EMOTION EXPRESSIVITY AND THE TREATMENT MILIEU: IMPACT ON CLINICAL AND BEHAVIORAL FUNCTIONING

by

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ABSTRACT

Emotions are believed to be socially adaptive tools (Keltner & Kring, 1998); yet, emotion deficits are common in many individuals with mental illness (e.g., Kring, 2001). The implications of these deficits for mentally ill individuals may therefore include day-to-day social functioning as well as clinical outcomes. In an inpatient setting, much of the treatment is formally or informally based upon a therapeutic milieu (Peplau, 1989), which may affect its residents positively or negatively (e.g., Buehler, Patterson, & Furniss, 1966; Moos, Shelton, & Petty, 1973). Thus, both individual and environmental factors are likely to influence patient outcomes.

The current study sought to examine the relation of individual factors (emotion expressivity), contextual factors (treatment milieu), and the person by environment interaction on patient functioning in a forensic inpatient population. Patient emotion expressivity (or the outward display of emotion) was a focus of investigation based on its adaptive function in social interactions and its relation to mental health outcomes. Patient-staff discrepancies on perceptions of the treatment milieu were of interest as a contextual factor, as smaller discrepancies have been associated with greater program "success." Further, treatment milieu discrepancies were explored as a moderating variable of the relation between patient emotion expressivity and functioning.

Participants included 53 patients and 36 staff from a secure forensic hospital. Overall, results suggested that patient ratings of emotion expressivity predicted behavioral functioning,

whereas staff ratings of patient emotion expressivity predicted clinical functioning. In both cases, greater emotion expressivity was generally related to superior functioning. Discrepancies on treatment milieu only moderated the relation between patient-rated emotion expressivity and behavioral functioning. Additional descriptive findings based on patient legal status, differences between the two programs studied, and differences between patient and staff perceptions were explored. Implications for educational and clinical interventions are discussed. Future directions include generalizing current findings to other measures of functioning and to longitudinal outcomes.

LIST OF ABBREVIATIONS AND SYMBOLS

p	Probability associated with the occurrence under the null hypothesis of a value at least as extreme as the observed value
r	Pearson product-moment correlation
F	Fisher's F ratio
R^2	Proportion of variability explained
η_p^2	Proportion of variability explained
t	Computed value of t-test
df	Statistical degrees of freedom
M	Mean
SD	Standard deviation
ANOVA	Analysis of variance (univariate)
<	Less than
=	Equal to

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EMOTION EXPRESSIVITY AND THE TREATMENT MILIEU: IMPACT ON CLINICAL AND BEHAVIORAL FUNCTIONING

Clinicians and researchers alike are interested in "what works" in clinical psychology, as reflected by the accelerating movement toward the development and use of evidenced-based and empirically-supported treatments (e.g., Chandler, Peters, & Field, 2004; Kazdin, 2008; Lehman, Buchanan, & Dickerson, 2003; Liberman, 2007; Martino, 2007; Steele, Elkin, & Roberts, 2008). However, intensive or protocol-driven therapy is not always practical in an inpatient setting due to a host of factors, including limitations in budgetary and staffing resources (Lehman, Goldman, Dixon, & Churchill, 2004). As such, much of inpatient treatment is formally or informally based upon a therapeutic milieu (Peplau, 1989), which, at its most basic level, may simply be the structure provided by the facility's schedule and routine. Some evidence for environmental influence in institutional settings appears to be negative (e.g., deviancy training; Buehler, Patterson, & Furniss, 1966), but there is also evidence to support positive environmental effects on patient functioning (e.g., Moos, Shelton, & Petty, 1973). One treatment milieu factor of particular interest in the present study is that of staff relationships with patients.

Important to the study of staff-patient relationships in an inpatient setting is the fact that most of patients' time is not spent with professional staff, but rather with front line personnel charged with patients' day-to-day care. What effect do these daily interactions have on patients, if any? Presumably, patient and staff factors, as well as the social interaction between patients and staff, may impact the atmosphere. Staff factors may include the amount of support they provide patients and their rigidity in rule enforcement. Patient factors may include compliance

with rules and expression of feelings. Due to the integral nature of emotions in mental health, patient emotions are of particular interest in the current study.

Emotions are complex in both their structure and function. Researchers tend to agree that the construct of emotion is multifaceted, containing a behavioral or expressive component, an experiential component, and a physiological component (Kring & Gordon, 1998). These components have great utility in both intrapersonal and interpersonal domains. Of particular relevance to the current study are the interpersonal applications and consequences of emotion, which have been conceptualized as the social-functional approach to emotion (e.g., Keltner & Kring, 1998).

The Social-Functional Approach

The social-functional approach designates emotions as tools for adaptive responding in a social context. Keltner and Kring (1998) delineated three routes through which emotions influence social interactions. First, emotions function to inform others by providing information about the sender (e.g., "I am feeling sad"), about objects and events in the environment (e.g., "I am disgusted by that animal"), and about the state of the relationship between the sender and receiver (e.g., "You are making me angry"). Second, emotions serve an evocative function, which can be complementary (e.g., displays of distress can elicit the complementary emotion of sympathy) or similar in nature (e.g., sadness expressions by one can bring about sadness in another). Finally, emotions may provide incentive (e.g., smiling may be an antecedent to motivate another to make a joke) or reinforcement (e.g., laughing at a joke may promote another to tell jokes again in the future) for another's behavior.

One assumption of the social-functional approach is that the experience and expression of emotion can lead to social benefits (Keltner & Kring, 1998). Thus, a deficit in the expression of

emotion may result in a loss or absence of these benefits. Because emotion deficits are common in many individuals with mental illness (e.g., Kring, 2001), there are implications of these deficits for social functioning and clinical outcomes. Studying inpatient emotion expression may increase understanding of the nature of these deficits and guide interventions to reduce their potentially negative effect on functioning.

Defining Emotion Expressivity

Early research in the area of emotion expressivity was broad, but current studies typically employ more narrow definitions, such as "individual differences in the extent to which people outwardly display their emotions" (Kring, Smith, & Neale, 1994, p. 934) or "the behavioral (e.g., facial, postural) changes that typically accompany emotion" (Gross & John, 1998, p. 171). Emotion expressivity has been measured by both self-report and other-rated coding systems, which are moderately related to one another (e.g., Kring, Smith, & Neale, 1994). While emotion expression can be measured as a state reaction to particular stimuli, the concept of emotion *expressivity* generally refers to a dispositional or trait-level characteristic. The trait conception of expressivity implies that state reactions for a given individual may fall within a relatively narrow range.

Although self-report measures have inherent limitations, advances in expressivity measures have been made. Earlier self-report measures of emotion expressivity were unidimensional (e.g., Friedman, Prince, Riggio, & DiMatteo, 1980; Kring, Smith, & Neale, 1994) and likely did not reflect the construct's complexity. More recent studies have moved toward a multifactor approach (e.g., Gross & John, 1998). Using multiple emotion expressivity measures, Gross and John (1998) found evidence of a hierarchical model in which the overarching concept of general expressivity is comprised of three domains: core emotional

expressivity, confidence in emotion expression, and ability to mask emotion (see Figure 1). Core emotional expressivity was further divided into positive expressivity, negative expressivity, and emotion intensity. Significant empirical support exists for the core domain of emotion expressivity, as evidenced by similarities in extant measures. For example, three of the instruments used by Gross and John (1998) used separate scales for the expression of positive and negative emotions. Two extant measures had scales to assess the strength of emotional impulses for expression. All three of these areas were supported by the authors' exploratory factor analysis. The authors theorized that it is this central domain that encompasses what researchers have typically defined as emotion expressivity (i.e., the behavioral expression of emotion).

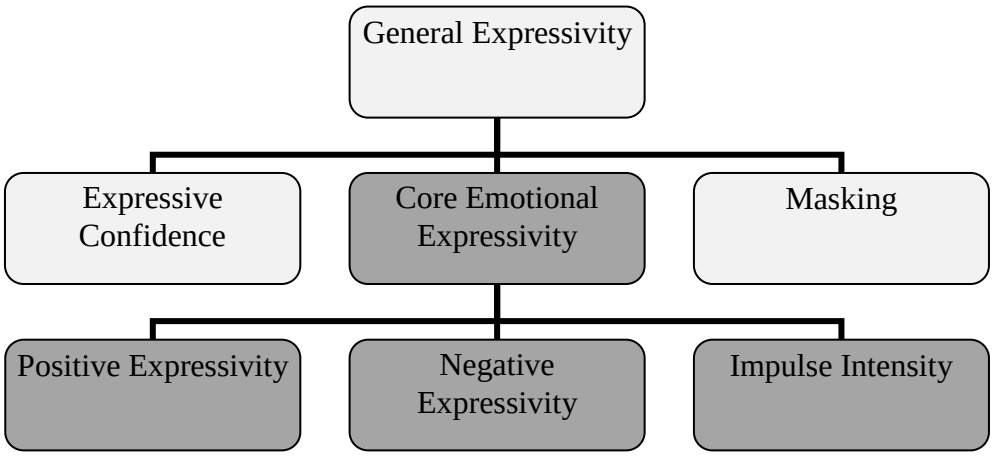

Figure 1. Gross and John's (1998) Model of Emotion Expressivity

Expressive confidence refers to comfort in expressivity skills and in social situations. Masking refers to discrepancies between inner emotional experience and outward display and hiding emotions for impression management purposes. Confidence and masking issues may be less central. Additional research has suggested an emotion-specific approach (rather than

valence-specific or unidimensional; e.g., Gross, John, & Richards, 2000), but no new measures to accommodate this suggestion have been developed to date.

Importantly, measures of emotion expressivity have been developed and used in general population samples, particularly college students. Several studies have found that women report higher levels of emotion expressivity (Gross & John, 1995; Kring & Gordon, 1998), but additional research has shown that sex differences vary across Gross and John's five facets of emotion expressivity. Specifically, women reported higher levels of emotion expressivity on all three facets of core emotional expressivity, but there were no sex differences for feelings of confidence and skill in expression, and men reported higher levels of masking their emotion expressions (Gross & John, 1998). Similarly, researchers have found that Asian Americans tend to be less emotionally expressive than other ethnic groups (Gross & John, 1995); however, analyses of specific facets showed that they mask their feelings more, have weaker emotional impulses, and feel less confident in their expressions (Gross & John, 1998). In addition, differences between expressivity facets have been found among different personality constructs. Using the Big Five and Eysenck Personality Inventory, Gross and John (1998) found positive expressivity to be related to Extraversion, negative expressivity to Neuroticism, and intensity of emotional impulse to both, further demonstrating the non-valenced nature of this facet.

Due to the communicative function of emotion expressions, studies have also used other-rated emotion expressivity (e.g., Gross & John, 1997; Kring, Smith, & Neale, 1994). The correspondence between self- and other-rated emotion expressivity has generally shown large effect sizes for total scores (r = .49 to .58), and medium effect sizes for subscales of core emotional expressivity (rs from .41 to .48). Studies have generally focused on "peers" (i.e., friends, roommates), although parents and other relatives have also been included. The

convergence between self and other ratings suggests that people are fairly accurate in assessing their tendency toward emotion expressivity.

