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Insight and Locus of Control as Related to Aggression in Individuals with Severe Mental Illness (SMI)

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Abstract

Individuals with severe mental illness (SMI) are often stereotyped as aggressive, although research has shown that the majority of these individuals are not aggressive. Nonetheless, closer examination of factors that differentiate high-aggressors from low-aggressors may predict which individuals are more likely to become verbally and/or physically aggressive. Previous studies have investigated the relationship between insight and aggression in this population. Some studies have found a relationship between poor insight and aggression, while others have not. Other studies have also examined the relationship between locus of control and aggression, and many have found that an external locus of control is related to higher aggression. The current study examined the relationship between insight, locus of control, and aggression in individuals with SMI. Forty-four participants with SMI were included. Participants were grouped according to history of aggressive behavior. A linear discriminant function analysis was performed. Neurocognitive functioning was forced into the discriminant equation to control for the possible effects of neurocognitive impairment on aggression, and the insight and locus of control variables were entered in a second block. The analysis did not identify a significant discriminant function. The insight and locus of control variables were unable to correctly reclassify a significant number of participants into their previously determined categories. In sum, insight and locus of control do not appear to be significantly related to aggression, and it is likely that there are a multitude of other variables that contribute to the occurrence of aggressive behaviors.

Introduction: Stigma and Study of Aggression in SMI

Individuals with severe mental illness (SMI) often face discrimination and stigmatization because of their illness. Unfortunately, both the general population and people that work with individuals with SMI perpetuate this discrimination. For example, some studies have found that over half of the general population, one fourth of nursing staff, and one third of relatives of individuals with SMI perceive individuals with schizophrenia as dangerous or responsible for the majority of sex crimes, which is untrue (Dietrich, Heider, Matschinger, & Angermeyer, 2006; Grausgruber, Meise, Katchnig, Schony, & Fleischhacker, 2007). Dietrich et al. (2006) also found that 54.7% of students surveyed used terms such as "violent" and "dangerous" to describe people with SMI. In a study by Bjorkman, Angelman, and Jonsson (2008), 40% of registered nurses working in psychiatric wards reported perceiving individuals with schizophrenia as dangerous, and 70% reported perceiving individuals with schizophrenia as unpredictable. Individuals with schizophrenia were also ranked "most different" and "hardest to talk to" in a survey about people with schizophrenia, drug abusers, and alcoholics (Bjorkman et al., 2008). Clearly, SMI is often unfairly stereotyped and stigmatized.

Obviously, many people subscribe to the incorrect stereotype that people with SMI are aggressive, which leads to the question of what exactly "aggression" means. In some studies, aggression is defined broadly as "any behavior that is performed with the intention to harm someone either physically or psychologically" (Matthews & Norris, 2002, p. 2). For the purposes of this study, this definition will be used. However, other studies narrow the definition of aggression. For example, Hatta et al. (1999) considered patients aggressive if they presented an immediate danger to themselves or people around them. Cheung and Schweitzer (1998) quantified aggression using several criteria such as severity, frequency, intent, the target, and/or outcome. In addition, Archer (2001) differentiated between direct and indirect aggression. Indirect aggression was defined as occurring behind the target's back, whereas direct aggression was said to have an immediate effect. Longo and Bisconer (2003) defined aggression as striking another person on any part of the body with an open or closed hand. Manifestations of aggression vary, as do definitions of the term. Although much research has been done on aggression in SMI, previous research has shown that the majority of inpatients in psychiatric hospitals are not aggressive.

