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Predictors of self-injury in child and adolescent psychiatric inpatients.

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PREDICTORS OF SELF-INJURY
IN CHILD AND ADOLESCENT PSYCHIATRIC INPATIENTS

A Thesis Presented

by

JEANINE M. VIVONA

Submitted to the Graduate School of the
University of Massachusetts in partial fulfillment
of the requirements for the degree of

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May 1993

Department of Psychology


PREDICTORS OF SELF-INJURY
IN CHILD AND ADOLESCENT PSYCHIATRIC INPATIENTS

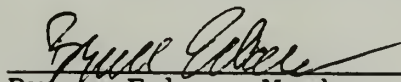
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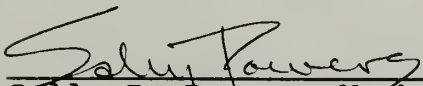
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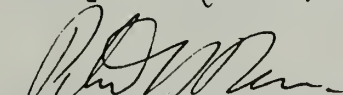
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ABSTRACT

PREDICTORS OF SELF-INJURY

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MAY 1993

JEANINE M. VIVONA, B.S., UNION COLLEGE

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Aggressive incidents perpetrated by child and adolescent psychiatric inpatients pose significant management and therapeutic challenges to hospital staff. Therefore, identification of patients who are likely to engage in a variety of aggressive behaviors during hospitalization can lead to more effective treatment planning, as well as to a safer and more therapeutic milieu. Child and adolescent patients who engaged in acts of self-injury during a psychiatric hospitalization were compared to assaultive and non-aggressive patients on a host of demographic, environmental, familial, and behavioral measures to determine the ways in which these patients differ. Compared to non-aggressive patients, patients who engaged in assaultive and/or self-injurious behaviors were more likely to have a history of antisocial behavior, including assaults and destruction of property, to be victims of physical abuse, sexual abuse, or neglect, to have been placed in foster care, and to have lived in multiple residences prior to admission. Subtypes of aggressive patients were

difficult to delineate based on pre-admission variables, however. Self-injurious and assaultive youngsters were equally aggressive during hospitalization, as well as strikingly similar on myriad behavioral, familial, and environmental characteristics. Only the number of living situations a patient had experienced prior to hospitalization was associated with the manner in which the youngster aggressed on the inpatient unit. Results indicated that youngsters who engage in acts of self-injury during hospitalization are those who have experienced the greatest degree of disruption in the home environment prior to admission, compared to assaultive and non-aggressive patients.

TABLE OF CONTENTS

	<u>Page</u>
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
LIST OF TABLES	vii
Chapter	
1. INTRODUCTION	1
Assaultive Behavior in Child Inpatients	1
Assaultiveness and Suicidality in Children	3
Assaultive and Suicidal Behaviors in Adolescents	4
Aggression and Psychosis	6
Non-suicidal Self-injury in Children and Adolescents	7
Summary of Child Aggression Research	8
Toward an Understanding of Non-suicidal Self-injury	9
Data Collection and Initial Results	10
Purpose of the Present Study	13
Hypotheses and Questions Addressed by the Study	16
2. METHOD	19
Classification of Patients	19
Patient and Family Characteristics Examined	20
3. RESULTS	23
Aggressive Behaviors during Hospitalization	23
Behavior as Measured by the CBCL	24
Environmental and Historical Variables	24
Findings Related to Study Hypotheses and Questions	27
Results of the Discriminant Function Analysis	29
4. DISCUSSION	31
Aggression in Self-injurious Patients	31
Aggressive Behavior during Hospitalization	33
Behavioral Predictors of Aggression	34
Discontinuity of Self-injurious Behavior	37
Aggression and Depression	38
Differences in Stability of the Home Environment	39
Length of Hospital Stay and Aggression	42
Predicting Aggression	43
Conclusion	45
REFERENCES	50

LIST OF TABLES

Table	Page
1. Reliability Estimates for Chart Review Variables . .	46
2. Group Daily Means for Aggressive Behaviors on the Unit	46
3. Numbers of Patients who Committed Each Type of Aggressive Act	46
4. Group Means and Standard Deviations for CBCL Variables	47
5. Chart Review Variables	47
6. Results of Discriminant Function Analysis	49
7. Correlation Matrix for Home Disruption Variables . .	49

CHAPTER 1

INTRODUCTION

Although youngsters typically engage in a variety of aggressive behaviors, psychiatrically hospitalized children and adolescents are more likely than other youngsters to employ interpersonal forms of aggression and to utilize tactics that have greater potential for harm (Pfeffer, Plutchik, Mizruchi, & Lipkins, 1987). Aggressive incidents perpetrated by child and adolescent psychiatric inpatients pose significant management and therapeutic challenges to hospital staff; patient aggression threatens the safety of the milieu for all patients and is thus a vital management concern, as well as a frequent, and sometimes intractable, treatment target (Garrison, Ecker, Friedman, Davidoff, Haeberle, & Wagner, 1990; Pfeffer et al., 1987). Delineation of subtypes of patients who are likely to engage in different types of aggressive behaviors will lead to more effective treatment planning for individual patients, and therefore a safer and more effective therapeutic milieu (Delga, Heinssen, Fritsch, Goodrich, & Yates, 1989; Fritsch, Heinssen, Delga, Goodrich, & Yates, 1992; Garrison et al., 1990; Pfeffer, Plutchik, & Mizruchi, 1983b).

Assaultive Behavior in Child Inpatients

Aggressive behaviors committed by children in hospital settings have been correlated with a number of patient and environment characteristics. Garrison and associates (1990)

collected detailed information on each aggressive incident committed by a patient on a hospital child psychiatric unit during a 12-month period. History of patient symptoms was measured using the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983), a reliable and commonly used measure of childhood psychopathology that allows comparison of boys and girls in three age ranges on factor-analytically derived scales reflecting various psychiatric syndromes. These researchers found that younger male patients with a history of aggression, as measured by the CBCL, were more likely than other patients to act aggressively while hospitalized, and that aggressive acts were more likely to be committed during evening hours, in unstructured settings, and when several patients were present. On reanalysis of the data, Garrison (1990) determined that a combination of high CBCL Externalizing scale score and low CBCL Internalizing scale score characterized the most highly assaultive patients.

Additional variables found to be associated with assaultive behavior in inpatient children have included a high level of psychopathology, poor impulse control, poor reality testing, use of projection as a defense, and assaultive behavior in one or both parents; negatively correlated with assaultiveness were symptoms of anxiety and depression (Pfeffer et al., 1983a, 1987). In an examination of extreme violence in children, Lewis, Shanok, Grant, and Ritvo (1983) found that a history of seizures, paternal

violence toward the mother, and maternal psychiatric history distinguished homicidal from non-homicidal child inpatients. Interestingly, suicidal ideation and acts were the only patient behaviors that discriminated homicidal from non-homicidal patients; homicidal children were more likely to engage in suicidal behavior. The authors concluded that the identified constellation of factors engenders rage and frustration in children which activate both suicidal and homicidal behaviors.

Assaultiveness and Suicidality in Children

Despite the fact that aggression has traditionally been conceptualized as interpersonal in nature (Eron, 1987; Parke & Slaby, 1983), and researchers have tended to focus on this aspect of aggression in inpatient children, the literature suggests that suicidal and assaultive behaviors co-occur in child and adolescent inpatients (Fritsch et al., 1992; Inamdar, Lewis, Siomopoulos, Shanok, & Lamela, 1982; Lewis et al., 1983; Pfeffer et al., 1983b). A paradigm that employs a more comprehensive concept of aggression assigns patients to one of four categories based on the types of aggressive behavior in which they engage: (a) assaultive only; (b) self-destructive only; (c) assaultive and self-destructive; and (d) neither assaultive nor self-destructive (Fritsch et al., 1992; Inamdar et al., 1982; Pfeffer et al., 1983b). This model has been used to compare patients who aggress in characteristically different ways (e.g., Inamdar

et al., 1982; Pfeffer et al., 1983b) and to predict the management challenges a particular child might present to the therapeutic milieu (e.g., Fritsch et al., 1992).

