk, 1994; Flannery, 2005;

Owen et al., 1998; Ruben, Wolkon, & Yamamoto, 1980; Vincent & White, 1994).

Evidence has shown that on average, nearly half of healthcare professionals including

psychiatrists, residents, nurses, therapists, psychologists, and social workers have been

assaulted at least once within their careers (Ruben et al., 1980; Thackrey, 1987; Vincent

& White, 1994); yet, the most common victims of assault are other patients (Kraus &

Sheitman, 2004). It may be speculated that these results are due to the general time spent

with, and proximity to, possible perpetrators. Consistent with this notion, among non-

patients, nursing staff are most often the victims of inpatient violence (78%) when

compared with other clinical staff (Owen et al., 1998) and are more likely to sustain

injuries that cause a significant absence from work (Carmel & Hunter, 1989).

Although research has produced substantial evidence that there is a risk of

violence among psychiatric inpatients, strong limitations exist regarding the relationship

between mental illness and aggression. One limitation is attributable to methodological

differences among studies regarding the nature of the patient setting, type of violence

and/or aggression, information source, and duration of study (Almvik et al., 2000). The

lack of an established operational and standardized definition, and variable interpretation

of the terms "violence" and "aggression" may be detrimental in determining prevalence

rates (Ehmann et al., 2001; Haller & Deluty, 1988; Noble, 1997). Douglas et al. (2009),

in a meta-analytical review of the current mental health literature, estimated that the

distribution among effect sizes was partly attributable to inconsistencies such as

methodological differences and variation in the definition and in the measurement of

mental disorder and aggression. Specifically, some researchers have used criteria that

included physical assault or injury to define violence (Noble & Rodger, 1989), whereas

others have included verbal aggression (Lussier et al., 2010; Quanbeck et al., 2007).

Additional studies within institutions have included self-injurious behaviors and property

destruction (Daffern et al., 2005; Ehmann et al., 2001; Flannery, Fisher, Walker,

Littlewood, & Spillane, 2001; Grassi et al., 2006) but not verbal threats (James et al.,

1990; Krüger, & Rosema, 2010). Subsequently, prevalence rates range from 1.4%

(Kraus & Sheitman, 2004) to 21.1% (Bjørkly, 1999) of individuals in inpatient settings

who are involved in perpetrating episodes of violence and/or aggression.

The lack of explicit criteria for institutional aggression therefore limits the

generalizability of this term across the entire body of literature. Subsequently, Dietz and

Rada (1983) refer to this limitation as the *apples and oranges phenomenon* because,

> "studies of incidents within institutions therefore must be interpreted with
>
> attention to the exact type of incidents studied, for some are studies of apples,
>
> some of oranges, and some of fruit in general" (p. 49-51).

For the present study, institutional aggression is operationally defined as aggressive

behavior involving a perpetrator and target that occurs within an institution based on the

parameters outlined by the OAS (Yudofsky et al., 1986), including verbal aggression (i.e.

shouting angrily, yelling insults, cursing, or threatening violence towards others, etc.),

physical aggression against self (i.e. hitting self, pulling hair, banging head, biting or

mutilating oneself, etc.), physical aggression against other people (i.e. striking, kicking,

pushing, grabbing the clothes of, or swinging at another person, etc.), and physical

aggression against objects (i.e. slamming doors, throwing or breaking objects, setting

fires, etc.).

Risk Factors for Institutional Aggression

A vast number of studies regarding the relationship between psychiatric patients and aggression has been focused on demographic, clinical, and historical variables (Chou, Lu, & Chang, 2001; Daffern et al., 2005; Lowenstein, Binder, & McNeil, 1990; Ehmann et al., 2001; Flannery, Irvin, & Penk, 1999; Flannery et al., 2001; Grassi et al., 2006; Krakowski et al., 1999; Markowitz , 2011; Markowitz, Bellair, Liska, & Liu, 2001; Owen et al., 1998; Serper et al., 2005; Tardiff, 1983). Some researchers have suggested that demographic variables, in particular those that are associated with inpatient aggression are similar to those of aggressive individuals in the general population (Bonta, Hanson, & Law 1998; Krakowski et al., 1986). Similarities in predictive risk factors will be discussed; however, because institutional aggression is composed of subtypes, it is possible that the same characteristics may be correlated with different types of aggression (Plutchik et al., 1988), yet may not be predictive of all types of aggression; some variables may be associated with verbal aggression, whereas others may be associated with physical aggression against others or property (Gray et al., 2003).

Despite the variance among researchers regarding the rates of aggression and methodological limitations, certain characteristics of psychiatric inpatients have emerged from the literature as risk factors for aggression and violence within institutions. Among static variables, sociodemographic factors such as gender, age, and demographic origin have provided insight in regard to the propensity to engage in aggressive behavior. Unlike community samples, in which males are more likely to be associated with higher rates of aggression, gender, relative to aggression among inpatients provides a mixed picture. Chou et al. (2001) found that male inpatients had a higher incidence of physical

aggression than females (73.1% and 26.9%, respectively); however, verbal threats were

more likely to be associated with females. Alternatively, some researchers suggest that

among inpatients, female patients are, at least, as likely as male patients to be aggressive

(Lowenstein et al., 1990), whereas others have found females to be associated with a

higher rate of aggression (Ehmann et al., 2001; Flannery et al., 1999; Serper et al., 2005)

and with repeated aggression (Daffern et al., 2005). As a result, some researchers suggest

that the strength of gender as a risk factor for institutional aggression may be weak

(Anderson et al., 2004; Sirotich, 2008).

Variables such as age and demographic origin have also been examined.

Research has shown that institutional aggression is associated with younger age (Chou et

al., 2001; Flannery et al., 1999; Flannery et al., 2001; Tardiff, 1983) and is more likely

among those who have lived in "socially disorganized" neighborhoods (Markowitz, 2011,

p. 40). These neighborhoods are often characterized as economically disadvantaged,

racially diverse, and consisting of fragmented families, which results in weakened social

cohesion. These neighborhoods, often inhabited by a greater percentage of those with

psychiatric disorders, also frequently have higher rates of crime (Markowitz et al., 2001).

Historical factors can also provide insight into the understanding of aggression

among inpatients. Specifically, a history of aggression (Daffern et al., 2005; Flannery et

al., 1999; Flannery et al., 2001; Grassi et al., 2006; Owen et al., 1998) before admission

has found to be a risk factor for inpatient violence. Chou et al. (2001), in a study of

assaultive behavior among psychiatric inpatients, found that more than three fourths of

patients with assaultive behavior had a previous history of aggression (77%), suggesting

that past violence is a significant predictor of future violence (Krüger & Rosema, 2010).

Researchers suggest that longer-stay patients (Grassi et al., 2006; Otto, 1992) and those who have had previous admissions to inpatient facilities (Grassi et al., 2006) tend to engage in higher rates of aggression, specifically aggression towards others rather than self-harm (Kraus & Sheitman, 2004).

Moreover, Cocozza and Steadman (1974) suggest that the change in clientele via the increased admission of more aggressive patients and the transfer of forensic patients is the cause for increased rates of aggression among inpatients. Conversely, when comparing forensic to non-forensic inpatients, Linhorst and Scott (2004) found that non-forensic patients had higher rates of aggression, compared with forensic NGRI or pretrial patients (40.0%, 21.1%, and 27.6%, respectively). Additionally, consistent with community samples, a history of substance abuse has shown to increase the propensity of aggression in inpatient settings (Daffern et al., 2005; Ehmann et al., 2001; Flannery et al., 1999; Flannery et al., 2001; Serper et al., 2005).

Although Douglas and Hart (1995) suggest that clinical variables are less consistent than demographic and historical variables when determining violence risk, Ehmann et al. (2001) believes that clinical data may enhance the prediction of violence. Certain clinical and diagnostic symptoms have been found to be related to greater propensity for aggression. Psychotic symptoms (Daffern et al., 2005; Tardiff, 1983) and a diagnosis of schizophrenia (Chou et al., 2001; Davis, 1991; Ehmann et al., 2001; Flannery et al., 2001; Tardiff, 1983) have shown throughout the literature to increase an individual's risk of aggression, compared with the general population. These finding have been criticized. For example, Davis (1991) suggested that the relationship between diagnosis and institutional aggression may be a function of the stage of illness or duration

of the hospitalization. Moreover, aggression may influence the type of diagnosis one is given (Krakowski et al., 1986).

Although some studies have identified characteristics of those who engage in aggressive acts, others have identified the contextual and environmental factors that occur within an institutional setting such as hospital downsizing (Flannery, 1997; Snyder, 1994) or overcrowding (Ng, Kumar, Ranclaud, & Robinson, 2001; Virtanen et al., 2011) as contributing factors to IA. Moreover, as previously mentioned, it may be the interaction with those in the environment and the environment itself. Katz and Kirkland (1990) found that violence was more prevalent in situations in which unpredictability and ambiguity in staff encounters and functions were present, as compared with wards that demonstrated structured routines and strong leadership. Other considerations may include poor staffing to patient interaction (Sheridan, Henrion, Robinson, & Baxter, 1990), of particular interest are those situations that limit the perceived freedom of the individual such as enacting restrictions or denying requests (Papadopoulos et al., 2012). However, the focus of the present study remains on individual characteristics as risk factors for institutional aggression; contextual and environmental factors fall outside the scope of this investigation.

Violence Risk Assessment

History of Risk Assessment

As mentioned, the relationship between mental disorder and aggression has been studied intensively and has been reviewed by researchers over decades. Throughout history, the placement of those with mental illnesses relied primarily upon the concept of dangerousness (Mulvey & Lidz, 1995; Steadman, 2000). Therefore it is of no surprise

that civil commitment laws were founded on and remain, concerned with dangerousness

to others. However, in the last few decades, dangerousness has taken a backseat to new

conceptualizations and theoretical models referred to as risk assessment (Douglas &

Kropp, 2002). In part, the conceptual advance was due to determining that

dangerousness was a broad concept that was, in fact, composed of multiple domains: risk

factors, protective factors, harm, and risk level (National Research Council, 1989).