In fact, in cases where aggressive behavior is present, other factors often complicate the relationship between aggression and SMI. For example, a study by Joyal, Gendron, & Cote (2008) found that 57% of aggressive acts were committed by 15% of inpatients with mental illness, and that those individuals were more likely to have neurological damage or mental retardation. Joyal et al. (2008) also found that 28% of individuals diagnosed with schizophrenia and without evidence of neurological damage or mental retardation had assaulted someone during the six-month study period. Other studies have also found that the majority of individuals with SMI are not aggressive (Ketelsen, Zechert, Driessen, & Schulz, 2007; Nolan & Citrone, 2008; Rao, Luty, & Trathen, 2007). The study by Rao et al. (2007) found that of the small number of individuals who commit assaults, many have diagnoses of drug and alcohol abuse in addition to SMI. The study by Ketelsen et al. (2007) found 7.7% of their sample to be aggressive. Aggression was correlated with male gender, younger age, and unemployment in this study. Also, Ketelsen, et al. (2007) stated that the prevalence of aggression varies substantially between studies, ranging from 7% to 35% of all psychiatric inpatients. Although there is a large variance in the percentage of individuals with SMI found to be aggressive from study to study solid evidence has been found that the majority of these individuals are not aggressive. Furthermore, other variables such as mental retardation, substance abuse, and neurological damage complicate the relationship between aggression and SMI.

Prediction of Aggression in SMI

Many studies have focused on the relationship of aggression to factors such as social skills deficits, symptoms of SMI, personality, and environmental factors and events (Foley et al. 2007; Fresan, Apiquian, Nicolini, and Cervantes, 2007; Joyal et al., 2008; Longo & Bisconer, 2003; Thomson, Davidson, Brett, Steele, and Darjee, 2008). However, other studies have focused on variables such as insight and locus of control in relation to aggression in individuals with SMI. Many studies which are mentioned below have uncovered valuable information which enhances the study of aggression and provides possible markers for aggressive behavior in the SMI population. In addition, because impaired neurocognitive function is a core element of SMI, it has been included and controlled for in the current study.

Insight and Aggression in SMI

Insight is a variable which has been studied in many populations; however, uncertainty surrounds its exact definition and classification. Insight is difficult to define objectively because it is an individual's subjective description of his or her own mental state. Some studies suggest that there are two components of insight: unawareness of illness and incorrect attribution of the source of symptoms. However, other studies suggest that medication nonadherence should be included as a component of insight (Diesfeld & Sjostrom, 2007). Still others maintain that poor insight is a coping mechanism that allows the individual to reject the stigma of mental illness (Lysaker, France, Hunter, & Davis, 2005). For the purposes of this study, insight will refer to an individual's awareness of his or her mental illness.

The relationship between insight and aggression is as uncertain as the definition of insight. Insight into one's illness has received attention as a possible predictor of aggression; however, results thus far have been inconsistent. For example, Waldheter, Jones, Johnson, and Penn (2005) found that insight was not significantly associated with violence, which contradicted the hypothesis. Waldheter et al. (2005) states that "it might be the case that low insight, when examined independently, is not likely to be associated with increased violence risk" (p. 616). However, a study which was cited by Waldheter et al. (2005) found that a combination of substance abuse, medication nonadherence, and poor insight did predict violent behavior (Swartz et al., 1998, as cited by Waldheter et al., 2005). These results suggest that variables such as substance abuse or medication nonadherence may be driving factors behind poor insight.

Similar to the study by Swartz et al. 1998 (as cited by Waldheter et al., 2005), a study by Arango, Barba, Gonzalez-Salvador, and Ordoñez (1999) found that patients who displayed more aggression had poorer insight into their illness when insight was measured in combination with frequency of aggressive behavior in the past week and a general psychopathology score (Arango et al., 1999). A general psychopathology score includes measures of positive symptoms such as delusions or hallucinations, and negative symptoms such as lack of affect or other reductions in normal function (Verma, Poon, Subramaniam, & Chong, 2005). Arango et al. (1999) also stated that clinical variables, such as symptoms, were more predictive of violence than were sociodemographic variables, such as gender. Another study by Verma et al. (2005) also found that more aggressive inpatients had poorer insight into their illness.

Unlike Arango et al. (1999) or Verma et al. (2005), some studies have found an indirect relationship between insight and aggression. For example, a study by Mutsatsa, Joyce, Hutton, and Barnes (2006) did not find a direct relationship between insight and aggression, although a relationship between poor insight and poor cognition was found. Poor cognition has been associated with higher levels of aggression (Cheer & Wagstaff, 2004; Pradhan, Chakrabarti, Nehra, & Mphil, 2008). Because of the contradictory findings surrounding the relationship between insight and aggression, further study would be useful.