Pfeffer and her colleagues (1983b) applied the aggression typology to the assaultive and suicidal behaviors of inpatient children and several important results emerged: (a) patients in the assaultive-only group were most likely to display antisocial behaviors; (b) children who engaged only in suicidal behaviors were most likely to be depressed; (c) patients who were both assaultive and suicidal were most likely to use compensation as a defense; and (d) non-aggressive children were most likely to use intellectualization as a defense. In addition, patients in both assaultive groups were more aggressive overall and more likely to have a violent parent than those in the non-assaultive groups, a finding that was corroborated by Griffin (1987). Suicidal patients were more likely than non-suicidal patients to have a suicidal parent. In contrast to Lewis and her colleagues (1983), these researchers concluded that assaultive and suicidal behaviors in children derive from distinct, independent factors.

Assaultive and Suicidal Behaviors in Adolescents

While there is a paucity of research that examines the relationship between assaultive and suicidal behaviors in children, these behaviors in adolescent psychiatric inpatients have been studied more extensively. Fritsch and

associates (1992) assigned adolescent inpatients to one of four aggression categories, based on the presence or absence of external and internal aggressive symptoms prior to admission, in order to predict aggressive behaviors during hospitalization. History of externalized aggression was found to be associated with greater manageability problems on the unit, while history of internalized aggression predicted greater self-destructive behavior during hospitalization. However, in contrast to the suicidal children studied by Pfeffer and her colleagues (1983b), internally aggressive adolescents did not manifest greater depressive symptomatology compared to other patients. Furthermore, contrary to the investigators' hypothesis, patients with histories of both internal and external aggressive behaviors were not significantly more assaultive or self-destructive on the unit than other aggressive patients. Fritsch and associates (1992) suggested that these patients may be more flexible in their use of tension-releasing schemes, and may therefore be more amenable to learning new and appropriate outlets for tension on the therapeutic milieu.

Nielsen, Harrington, Sack, and Latham (1987) examined family history variables and character structure in three groups of aggressive adolescents at a residential treatment facility: (a) aggressive only; (b) self-destructive only; and (c) aggressive and self-destructive. Of the three

groups, patients who were both aggressive and self-destructive were most likely to be victims of physical or sexual abuse, a finding that is also reported by Fatout (1990), and least likely to have an intact character structure. After community placement, self-destructive adolescents experienced the highest levels of success and aggressive adolescents the lowest, while those who engaged in both types of aggressive behaviors showed intermediate success.

Aggression and Psychosis

Assaultive and self-injurious behaviors have been consistently linked with psychosis in adults (e.g., Rossi et al., 1986); however, investigations with adolescent psychotic patients have yielded inconsistent results. Inamdar and associates (1982) found that 82% of psychotic adolescent inpatients in their lower socioeconomic class sample were assaultive, suicidal, or both. Using similar criteria, Delga and associates (1989) found that a significantly smaller number of psychotic adolescent inpatients from upper socioeconomic classes (54%) presented with a history of aggressive behavior, suggesting that socioeconomic status may mitigate the expression of aggression in psychotic adolescents. Furthermore, Delga and associates (1989) found that assault and self-injury were equally prevalent among psychotic and non-psychotic

adolescents, a finding that was corroborated by Fritsch and his colleagues (1992).

Non-suicidal Self-injury in Children and Adolescents

Most researchers interested in aggression in children and adolescents have focused on assaults and suicidal behaviors. Less is known about non-suicidal self-injury, although the two phenomena appear to be distinct yet related (Chowanec, Josephson, Coleman, & Davis, 1991; Senior, 1988). According to Senior (1988), nonlethal self-injury is typically employed by preadolescent females in enmeshed families as a means of engagement, attention-seeking, and punishment; the seriously suicidal youngster, on the other hand, is more likely to be an impulsive male adolescent whose intent is permanent separation from a distant and passive family. Chowanec and associates (1991) compared three groups of male delinquent adolescents at a detention center: those who engaged in at least one instance of nonlethal self-injury, those who were referred for psychiatric evaluation and were not self-injurious, and those who were neither self-injurious nor referred for psychiatric evaluation. Results indicated that, compared to other detainees, self-injurious adolescents engaged in more noncompliance, internalized aggression, and externalized aggression during incarceration. Incidents of self-injury were most often triggered by limit-setting, a finding that was corroborated by Garrison and associates' (1990) study of

aggressive behavior in child and adolescent psychiatric inpatients. Interestingly, the self-harm group was not distinguishable from the others on degree of suicidal ideation or depression, but self-harming adolescents appeared to have poorer non-verbal intelligence skills. The authors concluded that self-injury was "an attempt at adaptation by psychobiologically vulnerable youth to a stressful situation ... self-harm was used to mollify intolerable affects and to mobilize the interpersonal field" (Chowanec, 1991, p. 206), a conclusion that is consonant with Senior's (1988) characterization of nonlethal self-injury.

Summary of Child Aggression Research

Myriad demographic, familial, and environmental factors have been investigated in association with aggressive behavior in child and adolescent psychiatric inpatients; however, the use of divergent methodologies, sampling practices, and operational definitions of aggression necessitates caution when attempting to amalgamate findings from several studies. Nonetheless, the research suggests several potential predictors of aggression in this population, including male gender, age under twelve years, history of aggressive behavior, history of child abuse or neglect, domestic violence in the home, use of projection as a defense, poor reality testing, poor impulse control, and parental aggressive behavior. Results suggest that,

compared to patients who engage in aggression against others, self-harming patients are more likely to have a suicidal parent, to have a damaged character structure, and to have been physically or sexually abused; findings on the relationship between depression and self-injury have been equivocal. Patients who are both assaultive and suicidal do not appear to be more aggressive overall than patients who show a predominant aggressive style; perhaps counterintuitively, these patients may benefit from a more flexible or adaptive coping style than those who are only assaultive or only suicidal. In contrast to young psychiatric inpatients, incarcerated male adolescents who engage in nonlethal self-injurious behavior have been found to be more aggressive, but not more depressed and suicidal, than their non-self-harming counterparts.

Toward an Understanding of Non-suicidal Self-injury

To date, researchers examining aggression in child and adolescent psychiatric inpatients have focused primarily on the precipitants and concomitants of interpersonal assaults and suicidal behavior. This work has uncovered an important question concerning self-directed aggression: How do children and adolescents who exhibit non-suicidal self-injurious behavior during hospitalization differ from other aggressive and non-aggressive patients on demographic, personality, and environmental characteristics? Elucidating the answer to this question may help to resolve the current

disagreement concerning whether aggression directed toward the self and aggression toward others derive from similar or distinct sources. The data collected and analyzed by Garrison and his colleagues (1990) were useful in this regard, as they reflect direct observation of a wide array of aggressive behaviors, including non-suicidal self-injury, and thus allowed examination of characteristic differences between children and adolescents who were self-injurious during hospitalization and those who were not.

Data Collection and Initial Results

Garrison and his colleagues (1990) recorded incidents of four types of aggressive behavior committed by 99 patients who were admitted consecutively to the child psychiatry service of an 800-bed urban general hospital during a 12-month study period. The subjects ranged in age from five to fifteen; the 63 male patients were significantly younger (mean=10.67 years, SD=2.81) than the 36 female patients (mean=12.94 years, SD=2.12). The mean length of stay was 42.6 days for male patients and 39.9 days for female patients.