Only one study to date has used a dispositional measure of emotion expressivity in a mentally ill population (Kring, 1991). Kring found that schizophrenia patients (M = 54.46) did not significantly differ from normals (M = 59.05) on self-reported emotion expressivity, despite the fact that patients were rated by observers to be significantly less emotionally expressive in a laboratory situation (i.e., during film watching) and showed more flat affect during a semi-structured interview. One possible explanation for this finding is that patients had difficulty reporting on their expressive behavior or had trouble understanding the measure, based on the large number of double negatives in the items (Kring, 1991). Alternatively, patients may truly believe they are as expressive as normals believe themselves to be (Kring, 1991). Either way, this finding is similar to the discrepancy in the literature between schizophrenics' self-report of emotion *experience* and state measures of emotion expression (e.g., Mathews & Barch, 2004). This also suggests that patients with schizophrenia may show less convergence with other-rated emotion expressivity.

One commonly studied area has been the relation of emotion expression to the experience of emotion. Several studies have found significant positive relations, albeit modest in size (e.g., Gross & John, 1997; Gross, John, & Richards, 2000; Rosenberg & Ekman, 1994). Using the dispositional version of the Positive and Negative Affect Scale (PANAS; i.e., "to what extent you generally feel this way"), Gross and John (1997) found negative expressivity to be related to PANAS Negative Affect (r = .14) and positive expressivity to be related to PANAS Positive Affect (r = .34). Importantly, these modest relations suggest that emotion experience and emotion expressivity should be measured as unique predictors of state expressive behavior

(Gross & John, 1997). Within a laboratory situation, the authors further showed that negative expressivity predicted sadness expression while watching a funeral film clip (r = .32 to .41) and positive expressivity predicted amusement expression while watching a comedy routine (r = .28 to .36). Thus, emotion expressivity appears to be related to both tendencies toward experiencing positive and negative emotions and state expressive reactions.

Further, one group of researchers found that the relation between emotion experience and situational expression of emotion (e.g., facial displays) differed depending on emotion expressivity (i.e., high or low) and the valence of the emotion. Participants with low dispositional levels of emotion expressivity showed a similar *range* of expressivity (albeit lower overall) as those high in expressivity for positive emotions, but showed a more restricted range of expressivity for negative emotions (Gross, John, & Richards, 2000). Based upon two studies with varied methods, the authors concluded that the "emotion regulatory processes of low-expressivity individuals may be internalized to such a degree that these processes are invoked relatively automatically rather than executed consciously and deliberately" (p. 723-724). In other words, individuals with low levels of expressivity are not simply making overt efforts to mask their emotion for impression management; they naturally express relatively little emotion. Combined with research on the adaptive social functions of emotions (e.g., Keltner & Kring, 1998), these findings have important implications for understanding the impact of emotional deficits on social interactions. Low-expressivity individuals may attain fewer social rewards, not because they choose to limit their expressions, but because their limited expression is a result of automatic responses.

Deficits in Emotion Expressivity

The impact of emotion expressivity deficits on functioning have been explored across a variety of contexts. In social interaction, the mood of those who are interacting appears to have a differential effect on the individual depending upon their proclivity for emotion expressivity. Specifically, Friedman and Riggio (1981) found that during silent interactions, participants with lower dispositional levels of emotion expressivity ("unexpressives") not only showed significantly more of a change in their mood compared to those with higher dispositional levels ("expressives"), but unexpressives' moods became more similar to the expressive partner's initial mood than their own initial mood. Subsequent research in the area of social interaction has shown that expressives' moods were not affected by other expressives' moods (Sullins, 1991). Further, anxiety and aggression in one partner were the two moods most likely to lead to mood change; no evidence was found for an effect of positive moods (Sullins, 1991). These results suggest that individuals low in emotion expressivity may be more susceptible to the impact of others' negative moods.

Further evidence for the social and personal consequences of low emotion expressivity is provided in the psychopathology literature (e.g., Keltner & Kring, 1998; Kring & Neale, 1996). In their review of the literature on emotional and social disturbances in depression (measured as a trait characteristic in the general population as well as clinical depression), Keltner and Kring (1998) found evidence for a reduction in relationship satisfaction, a tendency to elicit negative emotion in others, and initiation of fewer social interactions. The authors concluded that the depressed individuals' anhedonia prevents their interaction partners from receiving positive social-emotional cues and removes the incentive function of emotion from their interactions. Additional research points to a clear discrepancy between the expression and experience of

emotion in individuals with schizophrenia (e.g., Kring & Neale, 1996; Mathews & Barch, 2004) and supports the idea that disordered individuals' flat affect both contributes to a lack of social support and evokes negative responses from others (Keltner & Kring, 1998). Thus, both for individuals with depression and schizophrenia, deficits in emotion expressivity are associated with poorer outcomes in the context of social interactions. These deficits in emotion expressivity may have significant consequences for an individual's functioning.

The Role of Staff in the Treatment Milieu

Although patient-to-staff ratios have shown negative relations with hospital release rates, an early study suggested no impact on program effectiveness (Ellsworth, Maroney, Klett, Gordon, & Gunn, 1971). However, staffing ratios do not necessarily relate to the level or quality of patient-staff interactions. Many have assumed that interactions between patients and staff provide meaningful therapeutic benefits, despite the fact that staff members spend relatively little time interacting with patients (Tyson, Lambert, & Beattie, 1995). Thus, popular conceptions would suggest that it is the quality, rather than the quantity, of the staff-patient interactions that are important for patient outcomes. Research on the treatment environment has revealed aspects of staff-patient relationships that appear to be particularly important.

In addition to the research on emotion deficits, the schizophrenia literature also comments on the relevance of staff-patient relationships. Individuals living with critical, overinvolved relatives or caretakers have consistently been shown to have poorer outcomes (for reviews, see Barrowclough & Hooley, 2003; Hooley & Hiller, 1998). One study of case managers for patients with severe psychotic illnesses found that quality of life was most improved for patients who had a positive relationship with their case manager (Tattan & Tarrier, 2000). Patients with a positive case manager relationship also showed the lowest levels of

symptomology. Notably, a positive relationship was associated with better outcomes as compared to those with negative *or neutral* relationships with their case manager, indicating that it was an absence of a positive relationship, rather than the presence of a negative one, that was associated with poorer outcomes (Tattan & Tarrier, 2000). So, while deficits in emotion expressivity can negatively impact the individual, positive caretaker relationships appear to mitigate the effect of these deficits. However, Tattan and Tarrier (2000) did not provide evidence of causality. Nonetheless, the authors suggested that the quality of the patient-caretaker relationship may have an effect on the course of schizophrenia that is similar to that of patient-family member relationships. The importance of the caretaker-patient relationship on outcome suggests that inpatient facility staff members may have an important role in shaping clinical outcomes.

General studies on the effect of program environments (including, but not limited to, staff-patient relationship factors) have found significant effects on treatment outcomes. To assess this relation, Moos (1968) asked a sample of Veterans Administration (VA) hospital patients about their behavioral and affective reactions to a variety of everyday situations. Patient reactions varied somewhat based on individual differences (e.g., variance on a continuum of trusting versus suspicious reactions) and situational factors (e.g., reactions during community meetings versus reactions while with another patient) taken separately, but the largest predictor of reactions was the statistical interaction between individual and situational factors (Moos, 1968). For example, patient responses on a continuum of sociable, friendly, and peaceful versus unsociable, hostile, and angry could be somewhat predicted by setting (e.g., in group therapy, at lunch, with another patient) and somewhat predicted by the patient's general propensity for sociable versus unsociable behavior (i.e., collapsed across settings), but was best predicted by an

examination of both the setting and individual traits. In other words, the main effects of setting or patient traits were less helpful in predicting individual behavior compared to the interaction effects.

In addition, both patient and staff perceptions of the treatment environment (generally assessed through self-report ratings of presence or absence of a number of ward characteristics) have been found to be strong predictors of treatment outcome. In a study of outpatient drug treatment programs, Friedman, Glickman, and Kovach (1986) found that both patient and staff ratings of program environment characteristics were related to reduction in drug use. Similarly, Cronkite and Moos (1978) found strong effects of treatment experiences (e.g., presence or absence of medication either with or without concurrent psychotherapy and educational interventions) and perceptions of the treatment environment on outcome in residential alcohol treatment programs. The authors noted that program environment variables accounted for as much or more variance than individual variables. Such studies suggest that program environment is at least as important to study as individualized client characteristics or objective criteria such as staff ratios.

Much research on inpatient psychiatric treatment environments has been conducted in VA hospitals. In one study of VA psychiatric treatment programs, Ellsworth and colleagues (1971) found that program characteristics, such as having nursing staff perceive professional staff as motivated and nondominant and having patients perceive being involved in ward management, predicted the effectiveness of the units, as measured by "community tenure" (i.e., remaining out of the hospital at least 90 days after discharge). Further, Moos, Shelton, and Petty (1973) studied the relation between program characteristics and three different measures of treatment outcome in 15 VA hospital wards. Programs with high drop out rates (e.g., where

patients eloped or left against medical advice) were perceived by patients and staff to have low patient involvement on the ward and low patient support. Programs with high release rates were seen as organized with a practical orientation, but did not encourage open expression of feelings. However, programs with better community tenure rates (at six months) emphasized the free and open expression of feelings, particularly anger. In other words, patient-staff relationship factors were less evident in wards with high dropout rates, were somewhat emphasized in wards with high release rates, and were essential in wards with superior rates of community tenure. These results suggest that patient and staff perceptions not only help to describe the atmosphere of a treatment program, but are also related to important measures of that program's "success."

Further, differences in resident and staff perceptions appear to be important. Although some environments show notably discrepant perceptions (e.g., correctional settings), others show considerable agreement (e.g., inpatient psychiatric wards; Moos, 1975). However, even in programs with similar patterns across program dimension, patients generally hold more negative views of the environment (e.g., Friedman, Jeger, & Slotnick, 1982; Moos, 1996). Differences between patient and staff perceptions have been used to initiate program change tailored to the particular facility in the hopes of improving treatment outcome (Friedman et al., 1982). It is unclear as to whether patient or staff reports are more objectively "correct," but the discrepancies themselves appear to be important. In fact, Friedman et al. (1986) found that in programs with greater discrepancy between patient and staff environmental perceptions, day treatment clients showed a smaller reduction in their illicit drug use as compared to patients from programs with smaller patient-staff discrepancies. In other words, more discrepant patient-staff perceptions predicted worse treatment outcome.

More recent research has addressed the measurement of program characteristics through satisfaction ratings. In a study of patient and staff satisfaction, the aspect of care that psychiatric inpatients were most satisfied with (i.e., over 75% of patients positively appreciated it) was their relationships with staff members. Specifically, patients placed the highest emphasis on nurse sympathy and being able to ask doctors questions, despite dissatisfaction with other aspects of the ward (Olusina, Ohaeri, & Olatawura, 2002). Thus, negative qualities of inpatient care did not overshadow the importance and appreciation of positive staff-patient relationships. Similar results have been replicated in other samples (Kuosmanen, Hatonen, Jyrkinen, Katajisto, & Valimaki, 2006).

Current Study

Recent research on emotion expressivity, or the outward display of emotion, has suggested a multidimensional construct that affects social interactions and mental health. Because emotion deficits have been found in many individuals with mental illness (e.g., Kring, 2001), the implications of these deficits for clinical functioning and outcomes are particularly important to study. The goal of such research would be to increase understanding of the nature of these deficits and their influence on patient-staff relationships, and to guide interventions to reduce the negative effects of low emotion expressivity on functioning. Due to the importance of examining the interaction between individual differences and treatment environment (Moos, 1968), milieu characteristics are important to examine in conjunction with emotion expressivity. In particular, such research can be used to help treatment facilities manage the environmental factors of particular situations to maximize certain patients' potential (Moos, 1968). Because individuals with severe mental illness tend to have limited social networks (Randolph, 1998) and

because inpatients primarily interact with facility staff, patient relationships with caretakers and unit staff take on particular importance.