Furthermore, it was believed that the concept of risk assessment should surpass a basic

dichotomous determination of the probability of violence; rather, it should enable

researchers to describe and more completely estimate the magnitude of danger a person

possesses (Hart, 1998; Monahan & Steadman, 1994; Mulvey & Lidz, 1995). As a result,

the growing field of violence risk assessment has shared a symbiotic relationship with the

expanding knowledge of the relationship between psychiatric illness and aggression.

This increased understanding of violence prediction has led to the development

and use of tools designed to aid in identifying those at risk for violent behavior. A

number of studies have demonstrated a significant statistical effect between risk

assessment instruments and risk factors in the ability to determine violence risk (Douglas,

Ogloff, Nicholls, & Grant, 1999; McNiel & Binder, 1994; Monahan et al., 2001;

Monahan et al., 2005; Steadman et al., 2000). Specifically, violence risk assessment

tools are used in the mental health care system in regard to civil commitment (Mercado &

Ogloff, 2007) and increasingly in criminal and civil court cases (DeMatteo & Edens,

2006). Originally, however, violence risk assessment was based primarily on the

judgment and experience of clinical professionals, otherwise known as unstructured

clinical judgment (Harris 2007, Hart, 1998); subsequently, it was heavily criticized

because of its poor inter-rater reliability, test-retest reliability, and predictive validity

(Hanson & Morton-Bourgon, 2009; Hart, 1998). For instance, Monahan (1981) found

that the prediction of risk by clinical professionals is accurate in not more than one of

three instances. Later, a second type of judgment, termed actuarial risk assessment,

evolved. Actuarial risk assessment is an empirically based, algorithmic model of

assessment that assigns numerical values to factors to determine a prediction of risk,

given the data provided (Hart, 1998; Singh, 2011). Monahan (1981) suggested that in the

determination of risk, actuarial approaches have advanced predictive ability, when

compared with clinical judgment.

Risk Assessment Tools

The practice of risk assessment continues to expand with the increasing need to

determine risk because there has not been a decline in violent acts or in the number of

people who commit violent acts (Douglas & Kropp, 2002). However, most of risk the

assessment tools were originally created and intended for administration at discharge, in

order to evaluate readiness for community reentry, which is evidenced by the lack of

tools developed specifically for the assessment of violence risk in inpatient settings

(Bjørkly, Hartvig, Heggen, Brauer, & Moger, 2009). Therefore, in considering that

violence is heterogeneous and contextual, researchers have developed multiple actuarial

risk assessment instruments to aid in identifying risk factors.

One of these assessments, the Violence Risk Appraisal Guide (VRAG; Harris,

Rice, & Quinsey, 1993), was developed on a sample of 618 male offenders with

diagnosed mental disorders, assessed in a Canadian maximum-security psychiatric

hospital. The VRAG consists of 12 items comprising information pertaining to

demographics, criminal history, and psychometric characteristics including psychopathy

as defined by the Hare Psychopathy Checklist-Revised (PCL-R; Hare, 1991), with the

purpose of predicting violence recidivism, or the likelihood that an individual will engage

in a violent act within a given time period. This actuarial tool indicates a risk category

for the offender from high to low by assigning weighted values to each of the items.

Research indicated that the VRAG has been successful in predicting future violence in

prolonged follow-up periods (Rice & Harris, 1995), general criminal recidivism (Loza,

Villeneuve, & Loza-Fanous, 2002), sexual recidivism (Barbaree et al., 2001; Harris, Rice,

Quinsey, Lalumière, Boer, & Lang, 2003), and institutional misconduct (Kroner & Mills,

2001).

Additionally, as aforementioned, one of the elements of the VRAG is a level of

psychopathy measured by the Hare Psychopathy Checklist-Revised (PCL-R; Hare, 1991).

The PCL-R is a 20 item scale designed to assess the construct of psychopathy.

Psychopathy is typically thought of as comprising two sub-factors; one factor is related to

emotional and interpersonal deficits and a second factor is related to poor behaviors and

parasitic lifestyle. The PCL-R is a semi-structured interview that rates each item on a

three-point scale from 0-2, according to the degree related to the individual. The summed

scores provide an overall score (0-40); according to standards in North America, a score

of 30 or greater indicates a high degree of psychopathy (Hare, 2003). The PCL-R was

not originally designed as a violence risk assessment measure; however, subsequent

meta-analytical research suggests that this tool is useful in the prediction of institutional

misconduct (Guy, Edens, Anthony, & Douglas, 2005) and institutional violence (Leistico,

Salekin, DeCosta, & Rogers, 2008) with factor two as a greater predictor when compared to factor one.

Another tool is the Historical/Clinical/Risk Management-20 (HCR-20; Webster, Douglas, Eaves, & Hart, 1997). This 20 item assessment is an alternative option to pure actuarial tools because the HCR-20 incorporates static, stable, and dynamic variables. It includes ten items dedicated to historical risk factors and 10 items dedicated to structured clinical judgment regarding present clinical factors (5 items) and situational risk management variables (5 items) to evaluate the probability of violence risk. Research has demonstrated that the HCR-20 has been useful in predicting violence in civil (Douglas, Ogloff, Nicholls, & Grant, 1999; Ross, Hart, & Webster, 1998) and in forensic (Gray, Hill, McGleish, Timmons, MacCulloch, & Snowden, 2003) psychiatric inpatient populations.

Another tool, the Brøset Violence Checklist (BVC; Almvik, Woods, & Rasmussen, 2000), views the assessment of violence risk in yet another way. This brief, purely dynamic measure was designed to quantify observable behaviors precipitating aggression, specifically on inpatient wards. Variables including confusion, irritability, boisterousness, physical threats, verbal threats, and attacks on objects were incorporated by a dichotomous coding of presence or absence in the first 24 hours of admission. A score ranging from 0-3 indicate the risk of violence, with 3 equaling a high risk for violence and signifying that preventative actions should be taken. The BVC has shown to have promising accuracy, with good sensitivity and specificity (Woods & Almyik, 2002).

Furthermore, a recently developed tool, the Iterative Classification Tree (ICT; Steadman et al., 2000), utilizes clinical judgment and actuarial formulas to predict violence risk. This method of assessment employs a system in which only one question is posed at a time. Contingent on the answer to the previous question, one or more additional questions are subsequently posed, therefore utilizing a decision tree format, mimicking the clinical decision-making process, to classify an individual into a category of high or low risk for future violence (Monahan et al., 2000; Monahan et al., 2001). Based on the ICT, the Classification of Violence Risk (COVR; Monahan et al., 2006) was developed as an interactive decision tree computer software program used to estimate the likelihood of future violence.

Two less commonly used tools are the Violence Screening Checklist (VSC; McNiel & Binder, 1994) and the Violence Risk Screening-10 (V-RISK-10; Bjørkly et al., 2009). The VSC was developed by utilizing the results from previous research regarding demographic, clinical and contextual correlates of aggressive behavior among psychiatric inpatients (McNiel, Greenfield, & Binder, 1988) to aid in the final selection of five variables for dichotomous questions. Each variable was assigned a weight and was so worded that an endorsement of the item indicated an increase in the likelihood of future aggression. Although originally calibrated on a sample of 238 civilly committed inpatients (McNiel et al., 1988), the checklist was validated on a sample of 338 university based, acute psychiatric inpatient units. Similarly, the V-RISK-10 is a short, easy to use, structured clinical screening measure for violence risk. The V-RISK-10 is composed of 10 items and was initially developed and implemented in two acute psychiatric settings in Norway with positive findings in predictive validity (Bjørkly et al., 2009).

Limitations

Although there is substantial research investigating aggression in inpatient psychiatric facilitates, serious limitations exist. Unfortunately, many of these tools are limited to measuring aggression only in a dynamic manner (BVC: Almvik et al., 2000; HCR-20: Webster et al., 1997; V-RISK-10: Bjørkly et al., 2009), in acute settings (V-RISK-10: Bjørkly et al., 2009; VSC: McNiel & Binder, 1994), or are limited in population generalizability (VRAG: Harris et al., 1993, VSC: McNiel & Binder, 1994). Other measures lack practical utility (ICT: Steadman et al., 2000; COVR: Monahan et al., 2006) or lack the ability to capture mediating and moderating factors against future violence (PCL-R: Hare, 1991). As a result, creating a profile based on sociodemographic and clinical factors and further identifying the type of aggression that one may commit, may prove beneficial.

This study aims to address inconsistencies in the definition and measurement of institutional aggression by operationalizing this concept according to the parameters outlined by the OAS (Yudofsky et al., 1986). Therefore, it may be beneficial to examine violence risk factors further, for the purpose of understanding, predicting, and subsequently mitigating the risk of institutional aggression. Considering the limitations of previous risk assessment tools, the present study aims to determine the predictive relationship between static clinical and sociodemographic factors and the frequency of acts of institutional aggression at a long-term inpatient psychiatric facility.

Chapter Three: Hypotheses

Research Question

What sociodemographic and clinical variables are predictive risk factors of Institutional

Aggression (IA)?

Hypotheses

The following hypotheses are proposed for the present study:

1.   Males, admitted from Philadelphia County, with a diagnosis of psychotic

disorder and history of criminal conviction(s), will be predictive of a significantly

higher rate of IA, relative to other characteristics.

2.   Of the given variables, a history of criminal convictions will account for the

greatest percentage of variability, followed by male gender, admittance from

Philadelphia County, and a diagnosis of psychotic disorder.

3.   There will be a significant difference in rates of IA between participants

transferred from the forensic section, compared with those participants directly

admitted to the general psychiatry section of the psychiatric hospital.