Three types of data were collected during the study: (a) critical incident reports filed by staff following aggressive incidents on the unit, (b) Child Behavior Checklists (CBCL; Achenbach & Edelbrock, 1983) completed by parents or guardians at the time of admission, and (c)

patient and family history data gathered during a retrospective chart review.

Critical incident reports were filed each time a patient's behavior elicited any of the following responses from the unit staff: confinement to a "quiet" or holding room, restriction to the patient's room, physical restraint, or mechanical restraint. An estimated 96% of all incidents that occurred during the study period were reported, and high reliability of reporting was achieved. Incident reports recorded the type, target, setting, and consequence of each occurrence of aggression. There were 887 aggressive incidents committed by 77 patients during the study period. These incidents were classified into four mutually exclusive categories: (a) physical assault (47.2%); (b) self-injury (10.5%); (c) property damage (15.2%); and (d) nonphysical aggression, such as verbal assaults and verbal threats to aggress (27.1%).

CBCL data were collected for 90 (90.9%) of the 99 patients admitted during the study period; those patients for whom CBCL data were unavailable did not differ significantly on other variables from those for whom CBCL data was collected. Patients with a history of aggression as indicated by an elevated CBCL Aggression scale score were responsible for a significant majority of the recorded incidents of assault, non-physical aggression, and property

damage; elevated Aggression scale scores were not associated with incidents of self-injury, however.

A retrospective chart review furnished data on a number of pre-admission patient variables, including history of foster care, substance abuse history, history of self- and other-directed aggressive behaviors, involvement in the legal system, and documented physical abuse, sexual abuse, or neglect; parental history of substance abuse and psychiatric treatment were also noted. Examination of the chart review data revealed that subjects were predominantly white (79.8%) and indigent (66.7%). A history of maltreatment, including physical abuse, sexual abuse, and neglect, was documented in 54.6% of the patient's histories, and parental psychiatric disorder or substance abuse characterized 66.4% of the patient's families. More than one-third of the patients (37.4%) had been placed in foster care prior to hospitalization, and 19.2% had received inpatient or residential psychiatric treatment prior to their involvement in the study.

Results indicated that aggressive acts most often occurred in unstructured settings and were perpetrated by younger male patients with a history of aggression, as measured by the CBCL. In contrast, older females committed significantly more acts of self-injury, and patients who were self-injurious typically did not have elevated Aggression scale scores. Additionally, self-injury was more

likely than other aggressive acts to occur when a patient was already in a behavioral management site, such as a holding room or seclusion room (31.2%), suggesting that the act of self-injury frequently took place in the context of other untoward events.

Purpose of the Present Study

It has been repeatedly asserted that children who engage in self-injurious behaviors during hospitalization comprise a unique subgroup of psychiatric patients (Delga et al., 1989; Fritsch et al., 1992; Garrison et al., 1990; Griffin, 1987; Nielsen et al., 1987; Pfeffer et al., 1983b). In the present study, the data collected by Garrison and associates (1990) were analyzed to illuminate the ways in which self-injurious patients differed from other aggressive and non-aggressive patients on a host of demographic, environmental, and behavioral measures.

The methodological diversity represented by the Garrison and associates (1990) study suggested that in-depth analysis of these data with respect to self-injury and subsequent comparisons with the results obtained by other investigators would lead to greater understanding of self-injurious behavior in child and adolescent psychiatric inpatients. Three methodological issues were particularly salient. First, a broad definition of self-injurious behavior was employed that was not based upon suicidal intention; other investigators centered conceptualizations of self-harm on

suicidality. Second, classification of behavior was based upon observed aggressive acts, rather than upon parent report or chart review; with a single exception (Chowanec et al., 1991), all previous studies of aggressive and self-injurious youngsters have utilized retrospective chart review or parent report to determine youngsters' patterns of aggression. Direct observation and recording of aggressive incidents is likely to lead to more accurate results by reducing reporter bias and censure (Chowanec et al., 1991). Third, the sample was comprised entirely of inpatient children and adolescents age 15 and younger, the majority of whom were from the lowest socioeconomic classes. Other investigators of these phenomena included in their samples outpatient children (Pfeffer et al., 1983a, 1983b), adolescents to age 18 (Chowanec et al., 1991; Delga et al., 1989; Fritsch et al., 1992; Nielsen et al., 1987), youngsters from higher socioeconomic classes (Delga et al., 1989; Fritsch et al., 1992), and incarcerated youth (Chowanec et al., 1991). Thus, a unique subsample of aggressive youngsters was captured.

In addition to these methodological issues, the data collected by Garrison and associates (1990) included a host of demographic, behavioral, historical, and environmental variables that held potential value for elucidating ways in which self-injurious patients may be distinguished from other patients. For example, an elevated CBCL Aggression

scale score was associated with frequency of assaults and aggressive incidents overall in the original analysis, but not with frequency of self-injury incidents. However, it seemed possible that elevations of other CBCL scales might characterize self-injurious patients, in particular the Depression scales (Pfeffer et al., 1983b) and the Internalizing and Externalizing scales (Chowanec et al., 1991; Fritsch et al., 1992; Garrison, 1990). In addition, factors such as physical or sexual victimization or exposure to domestic violence in the home may be more characteristic of self-injurious than other patients (Browne & Finkelhor, 1987; Fatout, 1990; Lewis et al., 1983). Finally, the relative overall aggressiveness of patients who engage in self-harming behaviors compared to others is the subject of some debate and considerable interest (Chowanec et al., 1991; Fritsch et al., 1992; Nielsen et al., 1987).

These data appeared to hold potential for expanding knowledge of the phenomenon of self-injury in psychiatrically hospitalized children and adolescents. Comparison of self-injurious children both with children who are interpersonally aggressive and children who are not aggressive on familial, historical, and environmental variables may augment knowledge of the factors that predispose youngsters to injure themselves and to aggress against others. Utilizing this information, predictions can be made concerning the likelihood that a particular patient

will aggress in self-destructive or assaultive ways during hospitalization. Such knowledge is clearly essential for devising effective individual treatment and discharge plans, as well as for maintaining a safe therapeutic milieu (Fritsch et al., 1992; Garrison et al., 1990; Pfeffer et al., 1983b).

Hypotheses and Questions Addressed by the Study

Of primary interest in the present study was whether similar or divergent factors elicit self-injurious versus other aggressive behaviors in inpatient children and adolescents. To address this question, self-injurious patients were compared to both interpersonally aggressive and non-aggressive patients on a host of demographic, environmental, familial, and behavioral variables to determine the ways in which patients who injure themselves during hospitalization differ from other patients.

A number of hypotheses were suggested by the literature:

1. Because victims of childhood physical and sexual abuse typically show patterns of interpersonal aggression as well as self-destructive behavior in childhood (Browne & Finkelhor, 1987; Darche, 1990; Fatout, 1990), abuse victims were expected to be overrepresented in the Self-injury group.
2. CBCL Aggression scale scores were expected to be higher for patients in the Aggression group than for patients in the Self-injury group (Garrison et al., 1990).

3. Self-injurious patients have been found to be characterized by greater expression of internalizing symptoms compared to other patients (Chowanec et al., 1991; Garrison, 1990). Therefore, it was hypothesized that CBCL Internalizing scores would be highest for the Self-injury group.
4. Garrison (1990) found that the largest differences between CBCL Externalizing and Internalizing scale scores were indicative of highly assaultive inpatient children. Therefore, this difference was expected to be greatest for the Aggression group. Furthermore, because females tend to exhibit more internalizing symptoms, while males demonstrate greater externalizing symptoms (Delga et al., 1989), these effects were expected to interact with gender.