The current study seeks to examine the implications of deficits in emotion expressivity in a forensic inpatient sample. A forensic sample provides an opportunity to not only study the mentally ill (with a high proportion of emotion expressivity deficits), but also to demonstrate the positive effects of the treatment environment on patient functioning in a population commonly thought to be dangerous and unpredictable by the general public (Silver, Cirincione, & Steadman, 1994; Steadman & Cocozza, 1978). By examining institutional adjustment (i.e., clinical functioning and institutional behavior problems), the current study is limited to immediate outcomes; additional research would be needed to explore whether emotion expressivity and treatment milieu have an effect on post-discharge functioning in the community. However, understanding the relation of these variables at one point in time serves as an important first step to allow for a more thorough examination of long-term outcomes.

Hypotheses

In the proposed study, low emotion expressivity of patients was hypothesized to be related to poorer clinical functioning as measured by clinician-rated symptom severity and global measures of level of functioning. However, it was also expected that the milieu characteristics of patient-staff relationships may moderate the connection between emotion expressivity and functioning. Specifically, patients experiencing more positive staff relationships would show an attenuated relation between their level of expressivity and functioning, such that those low in emotion expressivity were expected to show higher levels of functioning and less symptom severity as compared to similar patients with less positive staff relationships.

The relation between emotion expressivity and behavioral functioning (i.e., the number of incident reports recorded for behavioral problems) was also explored. Based on the emotion expressivity literature (that generally has been limited to college samples), low expressivity would be predicted to be related to worse behavioral functioning. However, anecdotal reports of psychiatric patient behavior would predict the opposite: patients who typically do not display much emotion are the same patients who tend to be more isolated and less disruptive. Therefore, these analyses were exploratory in nature.

The above models were conducted for both the patient-rated and staff-rated measures of expressivity (the Berkeley Expressivity Questionnaire; BEQ). Although previous research using the BEQ reported strong associations (r = .58) between self-reported and peer-rated emotion expressivity (e.g., Gross & John, 1997), the schizophrenia literature has shown a consistent discrepancy between patient's self-reported emotion experience and state emotion expression (e.g., Mathews & Barch, 2004), and preliminary evidence suggests a similar discrepancy between self-reported dispositional emotion expressivity and objective ratings of state emotion expression in schizophrenic patients (Kring, 1991). However, it is unclear if patients are wholly inaccurate in their ratings or if they simply tend to inflate their level of expressivity compared to what is objectively observed. In the current study, both patient-rated and staff-rated emotion expressivity were predicted to be related to outcomes as specified above; however, differences in the amount of scatter present were anticipated. Patient ratings may show a weaker correlation with functioning due to their apparent inaccuracy in reporting emotion expressivity. Alternatively, staff ratings may suffer from floor effects (and thus, weaker correlations) if they feel all patients show minimal levels of emotion expressivity.

Further, patient and staff ratings of program characteristics were compared to determine the degree of discrepancy in several areas of the program environment. As Moos and others have found, some degree of discrepancy is expected, although ratings were hypothesized to be similar in direction. The direct relation between program characteristics and functioning was also explored. Consistent with previous literature on more severely disturbed patients (Moos, 1996), it was predicted that wards perceived to have greater structure and less emphasis on "performance" (i.e., self-disclosure, open expression of anger) would be related to better patient functioning.

CHAPTER 2: METHOD

Participants

Patient sample. Patients were recruited from the three units of Taylor Hardin Secure Medical Facility (THSMF), a maximum security forensic psychiatric hospital that admits only male patients. Due to the historical data to be collected for the proposed study, only patients who have been at THSMF for at least six months were included in the analyses. As a result, only patients from two of the units had been residents long enough to qualify. Based on a power analysis using an alpha of .05, power of .80, a medium effect size (f^2 = .15), and four predictors, a sample size of 55 participants was required (Faul, Erdfelder, Lang, & Buchner, 2007). However, due to the six month requirement and the need to limit the length of time over which data were collected (i.e., due to the time sensitive nature of the information being collected), only 53 eligible patients volunteered and were approved for participation by a psychiatrist. Therefore, the achieved power using the same parameter estimates was .79 (Faul et al., 2007).

Patients from THSMF were chosen for this study for several reasons. While the measured variables in this study would be of interest in several populations, including civilly committed inpatients and prisoners, THSMF serves as a sort of "middle ground" between civil inpatient facilities and correctional institutions. All three have varying levels of treatment focus, and further research could certainly expand the study of emotion expressivity and functioning to these and other settings. Further, THSMF maintains treatment records that are superior to most correctional facilities, possibly due to the increased focus on treatment, and also likely due to the

oversight by the court system on this special population. Finally, although a small proportion of THSMF patients have a very short length of stay (e.g., for evaluation of competency to stand trial only), many stay beyond the six month period required for inclusion in the current study. This can be contrasted with state psychiatric hospitals, where the push to move patients to a less restrictive facility is less controlled by the legal system. Therefore, many patients at state hospitals would not meet the inclusion criteria of six months of hospitalization. Likewise, most correctional facilities have, at best, a secondary focus on treatment, resulting in both more limited clinical records and a less well-defined milieu.

Patient participants mostly reported Black (*n* = 28, 52.8%) or White (*n* = 21, 39.6%) ethnicity and ranged in age from 18 to 64 years old (average age of 44). The majority of patients had never been married (*n* = 34, 64.2%), although several were divorced (*n* = 9, 17.0%). Patients reported between four and 17 years of education (*M* = 10.89).

The majority were hospitalized subsequent to being found Not Guilty by Reason of Insanity (*n* = 45, 84.9%), and current hospital stays ranged in length from six to 105.75 months (*M* = 20.5, median = 13.38). Index crimes included violent offenses (*n* = 34, 64.2%), theft (*n* = 7, 13.2%), substance-related offenses (*n* = 2, 3.8%), sex offenses (*n* = 2, 3.8%), and other offenses (including multiple types of index charges; *n* = 7). Patients had a history of between zero and 19 prior criminal convictions that were able to be confirmed through available records (*M* = 2.67, median = 1).

Patient participants had a wide range of diagnoses, and many had more than one. The most common diagnosis was a substance use disorder (*n* = 43, 81.1%), followed by psychotic disorders (*n* = 38, 71.7%) and personality disorders (*n* = 28, 52.8%). Mood disorders (*n* = 11, 20.8%) and Mental Retardation or Borderline Intellectual Functioning (*n* = 9, 17.0%) were also

common. Forty-three patients (81.1%) were prescribed an antipsychotic, and 16 (30.2%) were prescribed more than one. Forty-one (77.4%) were prescribed a non-psychiatric medication for medical reasons (not including anticonvulsants). Four patients (7.5%) were not on any psychotropic medication. Previous hospital admissions ranged from zero to 32 (M = 5.06, median = 4).

On admission to THSMF, patients are assessed by psychiatric staff regarding current level of functioning using the Brief Psychiatric Rating Scale (BPRS) and Global Assessment of Functioning (GAF) scores. Superior functioning is indicated by higher GAF and lower BPRS scores. At intake, patient participants had GAF scores ranging from 10 to 60 (M = 40) and BPRS scores from 18 to 51 (M = 25.88). During the six months prior to the research interview, patients had between zero and 45 recorded program violations (median = 3), zero to 12 of which were violent or aggressive in nature (median = 0). See Table 1 for a summary of patient demographics.

Staff sample. Staff members were recruited from the same facility. Only "front line" staff, or those who interact with patients on a regular and frequent basis, were recruited for the current study (i.e., nurses, mental health workers). Other clinical staff (e.g., medical, psychological, social work) and administrative personnel were not eligible to participate. In order to ensure that staff members are familiar enough with patients to make ratings of the patients, only staff who were employed at THSMF for at least two months were eligible to participate. Data collected from staff members were specific to either their ward or to a particular patient under their care within the facility.

Staff from THSMF were an ideal population to study for several reasons. For one, staff are generally assigned to work on a particular ward, increasing both the stability of the ward atmosphere and the likelihood that staff members will know the patients on that particular ward.

Second, staff at this facility have some mental health training (prior to being hired and/or through on the job training), which may lead them to be more inclined to participate in research regarding mental health issues and to have more insight into the emotional functioning of their patients (e.g., as compared to correctional officers).

A total of 36 staff participated in the study. Staff participants were mostly Black (*n* = 30, 83.3%) and male (*n* = 26, 72.2%), and ranged in age from 19 to 54 years old (*M* = 33). Most staff were mental health workers (*n* = 27, 75.0%). Education history was evenly distributed between high school education (*n* = 14, 38.9%), some college (*n* = 11, 30.6%), and college graduates (*n* = 11, 30.6%). Most staff participants had worked at THSMF for almost three years (median = 35.0 months), although there was a wide range from two to 304 months. One-third of staff had previous inpatient hospital work experience (*n* = 12), but fewer had worked in correctional (*n* = 3, 8.3%) or forensic (*n* = 2, 5.6%) environments. See Table 2 for a summary of staff demographics.

Procedure

Patient sample. Data collection for the patient sample consisted of two components. All patients were provided the opportunity to participate. First, those who expressed interest met one-on-one with the author to gather informed consent and complete a brief assessment, which typically took between 25 and 45 minutes to complete. The assessment consisted of an interview to collect demographic information and to complete the Berkeley Expressivity Questionnaire and Ward Atmosphere Scale. The assessment was conducted in an interview style to avoid any problems with variability in patient reading level. Patients were provided with response cards that specified the response options for each measure.

Additionally, because of the interview style assessment, patients were subjectively rated on their ability to adequately complete the assessment. Forty-five patients were rated a "2" (no apparent difficulty in answering questions), eight were rated "1" (possible difficulty in answering questions), and none were rated "0" (clear difficulty in answering questions). Degree of difficulty the patient had was determined by his demonstration of understanding and appreciating the nature and content of the questions, as evidenced by behavioral and verbal responses. Upon completion of the assessment, $5 compensation was deposited into their financial account at THSMF.

Second, archival records were reviewed for those who completed the in-person assessment. However, one patient, after completing the interview, revoked his authorization to gather information from his records. Ratings that were given upon admission and during the last six months on the Brief Psychiatric Rating Scale, Global Assessment of Functioning, and Level of Functioning Assessment (when available) were collected. Importantly, the staff who made these ratings are professional staff, and therefore were not eligible to participate in the current study. In addition, records were examined over the previous six months for the following variables: marital status, diagnosis, reason for admission to THSMF, length of stay at THSMF, ward on which the patient resides, length of placement on that ward, current medications, history of inpatient hospitalizations, criminal history, and number and type of program violations at THSMF.

Staff sample. All "front line" staff members were provided the opportunity to participate. Staff were assured through the informed consent procedure that individual responses would not be shared with their employer. Those who volunteered completed two questionnaires on their own: the Ward Atmosphere Scale and a demographic questionnaire. In addition, each staff

member completed a rating of emotion expressivity on four patients (i.e., three randomly assigned participants and one "target" patient from their ward) as well as a short series of questions designed to gauge how well they know each of the three patient participants (e.g., how often they observe and talk to the patient, whether the staff member had to document on the patient). Upon completion of the assessment, staff were compensated $5 cash for their participation.