Chapter Four: Method

Overview

      The present study examined the predictive relationship between clinical and

sociodemographic factors and the rate of institutional aggression at a long-term inpatient

psychiatric facility. The goal of the study was to create a profile of those at risk to

commit institutional aggression based on the parameters outlined by the OAS (Yudofsky

et al., 1986).

Study Design and Design Justification

      The present study addressed the aforementioned hypotheses by investigating a

quantitative, retrospective, regression design for predicting aggression in inpatient

psychiatric patients. With the intent of determining the predictive relationship between

historical and clinical factors and the rate of institutional aggression at a long-term

inpatient psychiatric facility, the current study employed the use of correlational and

subsequent multiple regressional analyses.

Participants

      Potential participants were selected from a database of the general psychiatry

(civil section) population of a state psychiatric institution in Southeast Pennsylvania

between January 1, 2006 and December 31, 2011. The data analyzed in this study were

drawn from archived records originally gathered and recorded by state employed clinical

staff.

Inclusion and Exclusion Criteria

  Inclusion criteria consisted of patients who: (1) were civil admissions between

1/1/2006 and 12/31/2011, (2) were legal adults, and (3) were admitted from one of the

five counties of Southeastern Pennsylvania (Bucks, Chester, Delaware, Montgomery, or Philadelphia). Individuals were excluded from study participation if they (1) were under 18 years of age (n = 4), (2) were admitted from outside of the catchment area of the hospital or had unknown origin (n = 14), or (3) were missing critical data regarding admission or discharge dates (n = 4). A total of 22 (4%) participants were excluded from the present study.

Recruitment

All general psychiatry admissions between January 1, 2006 and December 31, 2011 were evaluated for study eligibility. Participants in the study were identified only according to a randomly assigned number. The use of this number allows all participants to remain de-identified, therefore protecting their identity.

Measures

Historical and clinical indicators. Historical and clinical characteristics of the general psychiatry participants are to be retrieved from *Census*, the hospital's patient tracking database. Historical indicators include sociodemographic information gathered from the patient's admission records (e.g., age, race, religion, criminal convictions, etc.). Clinical indicators include a primary ICD-9-CM (Buck, 2012) diagnosis of thought or affective disorder.

Indicators of institutional aggression. Pennsylvania state hospitals record all documented incident reports in a state wide Office of Mental Health and Substance Abuse Services (OMHSAS) Risk Management Database. It is the responsibility of the staff member witnessing or learning of an incident to construct a detailed report describing aspects of the incident, including the date and time, the perpetrator and

potential victim, the location, the type of incident, and a general narrative of the

occurrence. The report is sent to the Performance Improvement Department for the

purpose of tracking and analyzing data. For the present study, incidents of assault or

aggression toward person or property, defined by the OMHSAS incident category

definitions (Office of Mental Health and Substance Abuse Services, 2008) will be

included in analysis. Operational definitions of these acts are as follows:

      Aggression. Includes verbal or physical threats by a patient toward another person

without actual physical contact, and which results in restraint, seclusion, administration

of STAT (*statum* or immediate) medication for psychiatric reasons, or being placed on an

increased level of observation. Subcategories include: patient/staff, patient/patient,

patient/other/visitor/family, patient/property, and unspecified.

      Assault, patient/staff. This type of assault is defined as an aggressive act by a

patient toward a staff person(s) involving physical contact which may or may not result in

injury.

      Assault, patient/patient. This type of assault is defined as an aggressive act by a

patient toward another patient(s) involving physical contact which may or may not result

in injury.

      Assault, patient/other. This type of assault is defined as an aggressive act by a

patient toward a visitor, family member or any other individual, exclusive of staff or peer,

involving physical contact which may or may not result in injury.

      Fire setting. Is any accidental or willful action, which results in the ignition of a

fire.

Property damage. Is any willful damage by a patient of state or personal property, including throwing furniture or other items.

Physical Aggression, against self. This type of aggression is defined as an aggressive act by a patient toward oneself involving physical contact which may or may not result in injury.

Institutional Aggression (IA). Institutional aggression is defined as aggressive behavior involving a perpetrator and target that occurs within an institution based on the parameters outlined by the OAS (Yudofsky et al., 1986), including verbal aggression, physical aggression against self, physical aggression against other people, and physical aggression against objects. According to these parameters, verbal aggression consisted of *aggression* as defined by OMHSAS, physical aggression against self consisted of the coinciding OMHSAS definition, physical aggression against other people consisted of *assault (staff/ patient/other)* as defined by OMHSAS, and physical aggression against objects consisted of *fire setting* and *property damage* as defined by OMHSAS and re-termed aggression towards environment. In the present study, the rate of aggression was determined by the frequency of recorded incidents of IA accounting for the length of admission (in days) within the outline time period. If a participant was currently admitted during the time of data collection, the last date considered for the inclusion of records was December 31, 2011.

Procedures

Hospital data collection. Data retrieved from *Census* and the OMHSAS Risk Management Database were derived from information collected and archived as computer files maintained by the hospital's Performance Improvement (PI) Department.

No additional information was obtained from patients' charts. Permission to obtain this

data was granted by the hospital's Ethics Review Board and annual reviews were

conducted and approved. All information taken from the *Census* tracking system and

OMHSAS Risk Management Database was password protected and will be stored in a

secure office for at least seven years. All information involved in the research will be

kept confidential to the extent possible by law.

  Data coding. The archival records indicate if certain clinical and/or

sociodemographic indicators pertain to a participant (e.g., intellectual disability, criminal

convictions). Each dichotomous variable was coded either as present (coded 1) or as

absent (coded 0). Data from the OMHSAS Risk Management Database were analyzed as

variables.

<div align="center">Analyses</div>

  To test hypotheses 1 and 2, a multiple regression analysis was used to examine

the predictive relationship between clinical and sociodemographic factors and the rate of

institutional aggression. Multiple regression is used to predict a continuous dependent

variable (i.e., rate of institutional aggression) as well as determine the amount of variance

in a dependent variable that is explained by the independent variable(s). When applied to

the present hypotheses (1-2), a multiple regression estimated the extent to which the rate

of aggression is accounted for by the presence of specific clinical and sociodemographic

factors. Preliminary analyses were used to test for assumptions to ensure that no two

variables were too closely correlated. To test hypotheses 3, a one-way ANOVA was used

to evaluate the effect of the origin of the sample group (forensic or non-forensic) and the

rate of institutional aggression.

Chapter Five: Results

Descriptive Statistics

The sample of participants (n = 614) was demographically diverse (see Table 1).

Of the sample, 64% were male and 36% were female (n = 393 and n = 221, respectively).

The average age of participants at start of admission, according to the date parameters of

the present study, was 45 years (SD = 13.9; ranging between 18 and 85 years of age),

with 10.7% falling between the ages of 18 and 25 years (n = 66). Accordingly, 8.1% of

the sample was between the ages of 26 and 30 (n = 50); 31-35 (7.7%; n = 47); 36-40

(7.2%; n = 44); 41-50 (29.6%; n = 182); 51-60 (22.6%; n = 139), and over 60 (14%; n =

86). Of the overall sample, participants were identified as Caucasian (57%; n = 350);

African American (38.3%; n = 235); Hispanic (both identifying as Black-Hispanic and

White-Hispanic (2.8%; n = 17), and Pacific Islander (2%; n = 12). In total, the majority

of the sample was admitted from Philadelphia County (32.4%; n = 199), followed by

Montgomery (27.4%; n = 168); Bucks (17.9%, n = 110); Delaware (16.8%; n = 103), and

Chester (5.5%; n = 34) counties. Last, participants previously self-identified as Catholic

(30.6%; n = 188); Protestant (28.5%; n = 175); following no religion (12.5%; n = 77);

Christian (12.2%, n = 75); Muslim (3.3%, n = 20); Jewish (2.4%, n = 15), and "other"

(consisting of Buddhist, Jehovah's Witness, Greek Orthodox, and other). Additionally,

8.3% (n = 51) of participants religion was "unknown."

The sample was also clinically diverse. Records indicated that participants were

given a primary medical record ICD-9 diagnosis. For the present study, participants were

grouped into "schizophrenic disorders" (82.6%; n = 507); "episodic mood disorders"

(9.6%; n = 59); "other psychotic disorders" (delusional disorder and other nonorganic

psychosis; 3.7%; n = 23), and "other" (drug-induced mental disorders; transient mental

disorders; persistent mental disorders due to conditions classified elsewhere; anxiety,

dissociative, and somatoform disorders; adjustment reaction; depressive disorder not

elsewhere classified. and disturbance of conduct no elsewhere specified, 3.9%; n = 24).

Of those, 4.1% were also identified as Intellectually Disabled (n = 25).

According to hospital records, a significant proportion of patients (27.7%; n =

170) were transferred to the general psychiatry section from the forensic section of the

psychiatric hospital. Greater than 20 percent of the sample (20.8%; n = 128) had one or

more previous criminal conviction(s). Of those, the greatest numbers of participants were

convicted of assault (10.3%), followed by a sexual offence (5.4%), arson (3.1%), and

murder (.8%; n = 63, n = 33, n = 19, and n = 5, respectively). Additionally, eight other

participants (1.3%) were convicted of combined crimes consisting of attempted murder (n

= 1); both assault and murder (n = 1); both assault and attempted murder (n = 1); both

assault and a sexual offence (n = 3); both murder and a sexual offence (n = 1), and both

arson and a sexual offence (n = 1). However, this number was significantly greater when

all legal involvement regardless of conviction status was considered (46.3%; n = 284).

Finally, the average length of time participants were admitted during the parameters set

for by the present study was 955 days (approximately 31 months; SD = 692.28; ranging

between 18 and 2,190 days).