Current knowledge of self-injury in child and adolescent inpatients is both sparse and contradictory; therefore, hypotheses concerning several study variables could not be stated a priori. However, a number of open questions were formulated:

1. Domestic violence, defined as physical aggression toward one member of a child's family by another, has been positively related to assaultiveness in children (Lewis et al., 1983), but the relationship between domestic violence and self-injury was unknown. Therefore, the association between domestic violence and self-injurious

behavior in these child and adolescent inpatients was measured.

2. Because some researchers have found a positive relationship between depressive symptoms and self-injury (Pfeffer et al., 1983b) while others have not (Chowanec et al., 1991; Fritsch et al., 1992), CBCL measures of depression were compared across groups in an attempt to further illuminate the relationship between depression and self-injury.
3. Past investigations have both supported (Chowanec et al., 1991; Nielsen et al., 1987) and disputed (Fritsch et al., 1992) the fact that youngsters who are both assaultive and self-injurious are more aggressive overall compared to other aggressive patients. Therefore, the issue of the relative overall aggressiveness of each group was assessed.

Classification of Patients

Each of the 90 patients for whom a complete data set was available was assigned to one of three mutually exclusive groups based upon his or her documented aggressive behavior on the psychiatric unit. Patients who committed at least one act of self-injury during the hospital stay comprised the Self-injury group (N=36). The Aggression group included all patients who committed at least one act of non-self-injurious aggression (i.e., assault, property damage, or verbal aggression) during hospitalization (N=34). Patients who engaged in no aggressive behavior during hospitalization comprised the No Aggression group (N=20).

The Aggression group was included to control for the potential confounding effects of patients' non-self-injurious (i.e., other-directed) aggression. It was therefore considered important that the distributions of the other-directed aggression variable be similar for the Self-Injury and Aggression groups. A t-test indicated that the distributions were, in fact, dissimilar, principally due to the larger variability in the Self-injury group on this variable. Closer examination of the data revealed the existence of an outlier in the Self-injury group, a patient who was substantially more assaultive and more self-injurious during hospitalization than the other patients;

this patient's daily mean number of other-directed aggressive incidents (2.16) was 13.5 times the daily mean for all other patients (0.16) and his daily mean number of self-directed aggressive incidents (0.25) was 12.5 times the daily mean for all other patients (0.02). When this patient was removed from the analysis, the group distributions on other-directed aggression did not differ significantly. The outlying case was thus excluded from subsequent analyses, leaving 35 patients in the Self-injury group and a total 89 patients in the study.

Patient and Family Characteristics Examined

Patient demographic variables that were analyzed across the three patient groups were age, gender, and race. Patient experiences upon which group comparisons were made included history of physical abuse, sexual abuse, or neglect, substance abuse, prior treatment in a residential facility, history of foster care, prior involvement with the criminal justice system, and number of living situations prior to admission; a living situation was defined as a change of residence of at least two weeks' duration which necessitated a change in the patient's primary caretaker. Family variables on which the three patient groups were compared included parental psychiatric history, parental substance abuse, and domestic violence in the home.

Comparison variables related to the hospitalization included length of stay, referral source, method of payment,

and discharge disposition. Additionally, the Self-injury and Aggression groups were compared on daily rates of the three non-self-injury categories of aggression displayed on the unit (assaults, property damage, and verbal aggression), as well as on total other-directed aggression and overall level of aggression, to determine the relative aggressiveness of the groups. Analyses were based upon patients' daily mean number of aggressive incidents, that is, the number of aggressive acts committed by a patient divided by the number of days the patient remained in the hospital, thus adjusting for variability in length of hospital stay.

Several CBCL dimensions, including the Internalizing, Externalizing, Aggression, Delinquency, and Sum scale scores, as well as the difference between Externalizing and Internalizing scale scores, were compared across the three patient groups. It was also desirable to compare the groups on the level of depressive symptoms; however, depression scores are computed for only five of the six CBCL patient by age subgroups. There is no Depression scale for boys aged 12 to 16, although the Uncommunicative scale for boys in this age range has a majority of items in common with the Depression scales for the other subgroups. For example, 11 of 15 items (73.3%) are shared between the Uncommunicative scale for boys aged 12 to 16 and the Depression scale for girls in the same age range. Therefore, the CBCL

Uncommunicative scale was used as a measure of depression in this subgroup and, along with the Depression scales for the other subgroups, provided the basis for comparison of the three groups on depressive symptoms.

Finally, a discriminant function analysis was undertaken to identify those patient and family history variables that best predicted patient membership in the three aggression groups. These results allow predictions to be made concerning the likelihood that a particular type of patient would exhibit self-injurious or other aggressive behaviors during hospitalization based upon data available at the time of admission. Because variables which were gathered from the retrospective chart review represented unique and potentially interesting patient history data, it was desirable to include these variables in the discriminant function analysis; however, the reliability of these data was unknown. A reliability check of 21 (23.6%) of the 89 subjects' charts was undertaken to determine the reliability of the chart review data. This reliability check yielded percentage agreement estimates ranging from 81% to 100%, indicating that the chart review data were sufficiently reliable to be included as predictor variables in the discriminant function analysis. Reliability information, including inter-rater agreement percentages and kappa coefficients for each of the chart review variables, is detailed in Table 1 on page 46.

CHAPTER 3

RESULTS

Aggressive Behaviors during Hospitalization

The daily mean number of incidents of assault, property damage, and verbal aggression, as well as two aggregates, the total daily frequencies of non-self-injurious aggressive acts and aggressive acts including self-injury, were compared across the Self-injury and Aggression groups using one-way analysis of variance (ANOVA). No significant group differences emerged on any of these measures of aggressive behavior committed during hospitalization. Thus, patients in the Self-injury and Aggression groups were responsible for similar numbers of aggressive incidents per day, despite the fact that self-injurious patients utilized a broader repertoire of aggressive behaviors, which included acts of self-harm. Table 2 on page 46 lists group means and standard deviations for each variable measuring patients' aggressive behaviors during hospitalization.

Thirty-three (94.3%) patients in the Self-injury group engaged in interpersonal forms of aggression, that is, physical or verbal aggression directed toward a peer or staff member, as did 33 (97.1%) patients in the Aggression group. Thus, the majority of aggressive patients engaged in multiple forms of aggression during hospitalization, and a high percentage of aggressive acts were interpersonal in nature. Table 3 on page 46 lists the percentage of patients

in the Self-injury and Aggression groups who committed each of four types of aggressive acts examined in the present study.

Behavior as Measured by the CBCL

Seven indicators of psychopathology as measured by the CBCL were compared across the groups using one-way analysis of variance (ANOVA); these were Delinquency, Aggression, Depression, Externalizing, Internalizing, and Sum scale scores, as well as the difference between the Externalizing and Internalizing scale scores. Significant group differences were obtained only for Delinquency scale scores; planned orthogonal contrasts were used to examine this result. The No Aggression group had a significantly lower mean Delinquency scale score ($X=71.65$, $SD=7.69$) than both the Self-injury ($X=78.43$, $SD=8.55$) and Aggression ($X=77.35$, $SD=9.55$) groups; the Self-injury and Aggression groups did not differ significantly from each other on this measure, however. Interesting in light of previous findings, significant group differences were not obtained for either the Aggression or Depression scales of the CBCL. Table 4 on page 47 contains means and standard deviations for each of the CBCL variables for the three patient groups as well as for the entire patient sample.

Environmental and Historical Variables

The three groups were compared on each demographic, environmental, and historical variable gathered from the

retrospective chart review. One-way analyses of variance (ANOVAs) were performed to compare the groups on continuous variables, with planned orthogonal contrasts used to examine significant results; chi-square tests were performed to assess group differences on categorical variables.

Significant group differences were obtained for several variables: patient gender, history of physical abuse, sexual abuse or neglect, history of foster care placement, history of other-directed aggression, length of hospital stay, and number of living situations prior to hospitalization. Group statistics for each variable gathered from the retrospective chart review are presented in Table 5, beginning on page 47.