Measures

Berkeley Expressivity Questionnaire (BEQ). The BEQ (Gross & John, 1997) is a 16-item self-report survey of dispositional expressivity (see Appendix A). Items are rated on a 7-point scale from *strongly disagree* to *strongly agree*. Higher total and facet scores represent higher levels of dispositional emotion expressivity. The three facets are Negative Expressivity, Positive Expressivity, and Impulse Strength. Example items include "I've learned it is better to suppress my anger than to show it" (reverse scored) and "When I'm happy, my feelings show." Patients in this study completed the entire measure.

Staff ratings of emotion expressivity of three selected patients were made using the peer version of the BEQ (i.e., "I" is changed to "he"). In addition, staff rated a fourth "target" patient from their program. These ratings on the target patient made by all staff raters from the unit were then used to standardize staff BEQ ratings in order to account for individual differences in approaching the rating process. The final staff-rated BEQ variables for each patient were then created by averaging the standardized ratings across staff raters for that patient.

Through a series of studies with undergraduate students, Gross and John (1997) examined the reliability and validity of the BEQ. The total alpha was .86, and facet alphas ranged from .70 to .80. Similarly, the alpha for peer-rated BEQs was .84 for the total score and

ranged from .71 to .77 for the facets. Convergent validity was shown through strong negative relations with the Emotional Inhibition subscale of an impulse-control measure (Emotion Control Questionnaire; Roger & Najarian, 1989), moderate to strong relations (r = .41 to r = .48 for subscales, r = .58 for total score) between self- and peer-rated BEQs, and a strong correlation (r = .78) with another measure of emotion expressivity (Emotional Expressivity Scale; Kring et al., 1994). The subscales were further validated such that the Positive Expressivity scale predicted amusement expression and its intensity only in a positively valenced film and the Negative Expressivity scale predicted sadness expression and its intensity only in a negatively valenced film (Gross & John, 1997).

Data from the current study yielded good internal reliability for staff ratings and low reliability for patient ratings. Further, alphas for the negative expressivity subscale were unacceptable for both sets of ratings and the other subscales had poor reliability with patient ratings. Therefore, only the Total BEQ scores were explored in the main regression analyses; subscales were only used in descriptive or exploratory analyses (see Tables 3 and 4 for further measure statistics).

Ward Atmosphere Scale (WAS). The WAS (Moos, 1996) was developed from a program of research on social climate in several settings, including psychiatric inpatient units, schools, families, military companies, and adult and adolescent correctional institutions. Social climate can be measured both at the individual and program level (Moos, 1996). The version used in the present study is for the Real program (Form R), meaning that participants completed the questionnaire based on their perceptions of the environment in question (as opposed to making ratings based on what they think an ideal program would be). The WAS is a 100-item True/False questionnaire written at the sixth grade reading level that covers three broad domains represented

in ten different factors. The Relationship domain consists of the Involvement, Support, and Spontaneity factors. An example item includes “Patients are encouraged to show their feelings.” The Personal Growth domain consists of the Autonomy, Practical Orientation, Personal Problem Orientation, and Anger and Aggression factors. An example item includes “There is very little emphasis on what patients will be doing after they leave” (reverse scored). The System Maintenance domain consists of the Order and Organization, Program Clarity, and Staff Control factors. An example item includes “If a patient’s medicine is changed, a nurse or doctor always explains why.”

American normative data for the WAS was drawn from 3,575 patients and 1,958 staff from 160 programs in a variety of types of hospitals across 16 states (Moos, 1996). Staff and patients generally agree on aspects of the ward atmosphere, although staff tend to view the ward more positively (Moos, 1996). Internal consistencies for the subscales were found to be adequate, with a mean of .66 for patients and .71 for staff. Item-subscale correlations were moderate to high, with average patient correlations of .48 and average staff correlations of .47. Test-retest reliability measured over one week were adequate (M = .75). Test-retest profile stability was also examined over longer durations and showed high correlations over one to two months (.76 for patients, .85 for staff) and more than three years later (.73 for patients, .96 for staff) despite considerable patient turnover (Moos, 1996).

Construct validity of the WAS has been supported through psychiatrist perceptions of items, objective measures of ward environment, and organizational policies and structure (Moos, 1996). Convergent validity is suggested by significant positive correlations between particular WAS subscales and scales of other similar measures (e.g., the WAS Autonomy subscale and the Involvement in Ward Management subscale of the Perception of Ward scale; Moos, 1989).

Predictive validity has been shown over several studies in which WAS scores were related to patient satisfaction and behavior, treatment outcome, and staff morale and performance (Moos, 1996).

Data from the current study yielded adequate internal reliability for all WAS items (Chronbach's alpha = .75) for both patient and staff ratings. However, reliability estimates for the 10 subscales ranged from adequate to unacceptable. For the three Relationship scales of most interest to the study, alphas for the patient ratings ranged from .41 to .60, and from .29 to .56 for staff ratings. Therefore, these three scales were summed to create one Relationship domain score for use in the analyses (alphas of .70 for patient ratings and .68 for staff ratings). See Tables 3 and 5 for additional measure statistics.

Brief Psychiatric Rating Scale (BPRS). The BPRS (Overall, 1974; Overall & Gorham, 1962) is a clinician-rated scale that covers 18 different symptom areas from emotional withdraw and guilt feelings to disorientation and hallucinatory behavior (see Appendix B). Each item is rated on a 7-point scale from *not present* to *extremely severe*. Ratings are made after a clinical interview. A number of factor analytic studies have been conducted, but a recent meta-analysis suggests a five factor structure consisting of Affect, Positive Symptoms, Negative Symptoms, Resistance, and Activation (Shafer, 2005). At THSMF, the BPRS is rated upon admission and at least every 90 days thereafter.

Psychometric data is widely available on the BPRS, as it has been used in hundreds of studies (Faustman, 1994). The most common use has been to evaluate the efficacy of psychotropic medication. Concurrent validity has been shown through high correlations between BPRS symptom clusters (e.g., depressive symptoms, negative symptoms of schizophrenia) and other clinician-rated measures specific to each symptom cluster (Faustman, 1994). Relations

between BPRS symptom clusters and relevant Minnesota Multiphasic Personality Inventory scales have been found as well. Interrater reliability for the total score is generally high (r = .85), although individual item reliabilities tend to be more modest but still adequate (r = .56 to r = .87; Faustman, 1994).

Level of Functioning Assessment (LOFA). The LOFA is a measure created by THSMF to assess patient level of functioning. The measure consists of the following 12 items: acceptance of mental illness and knowledge of symptoms, warning signs and management strategies of mental illness symptoms, awareness about mental illness as related to THSMF admission, substance abuse, knowledge of treatment plan and discharge plan, treatment participation, knowledge of medications, medication and lab work compliance, episodes of self harm and/or physical aggression, levels program violations, social interaction/skills, and self care.

Each item is rated on a four-point scale where *4* is the highest level of functioning and *1* is the lowest level. For example, for the Treatment Participation item, a "4" indicates the patient "Attends and constructively participates in planned treatment activities with ***greater than 90%*** participation since last TPC [treatment planning conference]," a "3" indicates the patient "Attends and constructively participates in ***greater than 75%*** of planned treatment activities since last TPC," a "2" is "Attends ***less than 75%*** of planned treatment activities since last TPC, and/or participates only when prompted, or participation is non-relevant or disruptive," and "1" indicates "Recurrent refusals of planned treatment activities and/or TPCs."

A total score is derived from the sum of all item scores, and total scores are converted to one of four levels that correspond to privileges the patient is allowed. The LOFA has largely been used as a clinical tool. As such, little research has been conducted on the measure and the

current study will examine its psychometric properties. At THSMF, the LOFA is rated every 90 days on the two long-term wards, but is not rated on the acute ward.

Global Assessment of Functioning (GAF). The GAF score is a component of the multiaxial diagnostic system outlined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR). It provides a quantitative estimate of the individual's symptom severity and overall level of functioning in the psychological, social, and occupational domains (American Psychiatric Association, 2000). The GAF scale ranges from zero to 100, with higher scores representing superior functioning. At THSMF, the GAF is rated upon admission and at least every 90 days thereafter.

Patient Demographic Questionnaire. Patients will be asked to provide basic demographic information, including age, race, and level of education. Other demographic information will be gathered from THSMF records (see Procedure section above).

Staff Demographic Questionnaire. Staff will be asked to provide basic demographic information, including age, race, and level of education. In addition, they will be asked questions regarding position title, amount of time typically worked on each ward of the facility, length of time employed at THSMF, and previous employment at inpatient civil, inpatient forensic, and correctional facilities (see Appendix C).

CHAPTER 3: RESULTS

Overview of Analyses

First, several project validity analyses were conducted in order to examine potential confounds that may have affected the outcome of the primary analyses of interest. The main analyses consisted of several variations on two main regression models: 1) using emotion expressivity (as measured by the BEQ) to predict patient clinical functioning (as measured by the BPRS, GAF, and LOFA), and 2) using emotion expressivity to predict patient behavioral functioning (as measured by number of program violations). The primary variation of interest for these two sets of models involved examining treatment milieu (as measured by the WAS) as a possible moderator to the relation between emotion expressivity and functioning.

Several descriptive and exploratory analyses were also conducted. Patient differences were examined by legal status, by ward, and by level of functioning. Patient and staff ratings of ward milieu were compared. The ability of ward milieu to predict patient functioning was explored. Finally, the LOFA was analyzed for preliminary psychometric data.

Project Validity Analyses

Bivariate correlations between staff ratings of their knowledge of individual patients and that patient's staff-rated Berkeley Expressivity Questionnaire (BEQ) were examined in order to ensure that staff knowledge of the patient did not confound their expressivity ratings. BEQ scores were not related to length of time working with the patient (*r*'s from -.005 to -.04) or the amount of time staff observed (*r*'s from .004 to -.13) or talked to (*r*'s from -.002 to -.124) the patient. However, ratings made by staff who were required to chart notes on the patient were

higher than staff raters who were not required to chart notes, specifically for the BEQ Positive Expressivity (r = -.19), Impulse Strength (r = -.17), and Total (r = -.20) scores. A similar nonsignificant trend was found for Negative Expressivity (r = -.16, p = .06). However, because effect sizes were small and no other measure of patient knowledge was significantly related, staff ratings were determined to not be unduly influenced by staff knowledge of the patients.

To evaluate the validity of patient BEQ ratings, ANOVAs were conducted between interviewer ratings of patients' ability to complete the assessment and self-reported BEQ. Ability to participate ratings were not able to predict any of the BEQ scores (p-values from .48 to .21). Therefore, the patient's ability to adequately participate in the interview did not influence their self-ratings.

Bivariate correlations were used to determine whether the BEQ and WAS Relationship scales were so highly correlated as to impair the utility of the WAS as a moderator variable. Patient-rated BEQs were not significantly related to ward averages of patient or staff WAS Relationship scales (r's from .06 to .14). Similarly, staff-rated BEQs were not significantly related to ward averages of patient or staff WAS Relationship scales (r's from .12 to .19). These modest relations did not demonstrate a large enough effect to suggest WAS scores would not be a useful moderator in the main regression models.