Table 1. Characteristics of the Sample

Demographic	N	Percent
Gender		
Male	393	64.0
Female	221	36.0
Race		
White Non-Hispanic	350	57.0

Black Non-Hispanic	235	38.3
Hispanic	17	2.8
Asian Pacific Islander	12	2.0
Age Range		
18-25	66	10.7
26-30	50	8.1
31-35	47	7.7
36-40	44	7.2
41-50	182	29.6
51-60	139	22.6
Over 60	86	14.0
County		
Philadelphia	199	32.4
Delaware	103	16.8
Montgomery	168	27.4
Chester	34	5.5
Bucks	110	17.9
Diagnosis		
Schizophrenic Disorders	507	82.6
Episodic Mood Disorders	59	9.6
Other Psychotic Disorders	23	3.7
Other	24	3.9
Missing	1	.2
Forensic Transfer		
Transfer	170	27.7
No Transfer	444	72.3
Intellectual Disability		
ID	25	4.1
No ID	589	95.9
Crime		
Arson	19	3.1
Assault	63	10.3
Murder	5	.8
Attempted Murder	1	.2
Assault and Murder	1	.2
Assault and Attempted Murder	1	.2
Sexual Offence	33	5.4
Assault and Sexual Offence	3	.5
Sexual Offence and Murder	1	.2
Sexual Offence and Arson	1	.2
None	486	79.2
Religious Affiliation		
Catholic	188	30.6
Protestant	175	28.5
Christian	75	12.2
Jewish	15	2.4
Muslim	20	3.3
None	77	12.5
Unknown	51	8.3
Other	13	2.1

In total, nearly 70% (n = 429) of the sample engaged in Institutional Aggression during the period of study (69.87%). The mean rate of IA for the sample was .0202 (SD = .03981, ranging from .0005 to .3348). Of those who engaged in IA, nearly two thirds of participants were involved in at least one incident of aggression (n = 280) and an even greater number was involved in assault (n = 363) during the time parameters of the present study (65.3% and 84.6%, respectively). Greater than half of those participants involved in these acts of IA were responsible for three or fewer incidents of aggression (56.4%) and four or fewer incidents of assault (51.2%). When considering only acts perpetrated towards others (n = 5,431), aggression accounted for 35% of the total instance, and assault accounted for 65% (n = 1,918, n = 3,513, respectively).

Furthermore, incidents of aggression towards others (n = 280) were divided into five groups including Aggression towards Staff, Aggression towards Patient, Aggression towards Property, Aggression towards Other/Visitor/Family, and Unspecified Aggression. Accordingly, 79.6% of participants had at least one incident of aggression towards Staff (n = 223), followed by 55% towards Patient (n = 154); 37.9% towards Property (n = 106); 6.7% towards Other/Visitor/Family (n = 19), and 3.6% was Unspecified (n = 10). Assault incidents (n = 363) were divided into three groups. Of those groups, 92.6% of participants were involved in at least one incident of Patient to Patient Assault (n = 336); 59.5% of participants were involved in at least one incident of Patient to Staff Assault (n = 216), and 2.4% were involved in at least one incident of Patient to Other Assault (n = 9).

Additionally, acts of IA related to self and to the environment were examined. Incidents of aggression towards self were composed of suicide attempts, suicidal threats,

and self-injurious behaviors. Incidents of aggression toward environment included fire setting and property damage. Accordingly, 32.2% of those engaged in IA had at least one incident of aggression towards self and nearly 25.6% towards environment (n = 138, n = 110, respectively).

Table 2. Incidents of Aggression and Assault towards Others, Self, and Environment

	N	Maximum	Mean	Std. Deviation
Aggression Towards Staff	223	157	5.22	12.352
Aggression Towards Patient	154	31	2.65	3.476
Aggression Towards Property	106	35	2.91	4.067
Aggression Towards Other/Visitor/Family	19	4	1.32	.749
Unspecified Aggression	10	2	1.30	.483
Assault, Patient/Staff	216	104	5.25	11.827
Assault, Patient/Patient	336	192	7.05	13.863
Assault, Patient/Other	9	3	1.22	.667
Aggression towards Self	138	95	6.80	13.003
Aggression towards Environment	110	30	2.33	3.376

The mean rate of aggression towards others for the sample according to length of stay in days, was .0102 (SD = .0222, ranging between .0005 and .1915). Similarly, the mean rate of assault was .0111 (SD = .0185, ranging between .0005 and .1347 incidents). The mean rate of aggression towards self and environment was .0106 (SD = .019725, ranging between .0005 and .1389 incidents) and .0029 (SD = .0037621, ranging from .0005 and .0213), respectively.

Table 3. Rate of IA in Days

	N	Minimum	Maximum	Mean	Std. Deviation
Rate of Aggression	280	.0005	.1915	.010220	.0221648
Aggression Towards Staff	223	.0005	.1152	.007851	.0161276
Aggression Towards Patient	154	.0005	.1064	.003736	.0092677
Aggression Towards Property	106	.0005	.0613	.004596	.0074291
Aggression Towards Other/Visitor/Family	19	.0005	.0065	.001847	.0015456
Unspecified Aggression	10	.0005	.0031	.001304	.0008641
Rate of Assault	363	.0005	.1347	.011061	.0185478
Assault, Patient/Staff	216	.0005	.1043	.006260	.0127618
Assault, Patient/Patient	336	.0005	.0938	.007865	.0115328
Assault, Patient/Other	9	.0005	.0152	.002264	.0048648
Rate of Aggression towards Self	138	.0005	.1389	.010571	.0197250
Rate of Aggression towards Environment	110	.0005	.0213	.002909	.0037621

Preliminary Analyses

Preliminary analyses were conducted to examine characteristics of the sample (n = 614) to determine if significant differences were present between participants transferred from the forensic section (27.7%; n = 170), compared with those participants directly admitted to the general psychiatry section (72.3%; n = 444), termed "admission origination" for the present study. Chi-square analyses were conducted to examine if sociodemographic and clinical indicators were related to admission origination. Additionally, an independent samples t-test was used to compare the mean age at admission, according to the time parameters outlined for the present study.

Results indicated that there were significant differences between admission origination when considered by gender, $\chi^2(1, n = 614) = 30.08$, $p < .001$, Cramer's V = .221. Men had a greater representation in both categories of admission, forensic transfer and general psychiatry (81.2% and 57.4%, respectively). Significant differences were

also discovered when considered by race χ^2(3, $n = 614$) = 34.30, $p < .001$, Cramer's V =

.236 and by county of origin χ^2(4, $n = 614$) = 110.67, $p < .001$, Cramer's V = .425.

Caucasian participants were most prevalent in the general psychiatry group (64.2%).

Additionally, general psychiatry individuals from Montgomery County were also more

prevalent. No significance was found when examining admission origination by

diagnosis χ^2(3, $n = 613$) = 2.98, $p =$ ns. Results from the t-test, comparing age at

admission for forensic transfers (M = 44.75, SD = 13.26) and general psychiatry (M =

45.66, SD = 14.16), also yielded non-significant results, t(612) = -.72, $p =$ ns (see

Figures 1-4).

Primary Hypotheses

Due to the large sample size, a conventional alpha level of .05 was employed for all

analyses.

1. *Males, admitted from Philadelphia County, with a diagnosis of psychotic*
   disorder and history of criminal conviction(s), will be predictive of a significantly
   higher rate of IA relative to other characteristics.

2. *Of the given variables, a history of criminal convictions will account for the*
   greatest percentage of variability, followed by male gender, admittance from
   Philadelphia County, and a diagnosis of psychotic disorder.

To address hypotheses one and two, multiple regression analyses were conducted to

investigate if sociodemographic (e.g., sex, age at admission, race, county, religion) and

clinical factors (e.g., diagnosis, intellectual disability, history of criminal convictions)

predict IA as defined by rate of assault and aggression towards others, self, and

environment. These variables were chosen based on theoretical and empirical research,

therefore were included in the regression. In order to do so, three variables were re-coded to dichotomous representations (race, diagnosis, and religious identification). Of the overall sample, 57% identified as Caucasian/White (n = 350) and 43% identified as Non-White (n = 264). Additionally, 86.3% were classified with psychotic disorders (n = 530), and 13.5% were classified with non-psychotic disorder (n = 83). Last, 79.2% of the sample were identified as affiliated to a religion (n = 486) and 20.8% were not affiliated/ unknown (n = 128). The assumptions of linearity, multivariate normality, little or no multicollinearity, independence, and homoscedasticity were tested. Linear relationships were revealed in all analyses and no outliers were removed. Normality assumptions indicated a leptokurtic histogram for aggression, assault, and overall IA; the histogram suggested normality was reasonable for aggression against self. Tolerance was greater than .1 and the Variable Inflation Factor (VIF) remained below 10, indicating that multicollinearity was not an issue. Evidence of independence of errors was evaluated by the Durbin-Watson Statistic, which remained in normal range for all analyses, indicating a non-autocorrelation. Two predictors were excluded from the regression analyses due a violation of homoscedasticity (age 41-50 and Philadelphia County).

A linear regression was calculated to predict aggression towards others based on 18 predictor variables previously identified as the characteristics of the sample (Table 1). Results revealed that a history of criminal convictions β = -.006, $t(16)$ = -2.188, p = .03 (Tolerance = .816, VIF = 1.225), and the age group 26-30 β = .023; $t(16)$ = 5.216, $p <$ .001 (Tolerance = .839, VIF = 1.192) were significant predictors. However, the given predictors accounted for a small proportion of variance in aggression, R^2 = .148, $F(16, 262)$ = 2.843, $p <$ .001, Durbin-Watson = 1.184 (See Tables 4-5). In regard to assault,

none of the clinical factors were significant predictors of assault (See Tables 6-7).

However, among the sociodemographic predictors, two age ranges revealed significant

results, age 18-25 $\beta = .008$, $t(16) = 2.375$, $p = .018$ (Tolerance $= .726$, VIF $= 1.378$), and

the age group 26-30 $\beta = .014$, $t(16) = 3.637$, $p < .001$ (Tolerance $= .831$, VIF $= 1.203$)

were significant predictors. The variance explained by the given predictors was small, R^2

$= .112$, $F(16, 345) = 2.708$, $p < .001$, Durbin-Watson $= .24$.