Females comprised 60.0% of the No Aggression group, 40.0% of the Self-injury Group, and only 23.5% of the Aggression group; thus, a greater proportion of aggressive, non-self-injurious patients were male. Additionally, a significant age by gender interaction characterized membership in the three patient groups; the Aggression group included a greater number of younger males, as compared to the Self-injury and No Aggression groups. The significant age by gender interaction was controlled for in subsequent multivariate analyses.

Over half (51.4%) the patients in the Self-injury group had experienced foster care placement prior to hospitalization, compared to 38.2% of patients in the Aggression group and only 5.0% of patients in the No

Aggression group; the Self-injury and Aggression groups differed significantly from the No Aggression group but not from each other on this measure. Similarly, patients in the Self-injury and Aggression groups were significantly more likely than patients in the No Aggression group to have experienced physical abuse, sexual abuse, or neglect; 65.7% of self-injurious patients and 55.9% of interpersonally aggressive patients, as compared to 20.0% of non-aggressive patients, had a documented history of abuse or neglect. Finally, 70.6% of patients in the Aggression group were characterized by a history of other-directed aggression, that is, notable assaultiveness or destruction of property, as compared to 60.0% of the Self-injury group and 35.0% of the No Aggression group. Thus, non-aggressive patients were less likely than other patients to have a documented history of aggression prior to admission.

Each of the three patient groups differed significantly from the others on the average length of hospital stay, with the Self-injury group having the longest mean length of stay ($X=47.86$, $SD=10.06$) and the No Aggression group the shortest ($X=33.10$, $SD=12.37$); the Aggression group had an intermediate mean length of stay ($X=40.12$, $SD=14.48$). The three groups also differed significantly on the mean number of living situations that the patients had experienced prior to hospitalization. Patients in the Self-injury group had the greatest number of prior living situations ($X=3.20$,

SD=2.18) and the No Aggression group the fewest ($X=1.30$, SD=1.13); again, the Aggression group mean fell in between ($X=2.26$, SD=1.50).

Findings Related to Study Hypotheses and Questions

Four directional hypotheses and three non-directional questions were addressed in the data analyses. The first hypothesis, that patients who had experienced abuse or neglect would be overrepresented in the Self-injury group, was not supported by the data, as both interpersonally aggressive and self-injurious patients were equally likely to be victims of abuse. However, the finding that aggressive patients were more likely than non-aggressive patients to have experienced physical abuse, sexual abuse, or neglect is consonant with previous findings in similar populations (Browne & Finkelhor, 1987; Darche, 1990; Fatout, 1990; Nielsen et al., 1987).

CBCL Aggression scale scores were not significantly elevated in patients in the Aggression group as compared to the Self-injury and No Aggression groups; thus, the second hypothesis was rejected. In fact, the three patient groups did not differ on this measure of aggression, and each group obtained a mean Aggression scale score that exceeded the 98th percentile. The third hypothesis, that CBCL Internalizing scale scores would be greatest for the Self-injury group, was also rejected; the groups experienced similar levels of internalizing symptoms as measured by the

CBCL. The final hypothesis postulated that differences between CBCL Externalizing and Internalizing scale scores would be largest among patients in the Aggression group. This hypothesis was also not supported by the data; the groups did not differ significantly on the size of the discrepancy between Externalizing and Internalizing scale scores, even with the anticipated effects of gender held constant.

Three additional open questions were addressed by the analyses. The first question concerned the relationship between exposure to domestic violence, defined as physical aggression directed toward one member of the patient's family by another, and patients' aggressive behaviors. A history of domestic violence did not differentiate the three patient groups; domestic violence was documented in the hospital records of roughly half the patients in the Self-injury and Aggression groups and 30% of those in the No Aggression group. Domestic violence, therefore, does not appear to be a significant factor in the etiology of self-injury as compared to interpersonal aggression in this population.

The second question addressed a current controversy concerning the association between self-injury and depression in children and adolescents. CBCL scores for depression did not differ significantly across the three groups, although each group mean exceeded the 98th

percentile. Thus, all three groups were characterized by similarly elevated levels of depressive symptoms.

Finally, concerning the relative aggressiveness of the youngsters, patients in the Self-injury and Aggression groups engaged in similar numbers of aggressive acts per day of hospitalization; the daily means for assaults, property damage, verbal aggression, and total non-self-injurious aggression did not differ significantly between these two groups. Even when acts of self-injury were included in the analysis, the Self-injury group was not significantly more aggressive than the Aggression group. Thus, the two groups contributed equally to the occurrence of aggressive acts on the unit, despite the fact that the self-injurious patients engaged in a wider variety of aggressive acts than did the non-self-injurious aggressive patients.

Results of the Discriminant Function Analysis

A discriminant function analysis was performed to identify those variables that best predict the manner in which patients aggress during the hospital stay. Potential predictor variables included each of the CBCL and chart review variables listed in Tables 4 and 5; the dependent variable was patients' aggression group membership. This analysis controlled for the significant age by gender interaction in group membership.

The discriminant function analysis revealed that, above the age by gender interaction, a model utilizing five

factors best predicted patients' aggression group membership. These factors were: (a) number of living situations prior to hospitalization, (b) CBCL Delinquency scale score, (c) CBCL Sum scale score, (d) history of abuse or neglect, and (e) parental history of psychiatric treatment. This combination of variables resulted in a model that correctly classified 60.67% of the patients. As indicated in Table 6 on page 49, the discriminant function analysis based upon these variables successfully categorized 19 (54.3%) of the self-injurious patients, 19 (55.9%) of the non-self-injurious aggressive patients, and 16 (80.0%) of the non-aggressive patients. While the paucity of variables that discriminated the Self-injury and Aggression groups compromised the model's ability to correctly distinguish between the two aggression groups, the model was more successful when discriminating between those patients who aggressed in some way during hospitalization and those who did not. The model achieved a successful classification rate of 83.15% when categorizing patients as aggressive or non-aggressive, irrespective of the type of aggressive behaviors in which patients engaged. These classification rates compare favorably with the rate expected by chance for discriminating among three groups, that is, 33.3%.

CHAPTER 4

DISCUSSION

Striking differences as well as surprising similarities were revealed among child and adolescent psychiatric inpatients who are self-injurious, interpersonally aggressive, and non-aggressive during hospitalization. Important group differences emerged on demographic, environmental, and behavioral characteristics of patients and their families. Each of these differences, as well as unexpected similarities among the groups, is discussed below.

Aggression in Self-injurious Patients

The vast majority (94%) of self-injurious patients in this sample also engaged in interpersonal forms of aggression, such as physical assaults and verbal threats. The absence of a pure self-injury group is surprising in light of previous comparable investigations, which identified a unique subgroup of patients whose aggression was self-directed (e.g., Delga et al., 1989; Fritsch et al., 1992; Griffin, 1987; Nielsen et al., 1987; Pfeffer et al., 1983a, 1983b). Three methodological differences may help to explain this discrepancy. First, in contrast to prior investigations, a broad definition of self-injury was employed in the present study which was not based upon suicidal intention or lethality. Perhaps, then, self-injury broadly defined is a more frequent concomitant of

interpersonal aggression in child and adolescent psychiatric inpatients than is suicidality. This possibility is suggested by Chowanec and associates (1991), and is supported by the finding that 36% of youngsters engaged in self-harming behavior prior to admission.

Second, most previous studies of these phenomena have relied upon retrospective chart review or parent report to determine youngsters' patterns of aggression, whereas classification of behavior in the present study was based upon concurrent recording of aggressive acts. It may be that, in retrospect, an aggressive act targeting the self is more salient or memorable than one directed toward another, so that other-directed aggressive acts committed by self-injurious youngsters are under-reported.