Main Analyses

To examine the main hypotheses, two sets of regression models (analyzed using General Linear Modeling; GLM) used emotion expressivity to predict patient clinical and behavioral functioning. Models predicting clinical functioning were subdivided into two groups: multivariate regression (reported with Wilks' lambda statistics) was used to predict BPRS and GAF scores, and multiple regression was used to predict LOFA scores. LOFA scores were

analyzed as a separate dependent variable because the measure is designed to be administered only to patients who have progressed to a desired level of stability and because the variable contained significant missing data (due to not being rated for all patients), which would have reduced the ability to detect an effect of the other clinical functioning dependent variables.

Multivariate models controlled for patient length of stay, primary medication category, hospital program on which the patient resided, and patient functioning on admission (measured by BPRS and GAF scores at intake to THSMF). Using the patient-rated BEQ Total score, significant main effects were found for primary medication, Wilks' lambda = .50, $F(6,74) = 5.13$, $p < .001$, and program, Wilks' lambda = .83, $F(2,37) = 3.68$, $p = .04$; the BEQ was not a significant predictor in the model (see Table 6). The significant multivariate effect of primary medication was explored using separate univariate tests on each dependent variable. Primary medication predicted GAF scores but not BPRS scores (see Table 7). The significant effect of program was also explored and showed the variable predicted BPRS scores only. Overall, self-rated emotion expressivity did not predict these measures of clinical functioning.

On the other hand, multivariate models using the staff-rated BEQ Total score found significant main effects for primary medication, Wilks' lambda = .49, $F(6,76) = 5.40$, $p < .001$, and findings approach significance for program and BEQ Total (see Table 6). The significant multivariate effects were explored using separate univariate tests on each dependent variable. Staff-rated BEQ scores were able to predict GAF scores but not BPRS scores, such that higher BEQ scores were related to higher GAF scores. Consistent with models using the patient-rated BEQ, primary medication predicted GAF scores but not BPRS scores and program predicted BPRS but not GAF scores (see Table 7).

Univariate models used to predict the LOFA (controlling for length of stay, primary medication category, and program only) were not significant using either patient or staff BEQ scores, although both models approached significance. However, examination of effect sizes and the general data pattern revealed similar nonsignificant trends for primary medication and program main effects (see Table 8). Nonetheless, emotion expressivity did not predict this measure of clinical functioning.

Of note is that primary medication was typically a significant predictor in the models predicting clinical functioning. Primary medication was coded into four categories: no psychiatric medication (n = 4), antipsychotic (n = 38), mood-related (i.e., for both unipolar and bipolar disorders; n = 6), and other (n = 3). Follow-up with a separate univariate ANOVA revealed a significant difference, $F(3,47) = 16.11$, $p < .001$, $\eta_p^2 = .51$, such that patients taking no psychiatric medications had significantly higher recent GAF scores than those taking psychotropics, and patients taking an antipsychotic had significantly lower GAF scores than those taking a mood-related medication or no psychotropic (see Table 9).

Behavioral functioning was measured by the total number of program violations recorded during the six months prior to patient participation. Multiple regression models were used and controlled for length of stay, primary medication category, and program. The patient-rated BEQ model significantly related to program violations (see Table 10). Main effects were found for program and BEQ Total scores, such that higher BEQ scores were related to fewer program violations. On the other hand, staff-rated BEQ scores did not significantly predict program violations (see Table 10). Overall, self-rated emotion expressivity predicted behavioral functioning, whereas other-rated emotion expressivity did not.

Moderation Models

In addition, the previous multivariate and multiple regression models were conducted in GLM with the addition of treatment milieu as a moderator between emotion expressivity and the dependent variables of clinical and behavioral functioning. For the current study, treatment milieu was assessed using the Ward Atmosphere Scale, which pertains to three broad areas of a program: Relationship factors, Personal Growth factors, and System Maintenance factors. The current study was focused on examining the Relationship domain as a moderator, which was calculated by summing its three scales (Involvement, Support, and Spontaneity). Based on previous findings that more discrepant patient-staff perceptions predicted worse treatment outcome (Friedman et al., 1986), treatment milieu was defined for all moderation analyses as difference scores (on the Relationship domain) between the ward average of staff ratings and patient individual ratings.

Additionally, nonsignificant control variables from the initial models were dropped from the moderation analyses to improve the power to detect interaction effects. Specifically, the multivariate tests of clinical functioning did not include BPRS and GAF admission scores and patient length of stay. Univariate tests of clinical functioning did not include length of stay. Tests of behavioral functioning did not include primary medication category and length of stay.

Multivariate tests of clinical functioning (i.e., for BPRS and GAF scores) using the patient BEQ moderation model were not statistically significant for any of the independent variables of interest, although primary medication and program were significant (see Table 11). The univariate test of clinical functioning (i.e., for the LOFA) using the patient BEQ moderation model was not significant. An examination of effect sizes revealed the lack of significance was likely due to low power; nonetheless, neither of the treatment milieu variables had notable effect

sizes (see Table 12). Overall, discrepancies on ward milieu did not moderate the relations between self-rated emotion expressivity and clinical functioning. Although contrary to the initial hypotheses, these findings were to be expected, given the lack of statistical significance in the models analyzed without the WAS moderator.

Multivariate tests of clinical functioning were conducted using the staff-rated BEQ in the moderation model. Significant main effects were found for primary medication and program, and the main effect of staff BEQ ratings approached significance. Neither the WAS Relationship main or interaction effects were significant (see Table 11). Examination of separate univariate tests revealed staff BEQ ratings significantly predicted GAF, $F(1,43) = 5.60$, $p = .02$, $\eta_p^2 = .12$, but not BPRS, $F(1,43) = 2.14$, $p = .15$, $\eta_p^2 = .05$, scores. Univariate tests to predict the LOFA using the staff-rated BEQ moderation model did not find a significant effect. An examination of effect sizes revealed the lack of significance of the overall model was likely due to low power; nonetheless, neither of the treatment milieu variables had notable effect sizes (see Table 12). Overall, ward milieu discrepancies did not moderate the previously found significant relations between other-rated emotion expressivity and clinical functioning. This finding was not expected and does not support the hypotheses of this study.

Moderation models to predict the effect of emotion expressivity and treatment milieu on behavioral functioning were conducted as well (see Table 13). The overall model of behavioral functioning using the patient-rated BEQ was significant. The main effect of the WAS Relationship domain was not significant, although its interaction with the patient BEQ Total scores was. Specifically, patients whose WAS Relationship scores were closest to staff scores had similar program violations regardless of their BEQ ratings, whereas patients whose WAS Relationship scores differed most from staff scores had more program violations if they rated

themselves low on the BEQ, but fewer program violations if they rated themselves high on the BEQ (see Figure 2). However, the univariate test of behavioral functioning using the staff-rated BEQ moderation model was not significant. An examination of effect sizes revealed low power, although the WAS Relationship main and interaction effects had extremely small effect sizes. Overall, discrepancies on the Relationship domain moderated the relation between patient ratings, but not staff ratings, of emotion expressivity and behavioral functioning. These findings partially support the proposed hypotheses.

Descriptive and Exploratory Findings

Because BEQ scores were rated by both patients and staff, the self ratings were compared to averaged staff ratings. Bivariate correlations between patient and staff BEQ Total (r = .03), Positive Expressivity (r = .07), and Impulse Strength (r = .02) scores were not significant, although Negative Expressivity scores were inversely related (r = -.32). Examination of mean difference scores yielded similar results. ANOVAs comparing patient versus staff ratings revealed that BEQ Total, Positive Expressivity, and Impulse Strength means were significantly different, and Negative Expressivity scores showed a similar nonsignificant trend (see Table 14). However, the subscale differences should be interpreted cautiously due to their poor reliability in the current dataset. Overall, these results suggest self and other ratings of emotion expressivity are not related in this population.

Further, the patient-staff BEQ differences were compared by diagnosis. Specifically, a patient minus staff rating difference score was computed, and means on these difference scores were compared between patients who had a diagnosis of Mental Retardation (MR) or Borderline Intellectual Functioning (BIF) and those who did not. The means were significantly different, $t(50) = 2.95$, p = .005, such that patients with an MR/BIF diagnosis (n = 9) rated themselves as

lower on the BEQ than did staff members, whereas patients without an MR/BIF diagnosis (n = 43) rated themselves as higher on the BEQ than staff members rated them. Mean patient BEQ ratings did not differ (4.08 versus 4.37 for those with and without the diagnosis, respectively), whereas mean staff ratings were higher for those with an MR/BIF diagnosis (M = 4.85) versus patients who did not (M = 3.95).

For each of the main regression models, participants included patients that have been adjudicated and found Not Guilty by Reason of Insanity (NGI) as well as patients that have never been to trial because they have been found Incompetent to Stand Trial (IST). While THSMF does not have a large enough research-eligible IST patient population to allow the main analyses to be conducted separately, descriptive analyses comparing these two groups were conducted. NGI (n = 45) and IST (n = 7) patients were comparable on age, education, length of stay, program violations, and criminal history (see Table 15). However, NGI and IST patients differed in that NGI patients demonstrated higher GAF scores on admission, lower BPRS and higher GAF scores during the six months prior to the interview, and more psychiatric hospital admissions (see Table 15). Patients did not differ significantly on WAS or BEQ ratings.

T-tests comparing summative staff and patient WAS ratings on each ward were conducted to provide descriptive comparisons of the patient-staff discrepancies. For Program A, significant patient-staff differences were found for seven of the ten program dimensions (two of the three Relationship dimensions, two of the four Personal Growth dimensions, and all three System Maintenance dimensions; see Table 16 and Figure 3). On the other hand, Program B showed significant differences on just four dimensions (one Relationship dimension and the three System Maintenance dimensions; see Table 16 and Figure 4).

Program characteristics were further explored by examining mean differences between the wards for both patient and staff WAS ratings. Patients on the two wards significantly differed on their rating of Practical Orientation, $t(51) = -2.53$, $p = .01$, only. Specifically, patients on Program B felt the ward focused to a greater extent on learning practical skills and preparing for release from the program as compared to patients' ratings from Program A. Staff differed in their ratings of Support, $t(34) = 3.01$, $p = .005$, and Personal Problems Orientation, $t(34) = 2.06$, $p = .047$. Specifically, staff from Program A reported greater support between patients and from staff toward patients, and reported patients had a greater focus on seeking to understand their feelings and personal problems compared to staff from Program B. Table 17 provides mean scores for all patient and staff WAS raw scores. However, results using individual WAS scales should be interpreted cautiously due to low estimates of internal consistency using the current data.

Means on clinical and behavioral measures were compared between wards to examine whether a particular profile of WAS scores was associated with better patient outcomes (see Table 18). Patients on the two wards differed on GAF admission scores, $t(50) = -2.15$, $p = .04$, recent BPRS scores, $t(49) = 3.47$, $p = .001$, and LOFA level, $t(31) = -2.14$, $p = .04$, but nonsignificant trends were found for both admission BPRS, $t(46) = 1.70$, $p = .10$, and recent GAF, $t(49) = -1.92$, $p = .06$, scores. The pattern suggests patients on Program B were functioning better both on admission and prior to the interview. Patients also differed on their length of stay, $t(50) = -2.08$, $p = .04$, and number of program violations, $t(50) = 2.94$, $p = .005$, in that patients from Program B had fewer program violations (average 3.45 versus 11.78) but had a longer length of stay (average 27.21 versus 16.32 months). Overall, these results are consistent with the notion that the program with fewer patient-staff ward milieu rating discrepancies had better functioning patients.