        Both sociodemographic and clinical factors provided significant results when

considering the prediction of aggression towards self. Sex $\beta = -.01$, $t(16) = -3.073$, $p =$

.003 (Tolerance $= .809$, VIF $= 1.236$), diagnosis $\beta = -.012$, $t(16) = -3.101$, $p = .002$

(Tolerance $= .74$, VIF $= 1.351$), age 26-30 $\beta = .011$, $t(16) = 1.995$, $p = .048$ (Tolerance $=$

.71, VIF $= 1.408$), and admittance from Montgomery County $\beta = .011$, $t(16) = 2.328$, p

$=.022$ (Tolerance $= .5$, VIF $= 1.999$), were significant predictors. Nearly one third of the

variance was explained by the given predictors, $R^2 = .325$, $F(16, 121) = 3.64$, $p < .001$,

Durbin-Watson $= 1.736$. Last, no significant results were yielded for aggression towards

environment, $R^2 = .137$, $F(16, 92) = .912$, $p = $ ns (See Tables 8-10).

        A principal components analysis with varimax rotation and the use of Kaiser's

criterion (retain factors with eigenvalues greater than one) was utilized to determine if the

dependent variables could be summarized into one meaningful construct, IA. Bartlett's

test of sphericity was significant at $p < .001$, supporting the fact that the correlations

between the variables differed significantly from zero. The Kaiser-Meyer-Olkin measure

of sampling adequacy yielded a moderate result (.655), in support of the view that the

patterns of correlations are such that a distinct and reliable factor could be extracted. The

results of the analysis revealed that the different subtypes of aggression loaded onto one

factor. Therefore, this overall factor of IA was used as the criterion in the present study.

When IA was predicted, results revealed that diagnosis β = -.01, $t(16)$ = -2.004, p

=.046 (Tolerance = .883, VIF = 1.132), age 18-25 β = .017, $t(16)$ = 2.769, p =.006

(Tolerance = .72, VIF = 1.389), and age 26-30 β = .038, $t(16)$ = 5.24, p < .001 (Tolerance

= .838, VIF = 1.193), were significant predictors. The overall model fit was R^2 = .136,

$F(16, 411)$ = 4.04, p < .001, Durbin-Watson = .585 (See Tables 11-12). These results

indicated that only a non-psychotic disorder diagnosis and a combined age range from

18-30 were significant predictors of IA, thus hypothesis one was not supported.

Regarding hypothesis two, the relative contribution of the significant variables are

indicated by the standardized coefficients. Results indicated that age range 26-30 has a

greater effect on the rate of IA (Beta = .262), followed by age range 18-25 and diagnosis

(Beta = .15 and Beta = -.098, respectively).

3.   *There will be a significant difference in rates of IA between participants*

        transferred from the forensic section, compared wit*h those participants directly*

        admitted to the general psychiatry section of the psychiatric hospital.

Regarding hypothesis 3, Levene's test indicated unequal variances for aggression (p =

.002), assault (p = .003), and aggression towards environment (p = .01); therefore, a one-

way ANOVA using Welch's t-test was utilized because it is robust to homogeneity of

variance violations. There were statistically significant differences between aggression

group means as determined by one-way ANOVA ($F(1,277.081)$ = 6.335, p = .012). Thus,

the rate of aggression among participants transferred from the forensic section (n = 86; M

= .0063, SD = .0013) differed significantly from those admitted directly to the general

psychiatry section (n = 194; *M* = .0119, *SD* = .0253). Additionally, there was a significant

difference present in the rate of assault among forensic transfers (n = 106; *M* = .0073, *SD*

= .0112) when compared with those general psychiatry admission (n = 257; *M* = .0126,

SD = .0207), as determined by one-way ANOVA ($F(1,336.311) = 9.904$, *p* = .002).

There was also a significant difference present in the rate of aggression towards

environment among forensic transfers (n = 30; *M* = .0019, *SD* = .0025), when compared

with those general psychiatry admission (n = 80; *M* = .0033, *SD* = .0041), as determined

by one-way ANOVA ($F(1,86.26) = 4.223$, *p* = .043). However, regarding aggression

towards self, Levene's test indicated equal variances (*p* = .703); yet, no significant

difference was present between forensic and general psychiatry group means ($F(1,136)$ =

.087, *p* = .768). As a result, in three of the four conditions, participants admitted directly

to the general psychiatry section had significantly greater rates IA (See Tables 13-14).

When addressing the parameters of the Overt Aggression Scale specifically, the

mean rate of aggression and of assault were greater for participants admitted directly to

the general psychiatry section of the hospital in each sub-category. Additional Welsh's t-

tests were conducted to examine the target of aggression and assault in the overall sample

between admission origination groups, as determined by one-way ANOVA. Results are

listed in Tables 15-16. Significant results were found in rate of aggression between

patients and staff ($F(1,216.416) = 5.256$, *p* = .023) and patients to property ($F(1,95.770)$

= 9.182, *p* = .003), as well as rate of patient to patient assault ($F(1,329.462) = 13.100$, *p* <

.00), when considered by admission orientation. Additionally, the rate of patient to

patient aggression between groups was nearing significance ($F(1,115.941) = 3.668$, *p* =

.058).

Chapter Six: Discussion

Research has extensively reviewed the relationship between aggression and the presence of mental illnesses. From early colonization, a proportion of those individuals have been required to reside at facilities to address both their needs, and the safety of the community. Today, individuals with severe and persistent mental illnesses who meet the criteria for dangerousness require civil commitment to inpatient psychiatric institutions when other, less restrictive, options are insufficient. The current study examined archival data from a Pennsylvania state psychiatric hospital and regional forensic center. According to Pennsylvania statute, dangerousness is established if a person had, had attempted to, or had threatened to (with acts of furtherance on that threat) cause serious bodily harm to an individual or oneself. Research has shown that this aggression potential does transfer to hospital settings and threatens the ability to provide a safe and therapeutic environment for patients and for staff, necessitating means to identify individuals at risk. For the present study, these acts were termed Institutional Aggression (IA). Although earlier measures have been designed to address this construct, the present study examines IA based on the parameters of the Overt Aggression Scale (OAS; Yudofsky et al., 1986), thus deconstructing IA into four sub-categories: aggression towards others (patients/staff/property/other/unspecified), assault (patients/staff/other), aggression towards self, and aggression towards the environment. The purpose was to determine the predictive relationship between clinical and sociodemographic factors and the rate of IA, resulting in a screening measure for seriously mentally ill (SMI) inpatient populations.

The current study collected descriptive data regarding those who commit institutional aggression. Findings yielded that nearly 70% of the sample engaged in at least one act of IA during the period of study. The mean rate of aggression or assault towards others translated to one incident occurring every 50 days, on average, with few individuals perpetrating up to one incident every three days. However, consistent with research, more than half of participants were responsible for three or fewer acts of aggression or four or fewer acts of assault, within hospital settings; therefore, few individuals are responsible for a large percentage of aggression and violence (Kraus & Sheitman, 2004; Lussier, Verdun-Jones, Deslauriers-Varin, Nicholls, & Brink, 2010).

Results also revealed that incidents of assault were nearly double those of aggression. This may be due to a limitation in recording procedures because the lesser form of aggression would be predicted to be more prevalent. Regarding the subtypes of aggression towards others, contrary to previous findings (Kraus & Sheitman, 2004), patients were not the most common victims of aggressive incidents; rather, staff proved to be the target of a higher rate of aggression when compared with all other groups, followed by patients, property, and others/visitors/family. It may be inferred, therefore, that these results are also likely due to a bias in the recording procedures because incidents directed towards those with the ability to report would likely generate an increased motivation to report; thus, acts directed towards staff potentially yielded a higher rate of true occurrences of aggression when compared with other targets. Alternatively, a higher percentage of participants were found to perpetrate assault against peers, when compared with other potential targets. It is suggested that the aforementioned concerns in reporting procedures may dissipate when physical harm is

imposed. Proximity may therefore account for the higher incidences of assault towards

patients because there are likely more opportunities to engage in this type of aggression

due to propinquity, to ratio of patients to staff, and to the limited hours of visitation for

others. Additionally, assaults may be brought to the attention of staff reporters more

frequently than lesser forms of aggressive incidents because there is an increased

potential for physical injury, thus accounting for the higher number of recorded incidents

of assault overall when compared with aggression, and potentially for the results relating

to the targets, when considering these two actions. Smaller percentages of participants

were involved in acts of aggression towards self and towards the environment (22% and

18%, respectively.)

In regard to the proposed hypotheses for the current study, the following results

are examined. In accordance with Plutchik et al. (1988), amongst the sub-types of IA,

some characteristics were correlated with specific sub-types, but others were present

across categories. Klassen and O'Connor (1996) note, "different types of aggression

present different risks" (p. 245). Literature has generated mixed results regarding

characteristics of those who have a higher propensity for aggression, specifically

regarding gender and diagnosis. In the present study gender was found to have a

significant predictive relationship with aggression against self only; women were more

likely to perpetrate this type of IA. Diagnosis, a long debated topic in aggression

literature, was shown to have a predictive relationship with aggression towards self and

with IA overall, with both conditions indicating that the presence of a non-psychotic

disorder diagnosis was significant. These results are in direct opposition to frequently

held beliefs that it is those with psychotic disorders who are potentially dangerous. These

findings are helpful in the screening for those who are likely to commit acts of
aggression; however, when considering the concerns from previous studies, the
mechanism of action responsible for aggression in those with a psychotic or non-
psychotic disorder diagnosis is not determined by the current findings. Thus, in
accordance with Daffern and colleagues (2005) and Tardiff (1983), it remains a
possibility that aggression may be attributable more probably to symptomology than to
classification.