Third, differences in the demographic characteristics of the samples may explain the absence of a pure self-injury group. The sample in the present investigation was comprised of primarily indigent inpatient children and adolescents under the age of 15. Other investigators of these phenomena have included in their samples outpatient children (Pfeffer et al., 1983a, 1983b), adolescents to age 18 (Chowanec et al., 1991; Delga et al., 1989; Fritsch et al., 1992; Nielsen et al., 1987), and youngsters from higher socioeconomic classes (Delga et al., 1989; Fritsch et al., 1992). Clearly, a youngster's level of psychopathology, age, or social class, may affect the phenomena under

investigation. For example, other-directed aggressive behavior is more common among younger patients (Garrison, 1984) and those from lower socioeconomic classes (Delga et al., 1989). Perhaps because interpersonal aggression is more common than self-injury in this young, indigent inpatient population, a larger sample would be needed to obtain a substantial number of patients who are self-injurious but not interpersonally aggressive.

Alternatively, children who are dangerous to themselves but not to others may be less likely than older adolescents to be admitted to psychiatric inpatient facilities; thus youngsters whose aggressive impulses are directed primarily toward the self would be underrepresented in this inpatient sample.

Aggressive Behavior during Hospitalization

Surprisingly, self-injurious and interpersonally aggressive patients do not differ in terms of the number of aggressive acts they commit per day in the hospital. Although some researchers have found self-injurious patients to be less aggressive than patients whose aggression is directed outward (e.g., Chohanec et al., 1991; Nielsen et al., 1987), others have reported that self-injurious and interpersonally aggressive patients are equally aggressive overall (Fritsch et al., 1992).

During hospitalization, then, self-injurious and interpersonally aggressive patients are equally aggressive.

This finding underscores the appropriateness of using the Aggression group as a comparison group for the Self-injury group in the present study; since the level of aggression is held constant in the comparisons, factors associated with differences in the expression of aggression are allowed to emerge. Thus, the conclusions drawn from these results are strengthened by empirical evidence that differences in patients' aggressive behaviors are not associated with differences in aggression per se or with the likelihood of committing aggressive acts during hospitalization.

Behavioral Predictors of Aggression

Several indicators of a patient's history of aggressive behavior, obtained from both the CBCL and hospital records, were assessed. Only two of these variables were associated with aggressive behavior during the hospital stay; these were CBCL Delinquency scale score and history of assaultiveness or destruction of property as documented in the hospital chart. No measure of a patient's history of aggression indicated whether the patient would engage in self-injury or interpersonal aggression during hospital stay.

Patients who are aggressive during hospitalization, regardless of the target of their aggression, are those who have engaged in frequent or multiple antisocial acts prior to admission, as measured by the CBCL Delinquency scale. This finding corroborates a previous report that assaultive

patients were more likely than non-aggressive patients to have a history of antisocial acting out; patients who were both suicidal and assaultive also engaged in more antisocial acts than non-aggressive patients, although this difference did not reach statistical significance (Pfeffer et al., 1983b).

That elevated scores on the Delinquency scale but not the Aggression scale characterize these aggressive patients raises questions about the relationship between these two CBCL dimensions. The Delinquency scale measures commission of antisocial behaviors that violate the rights of others, such as stealing, destroying property, and setting fires; aggression may certainly underlie such acts. In addition to physical and verbal attacks, on the other hand, the Aggression scale taps behaviors such as arguing, screaming, sulking, and disobeying, that might be considered common expressions of anger. In contrast to acts of delinquency, then, which are considered aberrant by their very nature, the behaviors comprising the Aggression scale are considered problematic only when their frequency or severity exceeds situational demands. Therefore, the commission of inherently deviant behaviors, as opposed to normal acts committed with unusual frequency or severity, distinguishes aggressive from non-aggressive inpatient children and adolescents.

One possible explanation for this finding is that patients who engage in antisocial behaviors prior to admission are less likely than other patients to control their aggressive impulses during hospitalization. Perhaps a patient whose behavior frequently elicits disapproval or castigation is less responsive to consequences which help most patients to curtail their aggressive behaviors in the hospital. An alternative possibility is that elevated Delinquency scale scores signal a level of aggression that is quantitatively, as well as qualitatively, different from that assessed by the Aggression scale. Perhaps the Delinquency scale provides a measure of severe or frequent aggressive behavior in this population, and it is only when this quantitative aspect is accounted for that aggression during hospitalization is predictable from prior behavior. In any event, an elevated CBCL Delinquency scale score appears to be one indication that a youngster may act aggressively during hospitalization, although the manner in which the patient will aggress is not predictable from this information alone.

The hospital chart served as a second source of information about a patient's history of aggression. Given the terse nature of hospital records, it seems likely that only the most severe, unusual, or frequent behaviors would be documented in a patient's chart. Consequently, an indication of other-directed aggression in the hospital

chart, that is, assault or destruction of property, is best understood as reflecting a history of severe or repetitive aggressive acting out; this measure of aggression discriminated between aggressive and non-aggressive patients.

That aggressive behaviors are quite prevalent among youngsters receiving psychiatric inpatient treatment is evidenced by both the present study and numerous past reports (e.g., Delga et al., 1989; Fritsch et al., 1992; Garrison, 1984; Pfeffer et al., 1987). The high base rate of aggressive behaviors in this population results in a restricted range, especially when level of aggression is compared to that of normal populations, as in the computation of normalized CBCL scale scores. Therefore, it appears that only measures which expand the range by including frequent, multiple, or extreme aggressive behaviors enable discrimination between aggressive and non-aggressive children and adolescents in this psychiatric inpatient population.

Discontinuity of Self-injurious Behavior

In contrast to the association between aggressive behavior during hospitalization and pre-admission assaultiveness and destruction of property, history of self-injury as documented in the hospital chart is not associated with self-injurious behavior in the hospital; a history of self-harm is not more prevalent among self-injurious than

other patients. One explanation for this apparent lack of behavioral continuity is that, in contrast to indications of assault and property damage, incidents of self-injury are highly salient for observers and are reported and documented regardless of severity. Thus, perhaps, a greater breadth of incidents is recorded, so that a positive history of self-injury is not confounded with severity or frequency as is documented other-directed aggression. If true, this suggests that non-lethal self-injurious behavior is a frequent concomitant of psychiatric problems in children and adolescents treated on inpatient units; indeed, 36% of the patients had a positive history of self-injury according to their hospital records.

Another plausible explanation for the lack of continuity between pre-admission and unit behavior is that unit staff are diligent in their efforts to protect patients from self-destructive impulses; by design, there are certainly far fewer opportunities for and implements of self-destruction on a hospital psychiatric unit than elsewhere. Inhibition of self-destructive behavior within the therapeutic milieu may help to explain previous failures to demonstrate that self-injury prior to admission is predictive of self-injury during hospitalization (e.g., Fritsch et al., 1992).

Aggression and Depression

The relationship between aggression and depression in these young psychiatric inpatients is the topic of

considerable controversy and debate. It is notable that self-injurious patients in this population are not more depressed than other patients according to scores on the CBCL; in fact, non-aggressive patients are somewhat more depressed than self-injurious patients, although the difference does not reach statistical significance. Other investigators (Chowanec et al., 1991; Fritsch et al., 1992) have reported similar levels of depressive symptoms in self-injurious and non-self-injurious adolescents; replication of these findings supports the view that some self-injurious youngsters present with more aggressive than depressive features (Apter, Bleich, Plutchik, Mendelsohn, & Tyano, 1988; Pfeffer et al., 1983b).