In addition, the predictive ability of all program characteristics (i.e., the three WAS domains) and clinical functioning was explored. Three multivariate models were analyzed, once with the patient-staff difference scores on each WAS domain. Multivariate models predicting BPRS and GAF scores controlled for BPRS and GAF scores on admission, primary medication, and length of stay. None of the WAS domains were significant predictors in the multivariate models (*p*-values from .28 to .39, η_p^2 from .05 to .07), although primary medication continued to predict clinical functioning. Results of the univariate models, controlling for length of stay and primary medication, yielded similar nonsignificant results in predicting LOFA levels (domain main effect *p*-values from .11 to .96, η_p^2 from < .001 to .09). Thus, ward milieu discrepancies were essentially unrelated to clinical functioning.

Univariate models were also conducted to examine the ability of the WAS domain difference scores to predict behavioral functioning. Nonsignificant results, controlling for length of stay and primary medication, were found for models with all three domains, although the System Maintenance domain main effect approached significance, $F(1,46) = 3.79$, $p = .06$, $\eta_p^2 = .08$, albeit under a nonsignificant overall model. Thus, ward milieu discrepancies were essentially unrelated to behavioral functioning.

Finally, basic psychometric analyses were conducted on the LOFA. Because only total scores and level scores were collected, test-retest reliability was examined. The time between first and last collected LOFA scores ranged from 23 to 158 days. Bivariate correlations between initial LOFA scores and the most recent scores during the six months prior to the interview showed a large effect ($r = .84$). Repeated measures analysis showed nonsignificant within-subjects changes between the first and last collected LOFA scores, $F(1,32) = .004$, $p = .95$.

Construct validity was examined by comparing the LOFA to other measures of clinical functioning. LOFA scores (where up to 48 points can be awarded) were not significantly related to recent GAF scores (r = .18) but were significantly related to recent BPRS scores (r = -.47). LOFA levels (one through four) showed strong relations with both recent GAF (r = .42) and BPRS (r = -.54) scores. By comparison, BPRS and GAF scores showed a similar relation to each other, although the effect size was larger (r = -.71).

CHAPTER 4: DISCUSSION

Emotion Expressivity and Functioning

The current study explored the nature of the relations between patient emotion expressivity, treatment milieu, and patient clinical and behavioral functioning in a secure inpatient forensic hospital. The overall pattern of results indicated patient's self-rated emotion expressivity was able to predict their behavioral functioning in the institution, whereas staff-rated emotion expressivity predicted some (but not all) measures of patient clinical functioning. Relationship factors of the ward milieu (i.e., patient-staff discrepancies on combined measures of involvement, support, and spontaneity) did not moderate the relations between emotion expressivity and clinical functioning, but did moderate the relation between emotion expressivity and behavioral functioning

Patients who rated themselves as higher on emotion expressivity had fewer institutional behavior problems in the six months prior to the research interview. This finding is consistent with the notion that emotion expressivity is adaptive in social interactions (e.g., Keltner & Kring, 1998). Further, patients who were rated by staff as higher on emotion expressivity had higher ratings on the Global Assessment of Functioning, and similar nonsignificant trends found higher emotion expressivity related to lower scores on the Brief Psychiatric Rating Scale. While both the independent and dependent measures in this analysis were rated by facility staff, they were not rated by the same staff, in that psychiatrists were responsible for making GAF and BPRS ratings, while only nurses and mental health workers rated the BEQ for the current study. This finding supports the hypotheses and suggests emotion expressivity (as perceived by others)

does indeed serve an adaptive function for this population, consistent with the social-functional approach to emotion (Keltner & Kring, 1998).

Not only did staff and patient ratings of emotion expressivity behave differently in the regression models, but the ratings were largely unrelated to each other and demonstrated significant mean score differences. Staff members rated patients lower on positive expressivity and emotional intensity compared to patients' self-ratings. Differences on negative expressivity approached significance, with staff rating patients higher on this scale. These findings contrast with previous studies on emotion expressivity, which found moderate to strong relations (*r*'s from .41 to .58) between self and peer ratings (e.g., Gross & John, 1997).

On the other hand, this finding is consistent with the schizophrenia literature, which has regularly shown discrepancies between patient-reported emotion *experience* and state emotion expression (e.g., Mathews & Barch, 2004), and preliminary evidence suggesting a similar discrepancy for emotion *expressivity* and expression (Kring, 1991). The current study expands upon Kring's findings to support the notion that severely mentally ill inpatients do not agree with observers on their dispositional outward expression of emotion. Generally, patients reported expressing more emotion than staff members perceived.

Follow-up on these differences found patients with lower cognitive functioning rated themselves as less emotionally expressive than did staff members, whereas patients without such a diagnosis rated themselves as more emotionally expressive than staff members rated them. While patient self-ratings did not vary depending on their cognitive functioning, staff rated low functioning patients as more emotionally expressive than they rated patients who were not diagnosed with Mental Retardation or Borderline Intellectual Functioning. While the reason for

these differences are unclear, it is possible the low impulse control often associated with limited cognitive functioning was perceived by staff as greater emotion expressivity.

Despite these differences, both patient and staff perceptions of emotion expressivity had some relation to patient functioning. While the reason for these predictive differences was not fully elucidated in the current study, some possibilities are suggested as areas for future study. For example, behavioral functioning, including violating program rules, is under the patient's volitional control more so than overall clinical functioning, even considering that symptom severity may influence one's behavioral controls. Thus, perceptions of one's behavioral expression may be more closely tied to behavioral actions (over which patients feel they have more control).

Conversely, the somewhat more objective ratings made by staff members were able to predict a measure of clinical functioning. Perhaps the patient-staff discrepancy would suggest that discrepant patient ratings might be a target for intervention and would subsequently be better predictors of clinical functioning. One avenue for future study then would be to add a patient's level of insight into the analysis, with the hypothesis that patients with greater insight would be more likely to show significant associations between self-rated emotion expressivity and clinical functioning. Such a finding would also support the notion of a continuum for agreement or discrepancy between self and other ratings of emotion expressivity, in that "normal" populations tend to show strong agreement, whereas severely mentally ill populations do not.

Also of interest is the strong association between primary medication and clinical functioning. Above and beyond the effect of baseline measures of clinical functioning, patients not on psychotropic medications had superior recent clinical functioning compared to patients prescribed psychotropic medications. In other words, patients who did not need to be treated with

psychiatric medications (i.e., were not severely mentally ill) were higher functioning. Further, patients on an antipsychotic were lower functioning than most other patients, even after controlling for baseline clinical functioning. These somewhat intuitive findings nonetheless point to the heterogeneity of the inpatient forensic sample.

Effect of Treatment Milieu

The hypothesis that patient-staff discrepancies on perceptions of treatment milieu would moderate the relation between emotion expressivity and clinical functioning was not supported. One possibility for the lack of significant findings is that not all of the Relationship scales of ward milieu showed significant differences, suggesting the patient-staff discrepancies may not be substantial enough to impact the relation between emotion expressivity and clinical functioning. Alternatively, relationship factors may not be associated with clinical functioning as measured in the current study. Additional descriptive analyses support this notion. Specifically, discrepancies on the Relationship dimension of ward milieu were not able to predict any of the measures of clinical functioning.

On the other hand, patient-staff discrepancies on ward relationship factors did moderate the relation between patient ratings of emotion expressivity and behavioral functioning. Specifically, patients who rated themselves as less emotionally expressive had worse behavioral functioning the more they disagreed with staff perceptions of program relationship factors, whereas patients with greater self-rated emotion expressivity had better behavioral functioning if they disagreed more with staff perceptions of the program relationship factors. These results vary somewhat from the initial hypothesis that positive staff relationships would ameliorate the negative effect of emotion expressivity. Rather, results suggest that greater emotion expressivity ameliorated the negative effects of disagreement between patients and staff on treatment milieu

factors. Therefore, this finding provides further support for the adaptive function of emotion expressivity (e.g., Keltner & Kring, 1998).

Nonetheless, several differences were found between patients and staff on perceptions of ward milieu. Specifically, patients on both programs were less likely than staff members to believe the program encouraged the open expression of feelings, emphasized order and organization, and made program routines and rules clear and explicit. Patients were also more likely to believe staff utilized a greater amount of control over patients. Overall, patients had more negative views of their program than did staff, and patients thought the program was not run in a clear and understandable way. Such views may be reflective of a poorer cognitive processing that is likely to be found in the mentally ill. Another hypothesis is that a patient's likely dissatisfaction with being held in a secure institution may have led to an overly negative view of the facility.

In addition, patients on Program A were less likely than staff to believe their unit provided them with staff and peer support or taught them practical skills to prepare for release, and more likely to believe patients on the unit argued, were openly angry, and displayed aggression. Although Program A is considered a more long-term unit, it often serves as a transitional unit from the acute program (which did not have any participating patients) to Program B. Thus, these additional patient-staff discrepancies may be reflective of the relative lack of stability compared to Program B.

Facility-Specific Findings

While the current sample largely consisted of patients found Not Guilty by Reason of Insanity, a significant minority (around 13%) were hospitalized under Incompetent to Stand Trial statutes. These groups of patients did not differ on the key variables of interest in the study (i.e.,

emotion expressivity or treatment milieu perceptions), suggesting the findings can be generalized to both patient groups.

However, patients did differ on several clinical variables. The findings of superior clinical functioning for NGI patients, both on admission and recently prior to the interview, is consistent with the nature of their commitment. The essential difference is that NGI patients were determined to suffer from mental disease or defect at a prior point in time (i.e., during the commission of their committing offense), whereas IST patients have been determined by the court to be currently functioning at a level that is insufficient to be able to proceed with their legal case. Of note, the NGI patients did have a greater number of past psychiatric hospitalizations, consistent with a more longstanding or earlier onset of mental illness, but also, in this sample, a better adjustment to the residential forensic setting. The IST patients may have been experiencing a more acute stage of disorder.

In addition to comparing patients across legal status, differences across programs were examined. Patients rated Program B to be more focused on learning practical skills and preparing for release than Program A. Comparisons of background variables revealed Program B participants were functioning better on admission and prior to the interview than Program A participants, and they had fewer program violations despite a longer length of stay. Overall, these findings are consistent with the nature of Program A as a transitional unit and Program B as housing for more stable patients and as the last step before release. Further, combined with results comparing patient-staff differences, these results are consistent with previous findings of Friedman et al. (1986), in that programs with fewer patient-staff discrepancies in their perceptions of ward atmosphere had better functioning patients. Therefore, educational

interventions for both patients and staff in order to reduce discrepancies in their perceptions of the program may be an important avenue to explore.

Finally, a preliminary assessment of the LOFA was conducted. However, these findings are limited by the fact that the small sample size was further restricted due to the lack of LOFA data for all patients. Scores were highly consistent over time; however, it is unclear to what extent scores should change for these patients over the particular time period. Given the fact that the LOFA is scored only for patients who have reached a desired level of stability (and is not scored on admission), no more than minimal change over a relatively short period of time would be expected, providing some support of test-retest reliability. Construct validity of the LOFA, using the other measures of clinical functioning collected from records, had mild support. Correlational findings were in the expected direction, but ranged from a nonsignificant trend to a large effect size.