Although unable to measure Markowitz's (2011) concept of "socially
disorganized" neighborhoods quantitatively, it was hypothesized that admission from
Philadelphia County would be predictive of a higher rate of institutional aggression,
given the population density and diversity. However, Philadelphia County as a predictor,
as well as the age group 41-50, was excluded due to violations in homoscedasticity.
Findings indicated that admission county was significant only in the prediction of
aggression towards self; however, it is difficult to extrapolate information pertaining to
this admission county, Montgomery County, because it contains areas of suburban and of
metropolitan communities. Yet results may provide valuable information about the
targets of this specific type of aggression, based on general statistics for the county.
According to the U.S. Census Bureau, the population estimate in 2014 for Montgomery
County was 816,857 with an estimated population of 1,655.9 individuals per square mile
in 2010. In the years of 2009-2013, Montgomery County had an estimated number of
individuals in the labor force five percent greater than the national average (68.8% and
63.8%, respectively), the median household income was $79,183 and $53,056,
respectively, and in Montgomery County, the percentage of persons living in poverty was

6.6 compared with the national percentage of 14.5. Additionally, the racial makeup of the

county was 81.5% Caucasian compared with the national average of 77.7%. It therefore

can be suggested that aggression towards self may target inherently different individuals;

however, this hypothesis falls outside of the scope of the present study (U.S. Census

Bureau: State and County QuickFacts, 2015).

Age group 26-30 was predictive of overall IA and three of the four subtypes

(aggression towards others, assault, and aggression towards self), because no predictors

of aggression towards environment were found to be statistically significant.

Additionally, the age group 18-25 was predictive of assault and of overall IA; therefore,

participants in the age range of 18-30 years was most salient in the prediction of IA and

its subtypes. However, these results may be misleading because the age group with the

highest percent of participants was excluded from the analyses. It must also be noted,

that age as a construct in the present study was not the current age during the time

parameters of study; rather, it was the age at admission. It is therefore difficult to

determine the generalizability of age related results to other literature findings.

Considering this limitation, younger aged individuals were responsible for greater rates of

institutional aggression when compared with others; yet what remains questionable is

whether or not other confounding variables complicate the results. It also remains

questionable if stage of illness, the course of psychopharmacological treatment, and

treatment setting (setting dynamics) confound the results, or if age as a construct

encompasses the correlation of these variables into one factor.

A history of criminal convictions yielded a negative predictive statistic, contrary

to research findings that former acts of violence and aggression are predictive of a higher

likelihood of future aggression (Krüger & Rosema, 2010). However, when targeting

forensic verses non-forensic patients specifically, literature (Linhorst & Scott, 2004) is

consistent with the current findings; namely, that non-forensic, civilly committed,

patients were associated with a higher rate of institutional aggression. Two possibilities

for this outcome are suggested as in the present study: that these convictions were related

to violent crimes (see Table 1). The contextual factors of the environment may influence

ones' propensity to engage in aggression because it can be inferred that the environment

between forensic and non-forensic facilities are intrinsically different; however, these

differences were not within the scope of the present study and thus, no inferences can be

made regarding setting dynamics. Additionally, these results may be confounded by

length of stay, which poses a variety of unanswered questions for future research to

consider. It is highly probable that forensic patients spend a period of time in a

correctional setting before admittance to a forensic psychiatric facility, or that they have a

greater likelihood of prior incarceration; this time was not accounted for in the present

study. Thus, a true estimate of length of time spent in an institutional setting was

unknown, affecting the predictor of age at admission.

Although the present study aimed to examine the predictive ability of static risk

factors for Institutional Aggression, results offered little information about characteristics

of those likely to commit acts of aggression, due to small percentages of the variability

accounted for by the model. Therefore, a risk assessment screening measure was not

created because this may have conveyed the notion that these individual factors

contribute to one's propensity to commit violence in a greater manner, in actuality, than it

does. Swanson et al. (2002) stated, "Focusing on the empirical relationship between

violence and mental disorder can, unfortunately, reinforce the stigma that persons with

psychiatric disabilities continue to face in the community. However, the likelihood that

some individuals with SMI may commit assaultive acts is a significant risk to be

addressed by providers and caregivers" (p. 1528). Albeit true, the utmost importance

should be given to mitigating the risk of aggression; insufficient and unsubstantial

information may ignite the already inflamed belief system regarding the dangerousness of

those with mental illnesses that is perpetuated by misinformation.

Limitations

Research has supported the importance of determining risk factors for inpatient

violence among those with severe mental illnesses (Carmel & Hunter, 1989; Daffern et

al., 2005; DeMatteo & Edens, 2006; Ehmann et al., 2001; Flannery, 2005; Grassi et al.,

2006; James et al., 1990; Krüger, & Rosema, 2010; Mercado & Ogloff, 2007; Noble &

Rodger, 1989; Owen et al., 1998; Quanbeck et al., 2007). It has also determined that this

task becomes difficult not only because of the ambiguity in the definition of aggression,

but also because of the ways in which this outcome is measured (Douglas, Guy, & Hart,

2009; Ehmann et al., 2001; Haller & Deluty, 1988; Noble, 1997); this could potentially

affect the validity of the findings of the current study. Although the *apples and oranges*

phenomenon (Dietz & Rada, 1983) has been addressed in the methodology by providing

operational definitions for specific subtypes of institutional aggression, these definitions

are subject to personal interpretation, as is the nature of incidents of aggressive behaviors

that are observed. Specifically, what remains unknown is to the extent to which the

clinical staff is trained regarding the specific components of the recording measure and

further, if this training is consistent across shifts and is regularly implemented to maintain

reliability. It is unlikely that that incident reports are reviewed for accuracy. Moreover, it is possible that incidents that were not directly observed have been recorded, because aggression may be reported to a clinical staff member by a patient or another professional, thus questioning the validity of the information provided and recorded.

Another concern is in regard to the nature of a retrospective case design. Although Guy (2008) suggests that retrospective studies produce a larger predictive validity than prospective study designs, Douglas, Yeomans, and Boer (2005) suggest that retrospective studies are open to threats such as predictor-criterion contamination and the inability to optimize data collection procedures. For the current study, the data were categorized and defined in a way that was outside the scope of this researcher's control, as evidenced by the inclusion of "aggression towards property" in the overall category of aggression towards others. It is possible, in this case, that the originator of the data collection procedures was considering an impulsive incident in which one's aggression was expelled, devoid of intention of targeting property specifically (e.g., slamming a door) as opposed to destroying said property intentionally; however, this remains unknown. As it is understood, the aggression towards property did not result in damage, or a classification of property damage would have been instituted; however, it must also be noted that the data reported and collected were not verified for accuracy by any other clinician or agency, for the purpose of the current study. Furthermore, additional information regarding each incident of IA may have been available in many cases; however, the present study did not investigate the qualitative section of the incident reports, thus further information regarding the nature of the event may have been revealed and have instituted a change in classification of IA.

Additionally, reporting biases such as under-detection and underreporting of violent incidents through incident reports is particularly systemic to inpatient facilities (Ehmann et al., 2001; Krakowski, Volavka, & Brizer, 1986; Lion, Snyder, & Merrill, 1981; Noble, 1997) regardless of the seriousness of the incident (Owen et al., 1998). For example, incidents of aggression against staff members may be more highly reported than incidents against other patients, regardless of their actual occurrences, because staff members are ultimately responsible for completing the necessary paperwork. A personal connection to such aggression may be greater motivation to report particular incidents. In the current study, a higher number of assaults were reported when compared to aggression towards others. It would be inferred that the lesser form of aggression may be more prevalent; however, this information is unknown and is thus a limitation.

Furthermore, limitations concerning the systems in which incidents are recorded provide further evidence of compromised results. Documents are often left incomplete or poor definitions and standards of recording are implemented (Dietz & Rada, 1983). Consequently, retrospective studies utilizing incident reports are, perhaps, forming inaccurate conclusions based on incomplete data (Haller & Deluty, 1988). When considering recording procedures, the clinical staff was likely blind to the official medical record diagnosis (suggesting a reduced likelihood of predictor-criterion contamination); however, the diagnosis itself poses a particular limitation. The derivation procedure of the diagnosis was unknown, introducing the possibility that it was affected by observable behaviors of the patient (as such, aggression may contribute to diagnosis) or rather, the diagnosis may have preexisted to admission and was unverified by any clinical or assessment means.

In terms of statistical findings for the present study, the original hypotheses referred to an overall measure of IA that was supported by a factor analysis indicating the sub-types of aggression (aggression towards others, assault, aggression towards self, and aggression towards the environment) loaded onto one factor; therefore, this regression was the basis for testing the major hypotheses for current study. However, through further investigation of the analysis, different facets of the IA were examined. For these subsequent analyses a limitation in the present study was that a Bonferroni correction was not used to correct for alpha level. It is important to note that these analyses were done to examine if the predictor variables differentially predicted types of aggression.

The final, and arguably the most important concern, pertains to absence of contextual factors in the current study, constricted by the available information from archival data. As initially intended, the current study examined static factors that may contribute to aggression potential; yet, results revealed that only a small percentage of the variance in the rates of institutional aggression could be attributed to the factors examined. This may further provide support that it is not risk factors in isolation; rather, the interactions among the variables within the population that affects aggression as an outcome measure, thus creating an infinite number of scenarios that may either prompt an individual to commit, or preclude an individual from engagement in, aggressive actions.

Mulvey and Lidz (1995) suggested that differences in environments between research settings may affect the results; that is, dynamic environmental factors may increase or decrease violence among certain groups. In the present study, as it would likely be generalizable to other institutional settings, it is suggested that there may be a lack of consistent social dynamics among units or wards. For instance, some units are

organized according to the vulnerability of the population (older adult and medical unit), in contrast to units that may house a population that is more volatile and vulnerable to institutional aggression, considering the information previous research has afforded. Therefore, it is possible, that an environment that has a higher proclivity for instability or aggression may produce increased rates of aggression due to the interaction among individuals. Swanson et al. (2002) stated, "people who routinely witness or experience violent events in their surrounding communities over a long period of time may begin to act violently themselves, as a learned behavior or reaction to perceived threat from others" (p. 1529). It would not be a far stretch of the imagination to consider that the behaviors of even one individual in a confined setting may affect those of others in the same environment. Furthermore, as mentioned previously, it may be the interactions between patients and staff that affect the rate of aggression.