Differences in Stability of the Home Environment

Three measures that discriminate aggressive from non-aggressive patients represent distinct measures of the stability and appropriateness of a child's home environment: (a) history of foster care, (b) number of living situations prior to hospitalization, and (c) history of physical abuse, sexual abuse, or neglect. On each of these dimensions of the home environment, self-injurious patients were exposed to the most unstable, inadequate, and frequently disrupted caretaking.

These variables are clearly related, as evidenced by the correlation matrix in Table 7 on page 49. Children and adolescents who are victims of documented abuse by

caretakers may be removed from their homes, causing a disruption in living arrangements which may include placement in foster care. Alternatively, youngsters who receive foster placement for reasons other than physical or sexual victimization may be at greater risk for subsequent abuse due to their exposure to a larger number of caretakers. Despite their interrelatedness, however, each of these measures offers a distinct contribution to the assessment of disruption or instability in a patient's home environment. That both the number of living situations prior to admission and history of abuse are predictive of patient group membership in the discriminant function analysis suggests that each variable makes an independent contribution to the predictive model. In addition, the experience of sexual victimization has been shown to have a deleterious effect on victims above and beyond the negative effects of concomitant disruptions in the family environment (Inderbitzen-Pisaruk, Shawchuck, & Hoier, 1992).

Taken together, these variables capture the degree of disruption in the home environment caused by abusive, neglectful, or frequently changing caretakers. Bowlby (1979) distinguished several psychopathological conditions that may result from chronic disruption of "affectional bonds" with primary caretakers in childhood; one of these conditions involved antisocial, including suicidal, behaviors. Bowlby maintained that persons who engage in

antisocial acts are more likely than others to have experienced permanent loss of a parent during childhood, followed by repeated shifts of parental figures. It seems that these self-injurious children and adolescents, who have experienced considerable instability in their home environments and who engage in aggressive and antisocial behaviors, suffer the effects of disruption of affectional bonds that Bowlby described. Perhaps chronic disruption and lack of safety in the home environment leads to the development of self-injurious behaviors in children and adolescents.

Alternatively, the direction of causality may be reversed; commission of acts of self-injury may increase the likelihood that a child will experience disruption in caretaking. Since self-injurious patients do not differ from other aggressive youngsters on any measure included in the present investigation, perhaps characteristics that distinguish children who are likely to be removed from the home were not assessed. On the other hand, it may be that the nature of self-injury as a frightening and, for some, inconceivable act presents the caretaker of a self-injurious youngster with a formidable challenge to maintain safety; such a challenge may ultimately drain the caretaker's resources and lead the child to be removed from the home. Clearly, the relationship between self-injury and disruptions in the home environment warrants further study.

Length of Hospital Stay and Aggression

Self-injurious patients are hospitalized for significantly longer periods of time than other aggressive and non-aggressive patients. This longer length of stay is not likely due to higher levels of aggression or overall psychological disturbance, as no indicator of psychopathology or aggression discriminates among the patients. Inclusion of measures of psychopathology that do not rely on parent report, as does the CBCL, may elucidate differences in psychopathology among these patients, however.

Certainly, patients who present an active or compelling danger to themselves are not readily discharged from psychiatric hospital units, while patients who are dangerous only to others are not similarly detained. Thus, patients may be retained in the hospital until they cease to demonstrate a desire to harm themselves. While the frequency of patients' aggressive behaviors was fairly consistent throughout the hospital stay (Garrison et al., 1990), an examination of the frequency of self-injury incidents across hospitalization would inform this hypothesis.

An alternate explanation for the differences in length of stay is that treatment or discharge planning decisions are more complicated or protracted for these patients due to their proclivity for self-harm. Perhaps more lengthy

treatment is aimed at resolution of issues related to abuse, which is more common among these patients. Similarly, attainment of placement options for self-injurious patients with histories of multiple failed placements is likely to be complicated and time-consuming.

Predicting Aggression

Aggressive behavior during hospitalization can be predicted quite accurately from a number of pre-admission patient characteristics: history of antisocial behavior, repeated disruptions of the home environment, experience of abuse, and history of foster care. That the discriminant function analysis correctly classified 83% of patients as aggressive or non-aggressive attests to the existence of important and quantifiable pre-admission patient characteristics upon which prediction of aggressive behavior during hospitalization can be based.

Few behavioral measures of aggression are predictive of a patient's behavior in the hospital, however. One explanation for patients' lack of behavioral consistency is that the therapeutic milieu is helpful in inhibiting the expression of aggressive impulses; many patients who are aggressive prior to admission do not engage in aggressive behaviors once hospitalized. Paradoxically, the effectiveness of the therapeutic milieu in controlling behavior undermines the utility of pre-admission behavioral measures in predicting behavior during hospitalization.

Consequently, behavioral measures that distinguish between aggressive and non-aggressive patients are those which capture the most severe or frequent behaviors, effectively extending the range of aggressive behaviors that are quite prevalent in this population. Thus, indicators that assess the severity or frequency of aggression are the most useful predictors of aggressive behavior during hospitalization.

Although aggressive behavior during hospitalization can be predicted with considerable accuracy, predicting whether an aggressive patient will engage in acts of interpersonal aggression or self-injury is more challenging. In fact, the degree of similarity between self-injurious and interpersonally aggressive patients on myriad behavioral and environmental characteristics is striking given abundant clinical literature that distinguishes between persons whose aggression is directed outward and those who typically direct aggressive impulses toward the self (e.g., Fatout, 1990; Pfeffer et al., 1983b; Schmertz, 1991; Senior, 1988). Perhaps in this young, psychologically disturbed sample, self-injury is only one of many common signals of distress. Finally, the fact that the only measure that differentiates self-injurious from other aggressive patients assesses disruption or instability in a patient's home life is interesting in light of attachment theory (Bowlby, 1979) and warrants further investigation.

Conclusion

Important differences were elucidated between children and adolescents who behave aggressively during psychiatric hospitalization and those who do not. Compared to non-aggressive patients, patients who behave aggressively on the hospital unit are more likely to engage in antisocial behaviors, including assaults and destruction of property, to be victims of abuse or neglect, to have experienced foster care, and to live in multiple residences prior to admission. However, few characteristics differentiate between youngsters who aggress in characteristically different ways during hospitalization. Self-injurious and interpersonally aggressive youngsters are equally aggressive during hospitalization, as well as strikingly similar on a host of behavioral, historical, and environmental measures. Only the number of living situations that a patient has experienced prior to hospitalization is associated with the manner in which the youngster will aggress on the inpatient unit; those patients who have experienced the greatest degree of disruption in caretaking are most likely to engage in self-injurious behavior during hospitalization. Further investigations are clearly warranted to elucidate the relationship between self-injury and disrupted or unstable home environment in order to discover those factors that lead to the development of self-injurious behavior in children and adolescents.