Limitations and Future Directions

While the current study generally had sufficient power, the study was nonetheless limited by a small sample size due to missing data and decreased degrees of freedom in more detailed analyses, such as the moderation models. Although a larger sample size may have yielded additional significant findings, the overall pattern of results suggests findings would be similar. More specifically, effect sizes suggest a larger sample size would have provided stronger support for staff-rated BEQ scores to predict clinical functioning (i.e., the BPRS model). However, LOFA models had extremely small effect sizes for BEQ score main effects, consistent with the notion the LOFA may represent a different latent construct than do the GAF and BPRS.

The current findings are notably limited by the specific dependent variables used. While GAF and BPRS scores are familiar among many clinicians and widely used, idiosyncrasies in

individual clinicians can certainly distort ratings. Similarly, the behavioral measure of documented institution violations is limited by the requirement of formal documentation, given that the threshold of determining whether to write a formal infraction can be a subjective process as well.

Further, all of the dependent measures were collected as measures of functioning during the current period of hospitalization. While studying immediate functioning in a controlled inpatient environment is an important first step in understanding behavior and symptoms, perhaps a more interesting analysis would examine the relation of such factors to outpatient functioning, including important outcome variables such as treatment adherence, symptom levels, and future criminal justice system involvement.

Conclusions

The current study revealed that emotion expressivity of forensic inpatients has a significant association with patient functioning in the institution, although patient and staff perceptions of that emotion expressivity are quite different. Subsequently, differing perceptions are related to different types of patient functioning, in that patients better predict their behavioral problems, whereas staff better predict their clinical status. The overall pattern of results supports emotion expressivity as adaptive in this population. Future studies need to further examine what underlies these perceptual differences and their differential relations with outcome variables. Likewise, one might examine the amenability of patients to insight-oriented interventions designed to increase the accuracy of their self-appraisals, as well as educational interventions for both patients and staff regarding the perceived differences in the treatment milieu. Subsequent research should also explore these studied relations within less controlled, outpatient settings and extend current findings to longitudinal outcomes.

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APPENDIX A

Berkeley Expressivity Questionnaire

For each statement below, please indicate your agreement or disagreement. Do so by filling in the blank in front of each item with the appropriate number from the following rating scale:

1	2	3	4	5	6	7
Strongly disagree			Neutral			Strongly agree

____ 1. Whenever I feel positive emotions, people can easily see exactly what I am feeling.

____ 2. I sometimes cry during sad movies.

____ 3. People often do not know what I am feeling.

____ 4. I laugh out loud when someone tells me a joke that I think is funny.

____ 5. It is difficult for me to hide my fear.

____ 6. When I'm happy, my feelings show.

____ 7. My body reacts very strongly to emotional situations.

____ 8. I've learned it is better to suppress my anger than to show it.

____ 9. No matter how nervous or upset I am, I tend to keep a calm exterior.

____10. I am an emotionally expressive person.

____11. I have strong emotions.

____12. I am sometimes unable to hide my feelings, even though I would like to.

____13. Whenever I feel negative emotions, people can easily see exactly what I am feeling.

____14. There have been times when I have not been able to stop crying even though I tried to stop.

____15. I experience my emotions very strongly.

____16. What I'm feeling is written all over my face.

APPENDIX B

Brief Psychiatric Rating Scale Items

1. Somatic concern
2. Anxiety
3. Emotional Withdrawal
4. Conceptual Disorganization
5. Guilt Feelings
6. Tension
7. Mannerisms and Posturing
8. Grandiosity
9. Depressed Mood
10. Hostility
11. Suspiciousness
12. Hallucinatory Behavior
13. Motor Retardation
14. Uncooperativeness
15. Unusual Thought Content
16. Blunted Affect
17. Excitement
18. Disorientation

APPENDIX C

Staff Demographic Questionnaire

What is your gender?

Male

Female

What is your age? _____

What is your race?

Hispanic

White/Caucasian

Black/African American

Asian/Pacific Islander

Biracial/Multiracial

Other (please specify): _____

What is your highest level of education?

Graduated high school/GED

Some college

College degree

Advanced professional degree

What is your position title at Taylor Hardin Secure Medical Facility?

Nurse (list title: _____)

Forensic Technician

What percentage of your time on the job do you typically spend on each program?

ACE (%) _____

BEST (%) _____

CARE (%) _____

How long have you worked at THSMF (specify whether your answer is in years or months)?

_____

Have you ever previously worked at an inpatient hospital (for example, Bryce Hospital)?

Yes

No

Have you ever previously worked at another inpatient forensic hospital other than THSMF?

Yes

No

Have you ever worked in a correctional facility (prison or jail)?

Yes

No

Table 1
Patient Participant Information

Patient Descriptor (n = 53)	n (%)
Ethnicity	
Black	28 (52.8)
White	21 (39.6)
Other	4 (7.5)
Marital Status	
Never been married	34 (64.2)
Married	4 (7.5)
Divorced	9 (17.0)
Separated	4 (7.5)
Widowed	1 (1.9)
Commitment	
Not Guilty by Reason of Insanity	45 (84.9)
Incompetent to Stand Trial	7 (13.2)
Offense category	
Violent	34 (64.2)
Theft	7 (13.2)
Substance related	2 (3.8)
Sex offense	2 (3.8)
Other	7 (13.2)
Diagnoses	
Substance use disorder	43 (81.1)
Psychotic disorder	38 (71.7)
Personality disorder	28 (52.8)
Mood disorder	11 (20.8)
Mental Retardation/Borderline Intellectual Functioning	9 (17.0)
Medication	
Antipsychotic	43 (81.1)
Non-psychiatric/medical	41 (77.4)
Antidepressant	10 (18.9)
No psychotropic	4 (7.5)

Table 2
Staff Participant Information

Staff Descriptor (n = 36)	n (%)
Ethnicity	
Black	30 (83.3)
White	6 (16.7)
Gender	
Male	26 (72.2)
Female	10 (27.8)
Hospital position	
Mental health worker	27 (75.0)
Nurse	9 (25.0)
Education	
High school graduate	14 (38.9)
Some college	11 (30.6)
College graduate	11 (30.6)
Previous work experience	
Inpatient hospital	12 (33.0)
Correctional	3 (8.3)
Forensic	2 (5.6)
THSMF program	
Program A	21 (58.3)
Program B	15 (41.7)

Table 3

BEQ and WAS Internal Reliability

Scale	Patient ratings	Staff ratings
BEQ		
Positive Expressivity	.31	.82
Negative Expressivity	-.45	.57
Impulse Strength	.64	.82
Total	.55	.88
WAS		
Involvement	.60	.56
Support	.51	.29
Spontaneity	.41	.44
Autonomy	.22	-.25
Practical Orientation	.36	.33
Personal Problems Orientation	.57	.47
Anger and Aggression	.71	.69
Order and Organization	.63	.74
Program Clarity	.42	.51
Staff Control	.43	.53
Total	.75	.75

Note. BEQ = Berkeley Expressivity Questionnaire; WAS = Ward Atmosphere Scale. Reliability estimates are Chronbach's alpha statistics.

Table 4

BEQ Statistics

Scale	Mean	Median	Skewness	Kurtosis
Patient ratings				
Positive Expressivity	5.11	5.25	-.26	-.58
Negative Expressivity	3.57	3.50	-.10	-.51
Impulse Strength	4.31	4.17	.05	-.30
BEQ Total	4.33	4.47	-.61	.32
Staff ratings				
Positive Expressivity	4.35	4.50	-.24	-.70
Negative Expressivity	3.75	3.83	.08	.68
Impulse Strength	3.13	3.17	.06	-.31
BEQ Total	3.74	3.78	.007	-.48
Staff ratings (averaged for each patient)				
Positive Expressivity	4.89	4.75	-.16	-.09
Negative Expressivity	3.97	3.83	.74	1.45
Impulse Strength	3.44	3.42	.09	.13
BEQ Total	4.10	3.93	.09	.44

Note. BEQ = Berkeley Expressivity Questionnaire.

Table 5
WAS Statistics

Scale	Mean	Median	Skewness	Kurtosis
Patient ratings				
Involvement	5.94	6.00	-.68	.18
Support	5.72	5.00	-.25	.21
Spontaneity	3.58	4.00	.21	-.45
Autonomy	4.04	4.00	-.19	.13
Practical Orientation	6.06	6.00	.21	-.30
Personal Problems Orientation	4.30	5.00	-.22	-.64
Anger and Aggression	5.15	6.00	-.66	-.36
Order and Organization	7.13	7.00	-.29	-.71
Program Clarity	5.79	6.00	-.18	-.94
Staff Control	6.51	7.00	-.16	-.06
Staff ratings				
Involvement	6.06	6.00	-.34	-.35
Support	6.53	7.00	-.11	.30
Spontaneity	4.67	5.00	.22	-.80
Autonomy	4.19	4.00	-.53	.49
Practical Orientation	6.94	7.00	-1.08	1.69
Personal Problems Orientation	4.42	4.00	.35	-.03
Anger and Aggression	4.58	5.00	-.26	-1.08
Order and Organization	8.25	9.00	-1.01	.40
Program Clarity	7.28	8.00	-1.28	3.73
Staff Control	4.33	4.50	.39	-.02

Note. WAS = Ward Atmosphere Scale.

Table 6

Effect of Emotion Expressivity on BPRS and GAF Scores

Model	Wilks' lambda	*F*	*df*	*p*	η_p^2	observed power
Patient-rated BEQ Total						
Admit GAF score	.98	.33	2, 37	.72	.02	.10
Admit BPRS score	.98	.29	2, 37	.75	.02	.09
Primary medication	**.50**	**5.13**	**6, 74**	**< .001**	**.29**	**.99**
Length of stay	.99	.27	2, 37	.76	.02	.09
Program	**.83**	**3.68**	**2, 37**	**.04**	**.17**	**.64**
BEQ Total	.97	.57	2, 37	.57	.03	.14
Staff-rated BEQ Total						
Admit GAF score	.99	.28	2, 37	.76	.02	.09
Admit BPRS score	.97	.63	2, 37	.54	.03	.15
Primary medication	**.50**	**5.05**	**6, 74**	**< .001**	**.29**	**.99**
Length of stay	.99	.22	2, 37	.80	.01	.08
Program	.87	2.78	2, 37	.08	.13	.51
BEQ Total	.87	2.73	2, 37	.08	.13	.51

Note. GAF = Global Assessment of Functioning; BPRS = Brief Psychiatric Rating Scale; BEQ = Berkeley Expressivity Questionnaire. Values in bold represent statistically significant findings.

Table 7

Follow-up of Multivariate BPRS and GAF Model Effects

GAF Model	*F*	*df*	*p*	η_p^2	observed power
Patient-rated BEQ Total					
Primary medication	**10.33**	**3, 38**	**< .001**	**.45**	**1.00**
Program	2.22	1, 38	.15	.06	.31
BEQ Total	.86	1, 38	.36	.02	.15
Staff-rated BEQ Total					
Primary medication	**10.13**	**3, 38**	**< .001**	**.44**	**1.00**
Program	.90	1, 38	.35	.02	.15
BEQ Total	**5.60**	**1, 38**	**.02**	**.13**	**.64**
BPRS Model	*F*	*df*	*p*	η_p^2	observed power
Patient-rated BEQ Total					
Primary medication	1.25	3, 38	.31	.09	.31
Program	**7.47**	**1, 38**	**.009**	**.16**	**.76**
BEQ Total	1.03	1, 38	.32	.03	.17
Staff-rated BEQ Total					
Primary medication	.89	3, 38	.46	.07	.23
Program	**5.37**	**1, 38**	**.03**	**.12**	**.62**
BEQ Total	2.16	1, 38	.15	.05	.30

Note. GAF = Global Assessment of Functioning; BPRS = Brief Psychiatric Rating Scale; BEQ = Berkeley Expressivity Questionnaire. Values in bold represent statistically significant findings.