It is also unknown if, and how, individual characteristics increase the rate of aggression when in conjunction with a particular setting, for example, co-ed units as opposed to single sex units. Moreover, when considering the structure of a given environment, greater restrictions may positively or negatively affect the rate of aggression because it may institute greater organization or may be viewed as a deprivation of civil liberties. Therefore, in agreement with prior research (Douglas, Ogloff, & Hart, 2003; Hanson & Morton-Bourgon, 2007), measures designed to assess risk, specifically actuarial models, may be contextually bound in terms of accuracy and reliability.

Implications and Future Research

Considering the advice of Klassen and O'Connor (1996), aggression as a criterion has proven difficult to examine, attributable to the inherent complexity of variables impacting the outcome. Regardless of significant relationships, only small percentages of the variance in the criterion were accounted for by the predictors. These results suggest that the characteristics tested may not be strong contributing factors when quantifying the relationship with aggression, and therefore it is questionable what overall role clinical and sociodemographic factors play in predicting IA is questionable. It is possible that as such, it is the context in which aggression occurs, determined by dynamic situations, relationships among people, and environmental considerations that have a greater influence on the IA equation. This may provide promising potential that risk factors are not ingrained within individuals, constituting the prospect that aggression may be mitigated though increased education and training, intervention, or novel changes in the environment of institutional settings.

Nonetheless, significant predictive relationships were revealed, which may provide additional information about some of the characteristics of those likely to commit acts of aggression. Future research is necessary to investigate further, the way in which these variables interact with one another, the multitude of historical factors, and the dynamic environment in order to develop a clearer picture of the reasons *why* individuals engage in aggression, both within and exterior to institutional settings. With a greater understanding of the aforementioned, targeted interventions may be identified, developed, and employed to address both factors related to the individual and the context

in which the aggression occurs in order to confront the global concerns of improving the

therapeutic environment and of limiting aggressive behaviors.

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Appendix A: Figures

Figure 1. Number of Forensic Transfers by Sex

Figure 1. Forensic transfer vs. direct admission to general psychiatry by sex.

Figure 2. Number of Forensic Transfers by Race
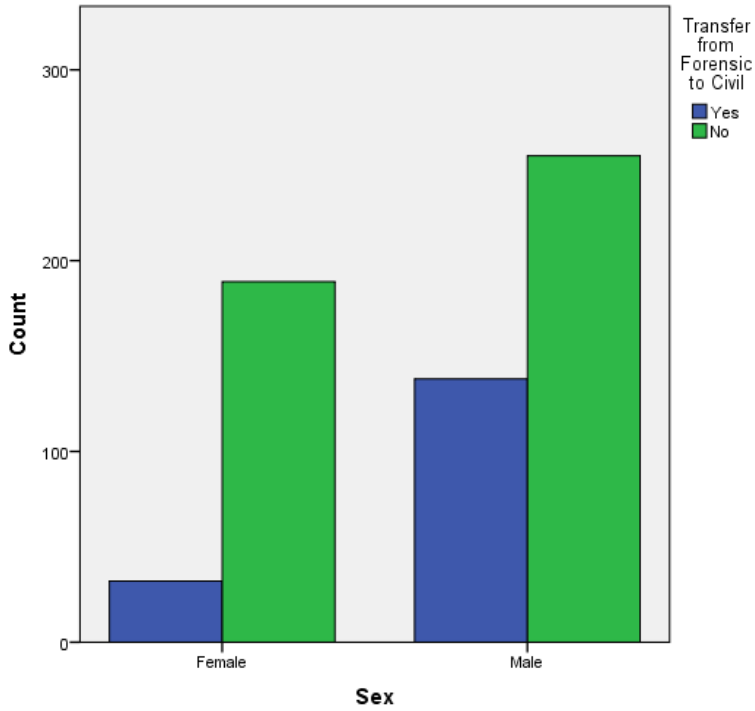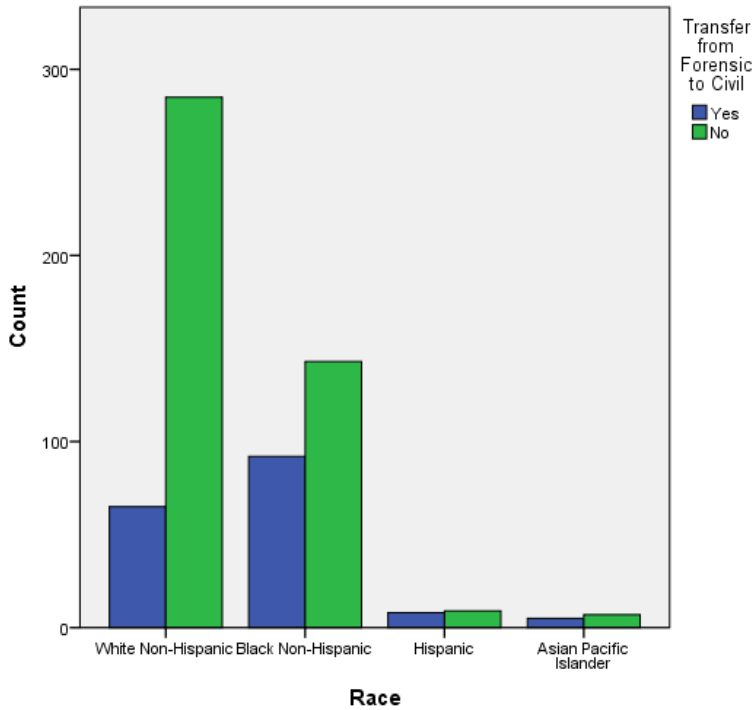

Figure 2. Forensic transfer vs. direct admission to general psychiatry by race.

Figure 3. Number of Forensic Transfers by County
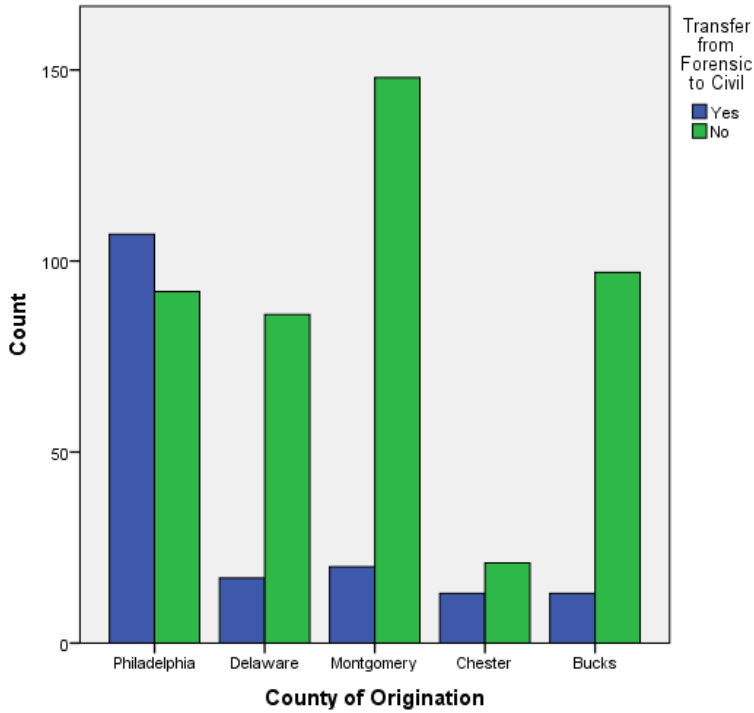
Figure 3. Forensic transfer vs. direct admission to general psychiatry by county of origination.

Figure 4. Number of Forensic Transfers by Diagnosis
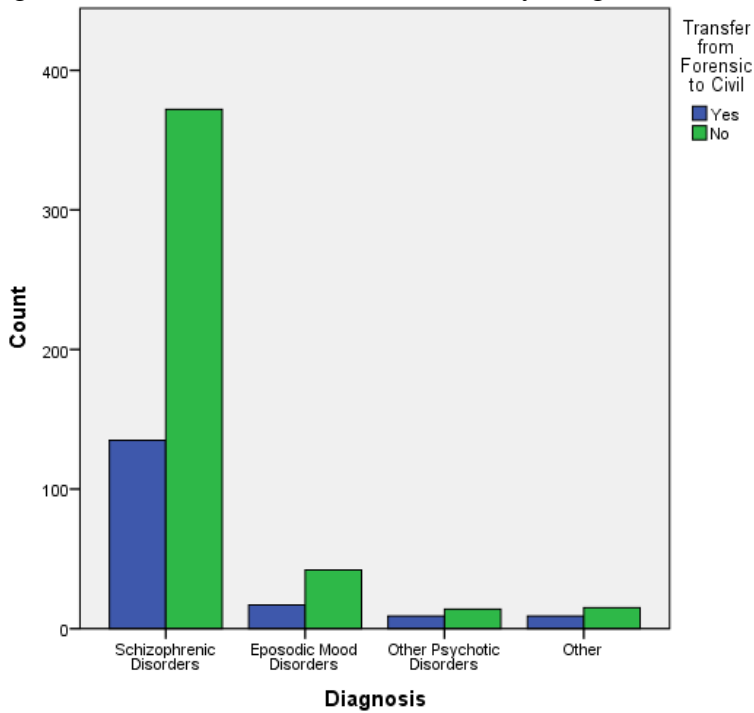
Figure 4. Forensic transfer vs. direct admission to general psychiatry by diagnosis.