Locus of Control and Aggression in SMI

Another variable which may be associated with aggression is locus of control. Locus of control, a component of social cognition, refers to the degree to which a person feels he or she is in control of his or her surroundings. External locus of control is the perception that external factors such as fate, chance, or influence of powerful others determine outcomes, whereas internal locus of control is the perception that one's own behavior influences outcomes (Osterman et al.,1999). Social cognition is a broad term that encompasses an individual's ability to perceive, process, and interpret social information (Penn, Corrigan, Bentall, Racenstein, & Newman, 1997). Unlike non-social cognition, social cognition involves stimuli that are personally relevant.

Many studies have found a relationship between external locus of control and aggressive behavior (Davis & Mettee, 1971; Hall, 2006; Osterman, et al., 1999; Sadowski & Wenzel, 1982; Williams & Vantress, 1969). The samples from these studies have included participants of a wide range of ages, both genders, and both individuals with and without SMI. Interestingly, the study by Osterman et al. (1999) found gender differences in their results. In males, external locus of control correlated with physical aggression, but in females, a correlation was found between external locus of control and verbal aggression. In contrast, internal locus of control has been associated with increased treatment participation, help-seeking behavior, and more positive treatment outcomes (Page & Scalora, 2004).

A study by Hall (2006) also found that external locus of control was associated with aggression. According to Hall (2006), the relationship between external locus of control and aggression may exist because individuals with external locus of control perceive events as less predictable and aggress in order to exert influence over outcomes. Hall (2006) sug-

gests that an inverse relationship between aggression and the perception of control over one's own life may exist. However, this study only found a relationship between physical aggression and external locus of control; the relationship was not found for verbal aggression (Hall, 2006). As discussed, many studies have concluded that locus of control is related to aggression (Davis & Mettee, 1971; Hall, 2006; Osterman, et al., 1999; Sadowski & Wenzel, 1982; Williams & Vantress, 1969) and that locus of control may serve as a valuable variable in the examination of aggression in individuals with SMI.

Neurocognitive function and Aggression in SMI

Neurocognitive function is another important factor in severe mental illness. In fact, it is well-known that neurocognitive deficits are a core feature of schizophrenia (Albus et al., 2006; Cheung & Schweitzer, 1998; Horan et al., 2008; Mesholam-Gately, Giuliano, Goff, Faraone, & Seidman, 2009). Neurocognition is defined as any form of cognition that is associated with the function of any specific area of the brain (Mesholam-Gately et al., 2009). According to Albus et al. (2006), components of neurocognition include executive function, memory, psychomotor processing, attention, and perceptual motor speed. Horan et al. (2008) found that, more specifically, explicit learning and memory functions are impaired in individuals with schizophrenia. These deficits in neurocognition can interfere with day-to-day activities such as planning events, keeping appointments, and remembering medication.

In addition to being an important factor in SMI, neurocognition has also been found to be related to aggression. A study by Cheung and Schweitzer (1998) found that neuropsychological deficits were associated with higher aggression, as were other variables, including past aggression, medication side-effects, substance abuse, reduced serotonin function, antisocial traits, impulsivity, and environmental factors. Because previous studies have repeatedly shown that neurocognitive deficits play a major role in SMI, neurocognition is controlled for in the current study.

Purpose and Hypotheses

Some of the studies summarized above have found a predictive relationship between insight and locus of control and aggression (Arango et al., 1999; Waldheter et al., 2005). However, because archival data was

used in this study, predictive hypotheses are not possible. Thus, all results of this study will be associative. The purpose of the present study is to examine the relationship between aggressive behavior and insight and locus of control while controlling for neurocognition in individuals with SMI, and therefore to enhance the understanding of aggression in SMI. The results of this study may allow others to research a predictive relationship between insight, locus of control, and aggression.