Table 1

Reliability Estimates for Chart Review Variables

Variable	Inter-rater Agreement	Kappa Coefficient
No. Living Situations	.81	-
Foster Care	1.00	1.00
Residential Treatment	.81	.55
Abuse or Neglect	.86	.58
Assaults/Property Damage	.90	.70
Self-injury	.86	.67
Substance Abuse	1.00	1.00
Legal Involvement	.95	.64
Domestic Violence	.90	.80
Parental Mental Illness	.90	.79
Parental Substance Abuse	.95	.90

Table 2

Group Daily Means for Aggressive Behaviors on the Unit

	Self-injury (N=35)		Aggression (N=34)		Total (N=89)	
	Mean	SD	Mean	SD	Mean	SD
Assault	.09	.11	.11	.14	.07	.12
Verbal	.08	.09	.07	.10	.06	.09
Property Damage	.04	.05	.03	.04	.03	.04
Assault + Verbal + PD	.21	.18	.21	.23	.16	.20
Self-injury	.04	.04	.00	.00	.02	.03
Total	.26	.21	.21	.23	.18	.21

Table 3

Numbers of Patients who Committed
Each Type of Aggressive Act

	Self-injury (N=35)		Aggression (N=34)		Total (N=89)	
	N	%	N	%	N	%
Assault	28	80.0	25	73.5	53	59.6
Verbal	29	82.9	24	70.6	53	59.6
Assault + Verbal	33	94.3	33	97.1	66	74.6
Property Damage	21	60.0	16	47.1	37	41.2
Self-injury	35	100.0	0	0.0	35	39.3

Table 4

Group Means and Standard Deviations for CBCL Variables

	Self-injury (N=35)		Aggression (N=34)		No Aggression (N=20)		Total (N=89)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Sum	78.34	7.07	76.06	8.93	75.15	9.16	76.75	8.31
Externalizing	75.14	7.03	74.09	8.90	70.50	8.31	73.70	8.18
Internalizing	71.14	6.90	70.47	6.47	70.30	8.80	70.70	7.14
Ext - Int	4.00	7.67	3.62	7.82	.20	7.52	3.00	7.76
Aggression	77.74	8.57	75.47	12.45	72.95	11.23	75.80	10.82
Depression	71.43	9.25	70.68	8.51	73.40	10.31	71.58	9.18
*Delinquency	78.43	8.55	77.35	9.55	71.65	7.69	76.49	9.07

*F=4.063, p=.0206; Combined Self-injury and Aggression group differs significantly from No Aggression group, planned orthogonal contrasts, p = .006.

Table 5

Chart Review Variables

	Self-injury (N=35)		Aggression (N=34)		No Aggression (N=20)		Total (N=89)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	11.71	2.43	11.15	3.31	12.50	2.09	11.67	2.76
*Length of Stay	47.86	10.06	40.12	14.48	33.10	12.37	41.58	13.55
*F=9.366, p=.0002; All groups differ significantly, planned orthogonal contrasts, p < .01.								
*No. Living Sits.	3.20	2.18	2.26	1.50	1.30	1.13	2.42	1.87
*F=7.794, p=.0008; All groups differ significantly, planned orthogonal contrasts, p < .05.								
*Gender:								
	N	%	N	%	N	%	N	%
Male	21	60.0	26	76.5	8	40.0	55	61.8
Female	14	40.0	8	23.5	12	60.0	34	38.2
*Chi-square=7.174, df=2, p=.0277.								
*History of Physical Abuse, Sexual Abuse, or Neglect:								
Acknowledged	23	65.7	19	55.9	4	20.0	46	51.7
Denied	12	34.3	15	44.1	16	80.0	43	48.3
*Chi-square=11.039, df=2, p=.0040; Combined Self-injury and Aggression group differs significantly from No Aggression group, Chi-square=8.799, df=1, p=.0030.								
*History of Foster Care:								
Yes	18	51.4	13	38.2	1	5.0	32	36.0
No	17	48.6	21	61.8	19	95.0	57	64.0
*Chi-square=12.038, df=2, p=.0024; Combined Self-injury and Aggression group differs significantly from No Aggression group, Chi-square=9.071, df=1, p=.0026.								
*History of Aggression (Assaults and/or Property Damage):								
Acknowledged	21	60.0	24	70.6	7	35.0	52	58.4
Denied	14	40.0	10	29.4	13	65.0	37	41.6
*Chi-square=6.625, df=2, p=.0364; Combined Self-injury and Aggression group differs significantly from No Aggression group, Chi-square=4.651, df=1, p=.0310.								
History of Self-injury:								
Acknowledged	15	42.9	10	29.4	7	35.0	32	36.0
Denied	20	57.1	24	70.6	13	65.0	57	64.0

Continued, next page.

Table 5, continued

	Self-injury (N=35)		Aggression (N=34)		No Aggression (N=20)		Total (N=89)	
	N	%	N	%	N	%	N	%
History of Residential and/or Inpatient Treatment:								
Yes	8	22.9	6	17.6	3	15.0	17	19.1
No	27	77.1	28	82.4	17	85.0	72	80.9
History of Substance Abuse:								
Acknowledged	11	31.4	6	17.6	5	25.0	22	24.7
Denied	24	68.6	28	82.4	15	75.0	67	75.3
Involvement with the Legal System, including CHINS petition:								
Acknowledged	12	34.3	10	29.4	3	15.0	25	28.1
Denied	23	65.7	24	70.6	17	85.0	64	71.9
Parents' Substance Abuse History:								
Acknowledged	20	57.1	18	52.9	10	50.0	48	53.9
Denied	15	42.9	16	47.1	10	50.0	41	46.1
Parents' Psychiatric History:								
Acknowledged	9	25.7	12	35.3	4	20.0	25	28.1
Denied	26	74.3	22	64.7	16	80.0	64	71.9
Presence of Domestic Violence in Patient's Home:								
Acknowledged	18	51.4	17	50.0	6	30.0	41	46.1
Denied	17	48.6	17	50.0	14	70.0	48	53.9
Race/Ethnicity:								
White	25	71.4	29	85.3	19	95.0	73	82.0
Black/Hispanic/Asian	10	28.6	5	14.7	1	5.0	16	18.0
Method of Payment:								
Medicaid	25	71.4	24	70.6	9	45.0	58	65.2
Pvt insurance	10	28.6	10	29.4	11	55.0	31	34.8
Referral Source:								
*D.S.S.	17	48.6	18	52.9	1	5.0	36	40.4
MH Professional	5	14.3	8	23.5	6	30.0	19	21.3
School	4	11.4	2	5.9	2	10.0	8	9.0
Pediatrician	2	5.7	2	5.9	3	15.0	7	7.9
Parents	2	5.7	2	5.9	2	10.0	6	6.7
Psych emergency	1	2.9	1	2.9	2	10.0	4	4.5
Hospital unit	0	0.0	1	2.9	3	15.0	4	4.5
Probation/Police	2	5.7	0	0.0	1	5.0	3	3.4
Residential tx	2	5.7	0	0.0	0	0.0	2	2.2
*For this subcategory, Chi-square=9.284, df=2, p=.0096.								
Discharge Disposition:								
*Parents' home	15	42.9	19	55.9	17	85.0	51	57.3
Foster home	8	22.9	8	23.5	1	5.0	17	19.1
Residential tx	7	20.0	3	8.8	1	5.0	11	12.4
Inpatient tx	2	5.7	0	0.0	0	0.0	2	2.2
Other	3	8.6	2	5.9	0	0.0	5	5.6
Left A.M.A.	0	0.0	2	5.9	1	5.0	3	3.4
*For this subcategory, Chi-square=13.595, df=2, p=.0011.								

Table 6

Results of Discriminant Function Analysis

Summary of Discriminant Function Analysis:

Step	Variable Entered	Wilks' Lambda	Significance
1	Number of living situations	.84656	.0008
2	Age by gender interaction	.74933	.0001
3	CBCL Delinquency scale	.71078	.0001
4	History of abuse or neglect	.68663	.0001
5	CBCL Sum scale	.66790	.0002
6	Parental psychiatric history	.65163	.0004

Classification Table:

Actual Group	N	Predicted Group		
		Self-injury	Aggression	No Aggression
Self-injury	35	19 54.3%	11 31.4%	5 14.3%
Aggression	34	9 26.5%	19 55.9%	6 17.6%
No Aggression	20	1 5.0%	3 15.0%	16 80.0%

Total percentage of patients correctly classified: 60.67%

Table 7

Correlation Matrix for Home Disruption Variables

	Abuse	Foster care	No. Living Situations
Abuse	1.0000	.5370**	.3976**
Foster care	.5370**	1.0000	.6007**
No. Living Situations	.3976**	.6007**	1.0000

** p < .001

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