Appendix B: Tables

Table 4. Predictive Characteristics of Rate of Aggression towards Others (in days)

Model	U Coefficients		S Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Err.	Beta			Tolerance	VIF
(Constant)	.007	.005		1.425	.155		
Race	.002	.003	.052	.695	.488	.583	1.715
Sex	.001	.003	.033	.547	.585	.911	1.098
ID	.005	.005	.063	1.069	.286	.934	1.070
Criminal Conviction	-.006	.003	-.138	-2.188	.030	.816	1.225
Diagnosis	-.001	.003	-.023	-.361	.719	.826	1.211
Religious Identification	.000	.003	-.009	-.153	.878	.894	1.119
Age 18-25	.007	.004	.129	1.865	.063	.677	1.477
Age 26-30	.023	.004	.325	5.216	.000	.839	1.192
Age 31-35	.006	.004	.083	1.305	.193	.813	1.231
Age 36-40	.000	.004	-.005	-.078	.938	.827	1.209
Age 51-60	.005	.003	.090	1.350	.178	.736	1.358
Age Over 60	-.002	.004	-.036	-.551	.582	.779	1.284
Delaware County	-.005	.004	-.098	-1.374	.171	.643	1.555
Montgomery County	-.003	.003	-.078	-.993	.321	.529	1.889
Chester County	.005	.005	.057	.891	.374	.806	1.241
Bucks County	.003	.004	.058	.736	.462	.528	1.893

Table 5. Proportion of Variance of Predictive Characteristics of Rate of Aggression towards Others (in days)

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
.385	.148	.096	.0183989	.148	2.843	16	262	.000	1.184

Table 6. Predictive Characteristics of Rate of Assault (in days)

Model	U Coefficients		S Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Err.	Beta			Tolerance	VIF
(Constant)	.013	.004		3.068	.002		
Race	.001	.002	.024	.367	.714	.579	1.726
Sex	-.002	.002	-.052	-.994	.321	.948	1.055
ID	.007	.004	.081	1.549	.122	.949	1.054
Criminal Conviction	-.004	.002	-.079	-1.465	.144	.887	1.127
Diagnosis	-.002	.003	-.031	-.580	.562	.877	1.141
Religious Identification	.000	.002	-.004	-.071	.944	.916	1.092
Age 18-25	.008	.003	.141	2.375	.018	.726	1.378
Age 26-30	.014	.004	.202	3.637	.000	.831	1.203
Age 31-35	.006	.004	.098	1.759	.079	.823	1.215
Age 36-40	-.005	.004	-.070	-1.263	.208	.845	1.184
Age 51-60	-.002	.003	-.035	-.593	.554	.718	1.393
Age Over 60	-.006	.003	-.109	-1.903	.058	.782	1.278
Delaware County	-.004	.003	-.076	-1.175	.241	.610	1.639
Montgomery County	.001	.003	.016	.232	.817	.535	1.868
Chester County	.001	.005	.015	.273	.785	.827	1.210
Bucks County	.001	.004	.026	.379	.705	.533	1.876

Table 7. Proportion of Variance of Predictive Characteristics of Rate of Assault (in days)

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
.334	.112	.070	.0178366	.112	2.708	16	345	.000	.240

Table 8. Predictive Characteristics of Rate of Aggression towards Self (in days)

Model	U Coefficients		S Coeffts.	t	Sig.	Collinearity Statistics	
	B	Std. Err.	Beta			Tolerance	VIF
(Constant)	.022	.006		3.455	.001		
Race	-.002	.004	-.043	-.429	.669	.548	1.824
Sex	-.010	.003	-.255	-3.073	.003	.809	1.236
ID	-.001	.005	-.014	-.180	.858	.898	1.114
Criminal Conviction	.004	.004	.093	1.099	.274	.780	1.283
Diagnosis	-.012	.004	-.269	-3.101	.002	.740	1.351
Religious Identification	.003	.004	.052	.648	.518	.880	1.137
Age 18-25	-.002	.005	-.038	-.372	.710	.523	1.913
Age 26-30	.011	.005	.177	1.995	.048	.710	1.408
Age 31-35	.002	.006	.036	.416	.678	.760	1.316
Age 36-40	-.006	.007	-.080	-.963	.338	.808	1.238
Age 51-60	-.005	.005	-.094	-.984	.327	.608	1.643
Age Over 60	-.011	.006	-.151	-1.752	.082	.748	1.337
Delaware County	-.002	.006	-.036	-.358	.721	.547	1.828
Montgomery County	.011	.005	.246	2.328	.022	.500	1.999
Chester County	.007	.007	.089	1.011	.314	.722	1.385
Bucks County	.005	.005	.099	.888	.376	.446	2.241

Table 9. Proportion of Variance of Predictive Characteristics of Rate of Aggression

towards Self (in days)

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
.570	.325	.236	.0172451	.325	3.640	16	121	.000	1.736

Table 10. Proportion of Variance of Predictive Characteristics of Rate of Aggression towards Environment (in days)

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
.370	.137	-.013	.0033583	.137	.912	16	92	.558	1.358

Table 11. Predictive Characteristics of Rate of IA (in days)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.030	.008		3.903	.000		
Race	-.002	.005	-.023	-.381	.703	.601	1.664
Sex	-.003	.004	-.043	-.917	.360	.934	1.070
ID	.013	.008	.078	1.653	.099	.954	1.049
Criminal Conviction	-.006	.005	-.070	-1.413	.158	.867	1.154
Diagnosis	-.010	.005	-.098	-2.004	.046	.883	1.132
Religious Identification	-.002	.005	-.016	-.338	.735	.910	1.099
Age 18-25	.017	.006	.150	2.769	.006	.720	1.389
Age 26-30	.038	.007	.262	5.240	.000	.838	1.193
Age 31-35	.010	.007	.076	1.501	.134	.827	1.209
Age 36-40	-.006	.007	-.042	-.836	.404	.842	1.188
Age 51-60	-.002	.005	-.018	-.342	.733	.717	1.394
Age Over 60	-.011	.006	-.093	-1.789	.074	.776	1.289
Delaware County	-.008	.006	-.084	-1.436	.152	.620	1.613
Montgomery County	5.836E-006	.005	.000	.001	.999	.551	1.815
Chester County	.006	.009	.034	.666	.506	.823	1.216
Bucks County	.001	.006	.006	.100	.920	.533	1.878

Table 12. Proportion of Variance of Predictive Characteristics of Rate of IA (in days)

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
.369	.136	.102	.0361924	.136	4.040	16	411	.000	.585

Table 13. Rate of IA (in days) by Forensic Transfer

		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Rate of Aggression	Yes	86	.006348	.0118686	.0012798	.0005	.0968
	No	194	.011936	.0252687	.0018142	.0005	.1915
	Total	280	.010220	.0221648	.0013246	.0005	.1915
Rate of Assault	Yes	106	.007308	.0111550	.0010835	.0005	.0712
	No	257	.012608	.0206688	.0012893	.0005	.1347
	Total	363	.011061	.0185478	.0009735	.0005	.1347
Rate of Aggression towards Environment	Yes	30	.0019	.00247	.00045	.00	.01
	No	80	.0033	.00410	.00046	.00	.02
	Total	110	.0029	.00376	.00036	.00	.02
Rate of Aggression towards Self	Yes	28	.0096	.01762	.00333	.00	.08
	No	110	.0108	.02029	.00193	.00	.14
	Total	138	.0106	.01973	.00168	.00	.14

Table 14. Further Analyses for Significant Comparison of Rate of IA (in days) by Forensic Transfer

	Levene Statistic	Sig.	Statistic	df1	df2	p value (alpha)
Rate of Aggression	9.720	.002	6.335*	1	277.081	.012
Rate of Assault	9.088	.003	9.904*	1	336.311	.002
Rate of Aggression towards Environment	6.827	.010	4.223*	1	86.260	.043
Rate of Aggression towards Self	.146	.703	.087	1	136	.768

Welch's Robust Tests of Equality of Means

Table 15. Mean Rate of IA (in days) by the Parameters of the Overt Aggression Scale by Forensic Transfer

		N	Mean	Std. Deviation	Std. Error Mean
Aggression towards Staff	Yes	69	.004911	.0094460	.0011372
	No	154	.009169	.0182235	.0014685
Aggression towards Patient	Yes	54	.002269	.0024960	.0003397
	No	100	.004528	.0112959	.0011296
Aggression towards Property	Yes	34	.002287	.0027826	.0004772
	No	72	.005687	.0086175	.0010156
Aggression towards Other/Visitor/Family	Yes	4	.001365	.0010750	.0005375
	No	15	.001975	.0016553	.0004274
Unspecified Aggression	Yes	2	.000671	.0003034	.0002146
	No	8	.001462	.0008967	.0003170
Assault, Patient/Staff	Yes	49	.004661	.0086033	.0012290
	No	167	.006729	.0137317	.0010626
Assault, Patient/Patient	Yes	105	.005192	.0066545	.0006494
	No	231	.009079	.0129985	.0008552
Assault, Patient/Other	Yes	2	.000556	.0001399	.0000989
	No	7	.002752	.0055047	.0020806

Table 16. Further Analyses for Significant Comparison of Rate of IA (in days) by the Parameters of the Overt Aggression Scale by Forensic Transfer

	Levene Statistic	Sig.	Statistic	df1	df2	p value (alpha)
Aggression Towards Staff	8.468	.004	5.256*	1	216.416	.023
Aggression Towards Patient	4.061	.046	3.668*	1	115.941	.058
Aggression Towards Property	7.964	.006	9.182*	1	95.770	.003
Aggression Towards Other/Visitor/Family	.408	.532	.477	1	17	.499
Unspecified Aggression	3.224	.110	1.399	1	8	.271
Assault, Patient/Staff	1.722	.191	.995	1	214	.320
Assault, Patient/Patient	11.069	.001	13.100*	1	329.462	.000
Assault, Patient/Other	1.409	.274	.289	1	7	.608

Welch's Robust Tests of Equality of Means