It is hypothesized that poor insight is related to more aggressive behavior. A second hypothesis is that external locus of control will be related to higher aggression. A third hypothesis is that poor insight will be related to external locus of control.

Methods

Participants

Participants of the current study included 44 inpatients from a state psychiatric hospital. There were 24 males and 20 females. The average age at admission was 39.63, and ages at admission ranged from 22 to 66. Of the 44 participants, 7 had a history of verbal aggression, 27 had a history of physical aggression, and 10 had no history of aggression. Forty (90.9%) of the participants were Caucasian, 3 (6.8%) were African American, and one (2.3%) was Asian American. All participants met criteria for severe and persistent mental illness. Demographic variables are summarized in Table 1, and clinical variables are summarized in Table 2.

Measures

Information about aggression was obtained from Social Histories. Each patient had a Social History as a part of his or her medical record. History of aggression for each person was categorized as "no aggression," "verbal aggression," or "physical aggression/physical and verbal aggression." Reliability was established through a preliminary interrater check requiring 100% agreement.

To measure insight, the *Birchwood Insight Scale* was used (Birchwood, 1994). The Birchwood Insight Scale is a well-validated self-report questionnaire which evaluates three dimensions of insight, including perceived need for treatment, awareness of illness, and the individual's ability to re-label symptoms as part of his or her illness. The participant

Table 1. Demographic Variables

Variable	*N*	Mean	*SD*	Minimum	Maximum
Years of Education	43	13	2.35	8	18

	N	Percentage of Patients
Gender		
Males	24	54.5
Females	20	45.5
Race		
Caucasian	40	90.9
African American	3	6.8
Asian American	1	2.3
Highest Occupational Functioning		
Unemployed	1	1.9
Laborer	3	5.7
Semi-skilled/worker/farmer/ Service worker	12	22.6
Skilled/craftsman/foreman	2	3.8
Professional/manager/official/ Sales/student/technical/clerical/ Proprietor	13	24.5
Missing data	22	41.5

	N	Married	Single	Divorced	Separated
Marital Status	44	3	28	12	1

	N	Yes	No
Has GED	44	6	38
Received Special Education	44	7	37

answers each question as "true," "false," or "not sure." There is an overall insight score which ranges from 0 to 12, and higher scores indicate higher levels of insight.

To measure locus of control, the *Inventory of Competence and Control Beliefs* was used (FKK; Krampen, 1991). The FKK is a 32-item self-report questionnaire with a Likert scale with responses ranging from "strongly agree" to "strongly disagree" (Krampen, 1991). An example of a state-

Table 2. Clinical Variables

Variable	*N*	Mean	*SD*	Minimum	Maximum
Age at Admission	53	40.52	12.42	22	66
Insight Scale total	46	7.85	3.87	0	12
Externality subscale of FKK	53	49.91	13.87	16	79

	N	Percentage of participants
Axis I Diagnosis		
Paranoid schizophrenia	20	37.7
Chronic/undifferentiated Schizophrenia	12	22.6
Schizoaffective disorder	12	22.6
Bipolar disorder	5	9.4
Other	12	6.8
Psychotic disorder, not otherwise specified	2	3.8
Pervasive developmental disorder	1	1.9
Impulse control disorder	1	1.9
History of aggression		
None	10	22.7
Verbal	7	15.9
Physical/Physical and Verbal	27	61.4

ment found on the FKK is "My life is chiefly controlled by powerful others." Scoring of the FKK determines where the participant lies on the continuum of internal versus external locus of control. Each individual has both an internal and an external score. For the purposes of this study, however, only the Externality subscale of the FKK was used, with higher scores indicating a more external locus of control.

Scores on the Birchwood Insight Scale and the Externality subscale of the FKK are summarized in Table 2, and simple correlations between them are summarized in Table 3.

To assess neurocognition, the *Repeatable Battery for the Assessment of Neuropsychological Status* was used (RBANS; Ranolph, 1998). The RBANS was developed to measure abnormal cognitive decline in adults from 20

Table 3. Correlations

	Externality subscale of FKK	Insight Scale Total Score
Externality Subscale of FKK	1	-.031
Insight Scale Total Score	-.031	1

to 89 years old. The RBANS consists of five indices with norms for individuals with SMI; the indices include Attention, Immediate Memory, Delayed Memory, Language, and Visuospatial/Constructional tasks.

Procedures

These measures were administered by psychiatric staff as a part of a routine battery that is given every six months. All information from the assessments was obtained from a database and analyzed using secondary analysis.

Data Analysis

A linear discriminant function was performed to analyze the variables. Scores on the Birchwood Insight Scale and scores on the Externality subscale of the FKK were analyzed in relation to aggression, while controlling for neurocognition. Also, the relationship between scores on the Birchwood Insight Scale and the Externality subscale of the FKK were examined.

Results

Linear discriminant analysis was used to determine if individuals who had a history of verbal, physical, or no aggression could be correctly reclassified into those categories by using insight and locus of control. Multivariate analysis demonstrated that the function did not reliably differentiate among the groups, λ=.855, $\chi^2(3)$=2.123, p=.547, R^2 canonical=.15.

A simple correlation between scores on the Birchwood Insight Scale and Externality subscale of the FKK was performed. Analysis showed that these scores were not significantly related (r=-.03, p=.84).

Discussion

The purpose of this study was to examine the relationship between insight, locus of control, and aggression in individuals with SMI. It was hypothesized that poorer insight would be associated with higher aggression, and that external locus of control would be associated with higher aggression. No support was found for these hypotheses.

Contrary to the hypotheses, neither insight nor locus of control had a significant relationship with aggression, and therefore were unable to correctly reclassify a significant number of individuals into their original groupings of "no aggression," "verbal aggression,' or "physical/physical and verbal aggression."

It was also hypothesized that poorer insight would be associated with external locus of control. Contrary to the hypothesis, no significant relationship was found between insight and locus of control.

Unlike the present study, many previous studies have found significant associations between poor insight, external locus of control, and higher aggression. One possible reason for these results is the size and composition of the sample. Many of the populations previously studied included individuals with diagnoses such as bipolar disorder, schizophrenia, and other psychotic disorders. In previous studies, severity of symptoms varied substantially. In contrast, the 44 individuals used in this study represented a small portion of all individuals with SMI, and all participants had diagnoses in the schizophrenia spectrum. All participants of this study also demonstrated criteria for "severe and persistent" mental illness. In addition, this sample was taken from a state hospital; individuals housed at state hospitals tend to be more aggressive and/or impaired than other individuals with SMI. While the relationship between poorer insight, external locus of control, and higher aggression are found in populations which contain individuals with a wider array of disorders, the results of this study suggest that when the population includes a relatively small number of individuals with only schizophrenia-spectrum diagnoses, the relationship between the variables changes.

In addition to the differences in populations between this study and previous research, this study was limited in the aggression data that was used. The data on aggression was historical data instead of data from the same time period as when the assessments were performed. Historical data is likely to be less representative of current aggressive behavior than data taken at the same time as the other assessments. Historical data provides little or no context for aggressive behavior; it is unknown whether

the aggressive instances that occurred did so before or after the onset of SMI. Also, because age at admission was relatively high (39.63 on average) it is likely that most of the individuals included in the study had experienced previous hospitalizations. Furthermore, the assessment scores which were analyzed were from the admission of these participants, which may have influenced their responses for several reasons. Individuals who are being committed to a psychiatric hospital are likely to be undergoing stress; they are also more likely to be in an acute phase of their mental illness when admitted.

The results of this study have important implications for future research. Future projects may include more detailed aggression data. Aggression data which includes dimensions of frequency and severity would be helpful in demonstrating the complexity of the behavior and its predictive factors. Whether the aggression occurred before or after the onset of SMI is another important aspect of the variable which must be considered. Also, examining insight, locus of control, and aggression over time would likely provide a more comprehensive and accurate representation of participants' levels of insight, locus of control, and behavior. A more longitudinal design would also take age of the participant into account.

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