Table 8

Effect of Emotion Expressivity on LOFA Scores

Model	*F*	*df*	*p*	η_p^2	observed power
Patient-rated BEQ Total	2.26	6, 26	.07	.34	.68
Primary medication	2.33	3, 26	.10	.21	.52
Length of stay	.33	1, 26	.57	.01	.09
Program	1.89	1, 26	.18	.07	.26
BEQ Total	.39	1, 26	.54	.02	.09
Staff-rated BEQ Total	2.16	6, 26	.08	.33	.66
Primary medication	2.51	3, 26	.08	.23	.55
Length of stay	.39	1, 26	.54	.02	.09
Program	1.89	1, 26	.18	.07	.26
BEQ Total	< .001	1, 26	.99	< .001	.05

Note. LOFA = Level of Functioning Assessment; BEQ = Berkeley Expressivity Questionnaire.

Table 9

Mean GAF Score Differences by Primary Medication

Medication	*M (SD)*	Difference score[a]	*p*[b]
No psychiatric	72.50 (3.00)	----	----
Antipsychotic	49.47 (6.55)	23.03	< .001
Mood-related	55.33 (5.68)	17.17	< .001
Other	55.00 (8.91)	17.50	.001

Note. GAF = Global Assessment of Functioning.

[a] Difference score is the difference between the means on the given medication category and patients on no psychiatric medications.

[b] *p*-values correspond to difference scores.

Table 10

Effect of Emotion Expressivity on Program Violations

Model	*F*	*df*	*p*	η_p^2	observed power
Patient-rated BEQ Total	**3.80**	**6, 45**	**.004**	**.34**	**.94**
Primary medication	.51	3, 45	.68	.03	.15
Length of stay	.33	1, 45	.57	.007	.09
Program	**5.87**	**1, 45**	**.02**	**.12**	**.66**
BEQ Total	**10.55**	**1, 45**	**.002**	**.19**	**.89**
Staff-rated BEQ Total	1.66	6, 45	.15	.18	.57
Primary medication	.56	3, 45	.65	.04	.16
Length of stay	.01	1, 45	.92	< .001	.05
Program	**6.02**	**1, 45**	**.02**	**.12**	**.67**
BEQ Total	.03	1, 45	.87	.001	.05

Note. BEQ = Berkeley Expressivity Questionnaire. Values in bold represent statistically significant findings.

Table 11

Effect of Emotion Expressivity and Treatment Milieu on BPRS and GAF Scores

Model	Wilks' lambda	*F*	*df*	*p*	η_p^2	observed power
Patient-rated BEQ Total						
Primary medication	**.42**	**7.53**	**6, 84**	**< .001**	**.35**	**1.00**
Program	**.81**	**4.88**	**2, 42**	**.01**	**.19**	**.77**
BEQ Total	.97	.60	2, 42	.56	.03	.14
WAS Relationship	.95	1.01	2, 42	.37	.05	.22
BEQ Total X WAS Relationship	.91	2.09	2, 42	.14	.09	.41
Staff-rated BEQ Total						
Primary medication	**.41**	**7.77**	**6, 84**	**< .001**	**.36**	**1.00**
Program	**.86**	**3.42**	**2, 42**	**.04**	**.14**	**.61**
BEQ Total	.89	2.74	2, 42	.08	.12	.51
WAS Relationship	1.00	.05	2, 42	.96	.002	.06
BEQ Total X WAS Relationship	.99	.32	2, 42	.73	.02	.10

Note. GAF = Global Assessment of Functioning; BPRS = Brief Psychiatric Rating Scale; BEQ = Berkeley Expressivity Questionnaire; WAS = Ward Atmosphere Scale. Values in bold represent statistically significant findings.

Table 12

Effect of Emotion Expressivity and Treatment Milieu on LOFA Scores

Model	*F*	*df*	*p*	η_p^2	observed power
Patient-rated BEQ Total	1.93	7, 25	.11	.35	.63
Primary medication	1.79	3, 25	.18	.18	.41
Program	3.56	1, 25	.07	.13	.44
BEQ Total	.45	1, 25	.51	.45	.10
WAS Relationship	.38	1, 25	.55	.02	.09
BEQ Total X WAS Relationship	.17	1, 25	.68	.007	.07
Staff-rated BEQ Total	1.78	7, 25	.14	.33	.59
Primary medication	1.84	3, 25	.17	.18	.42
Program	3.67	1, 25	.07	.13	.45
BEQ Total	.04	1, 25	.85	.002	.05
WAS Relationship	.32	1, 25	.58	.01	.09
BEQ Total X WAS Relationship	.02	1, 25	.89	.001	.05

Note. LOFA = Level of Functioning Assessment; BEQ = Berkeley Expressivity Questionnaire; WAS = Ward Atmosphere Scale.

Table 13

Effect of Emotion Expressivity and Treatment Milieu on Program Violations

Model	*F*	*df*	*p*	η_p^2	observed power
Patient-rated BEQ Total	**7.23**	**4, 47**	**< .001**	**.38**	**.99**
Program	**10.20**	**1, 47**	**.003**	**.18**	**.88**
BEQ Total	**4.40**	**1, 47**	**.04**	**.09**	**.54**
WAS Relationship	.25	1, 47	.62	.005	.08
BEQ Total X WAS Relationship	**5.35**	**1, 47**	**.03**	**.10**	**.62**
Staff-rated BEQ Total	2.24	4, 47	.08	.16	.61
Program	**5.43**	**1, 47**	**.02**	**.10**	**.63**
BEQ Total	.39	1, 47	.53	.008	.09
WAS Relationship	.52	1, 47	.47	.01	.11
BEQ Total X WAS Relationship	.005	1, 47	.94	< .001	.05

Note. BEQ = Berkeley Expressivity Questionnaire; WAS = Ward Atmosphere Scale. Values in bold represent statistically significant findings.

Table 14

Mean Comparisons of Patient and Staff BEQ Scores

	Patient-rated BEQ	Staff-rated BEQ		
BEQ scale	*M* (*SD*)	*M* (*SD*)	*t*	*p*
Total	4.33 (.75)	3.74 (1.17)	5.68	< .001
Positive Expressivity	5.11 (1.12)	4.35 (1.65)	4.97	< .001
Negative Expressivity	3.57 (.73)	3.75 (1.08)	-1.84	.07
Impulse Strength	4.31 (1.22)	3.13 (1.29)	6.99	< .001

Note. BEQ = Berkeley Expressivity Questionnaire.

Table 15

Comparison of NGI and IST Participants

Independent variable	NGI patients *M* (*SD*)	IST patients *M* (*SD*)	*t*	*p*
Age	44.07 (11.27)	39.00 (13.35)	1.08	.29
Education	11.00 (2.51)	9.86 (2.80)	1.11	.27
Length of stay	21.17 (19.97)	16.29 (9.80)	.63	.53
BPRS admission score	25.14 (7.23)	31.00 (7.80)	-1.84	.07
GAF admission score	**42.00 (11.02)**	**27.14 (9.81)**	**3.36**	**.001**
BPRS recent score	**22.41 (4.44)**	**27.14 (3.34)**	**-2.69**	**.01**
GAF recent score	**53.34 (8.76)**	**45.71 (7.30)**	**2.18**	**.03**
Psychiatric hospital admissions	**5.71 (6.11)**	**.88 (1.07)**	**2.08**	**.04**
Criminal convictions	2.82 (3.90)	1.71 (2.87)	.72	.48
Program violations	7.96 (11.06)	12.57 (7.07)	-1.07	.29

Note. NGI = Not Guilty by Reason of Insanity; IST = Incompetent to Stand Trial; GAF = Global Assessment of Functioning; BPRS = Brief Psychiatric Rating Scale. Values in bold represent statistically significant findings.

Table 16

WAS Patient-Staff Discrepancies

WAS scale	Program A, *M* (*SD*)		Program B, *M* (*SD*)	
	Patient ratings	Staff ratings	Patient ratings	Staff ratings
Relationship Domain				
Involvement	5.72 (1.96)	6.00 (1.95)	6.29 (2.49)	6.13 (2.33)
Support	**5.53 (1.97)**	**7.10 (1.38)**	6.00 (2.17)	5.73 (1.28)
Spontaneity	**3.63 (1.54)**	**4.76 (1.79)**	**3.52 (2.09)**	**4.53 (1.55)**
Personal Growth Domain				
Autonomy	4.16 (1.63)	4.05 (1.24)	3.86 (1.46)	4.40 (.99)
Practical Orientation	**5.59 (1.74)**	**7.00 (1.76)**	6.76 (1.48)	6.87 (1.30)
Personal Problems				
Orientation	4.69 (2.18)	4.95 (1.36)	3.71 (1.88)	3.67 (2.38)
Anger & Aggression	**5.38 (2.06)**	**4.57 (2.16)**	4.81 (2.75)	4.60 (2.41)
System Maintenance Domain				
Order & Organization	**7.16 (2.02)**	**8.24 (1.84)**	**7.10 (2.12)**	**8.27 (2.22)**
Program Clarity	**5.59 (1.66)**	**7.43 (1.40)**	**6.10 (1.81)**	**7.07 (2.12)**
Staff Control	**6.63 (1.76)**	**4.62 (2.18)**	**6.33 (1.53)**	**3.93 (1.83)**

Note. WAS = Ward Atmosphere Scale. Values in bold represent statistically significant differences between patient and staff ratings.

Table 17

Comparisons of WAS Scores Across Programs

	Patient ratings, *M* (*SD*)		Staff ratings, *M* (*SD*)	
	Program A	Program B	Program A	Program B
WAS scale	(*n* = 32)	(*n* = 21)	(*n* = 21)	(*n* = 15)
Relationship Domain				
Involvement	5.72 (1.96)	6.29 (2.49)	6.00 (1.95)	6.13 (2.33)
Support	5.53 (1.97)	6.00 (2.17)	**7.10 (1.38)**	**5.73 (1.28)**
Spontaneity	3.63 (1.54)	3.52 (2.09)	4.76 (1.79)	4.53 (1.55)
Personal Growth Domain				
Autonomy	4.16 (1.63)	3.86 (1.46)	4.05 (1.24)	4.40 (.99)
Practical Orientation	**5.59 (1.74)**	**6.76 (1.48)**	7.00 (1.76)	6.87 (1.30)
Personal Problems Orientation	4.69 (2.18)	3.71 (1.88)	**4.95 (1.36)**	**3.67 (2.38)**
Anger & Aggression	5.38 (2.06)	4.81 (2.75)	4.57 (2.16)	4.60 (2.41)
System Maintenance Domain				
Order & Organization	7.16 (2.02)	7.10 (2.12)	8.24 (1.84)	8.27 (2.22)
Program Clarity	5.59 (1.66)	6.10 (1.81)	7.43 (1.40)	7.07 (2.12)
Staff Control	6.63 (1.76)	6.33 (1.53)	4.62 (2.18)	3.93 (1.83)

Note. WAS = Ward Atmosphere Scale. Values in bold represent statistically significant differences between Programs A and B.

Table 18

Comparison of Patients Across Programs

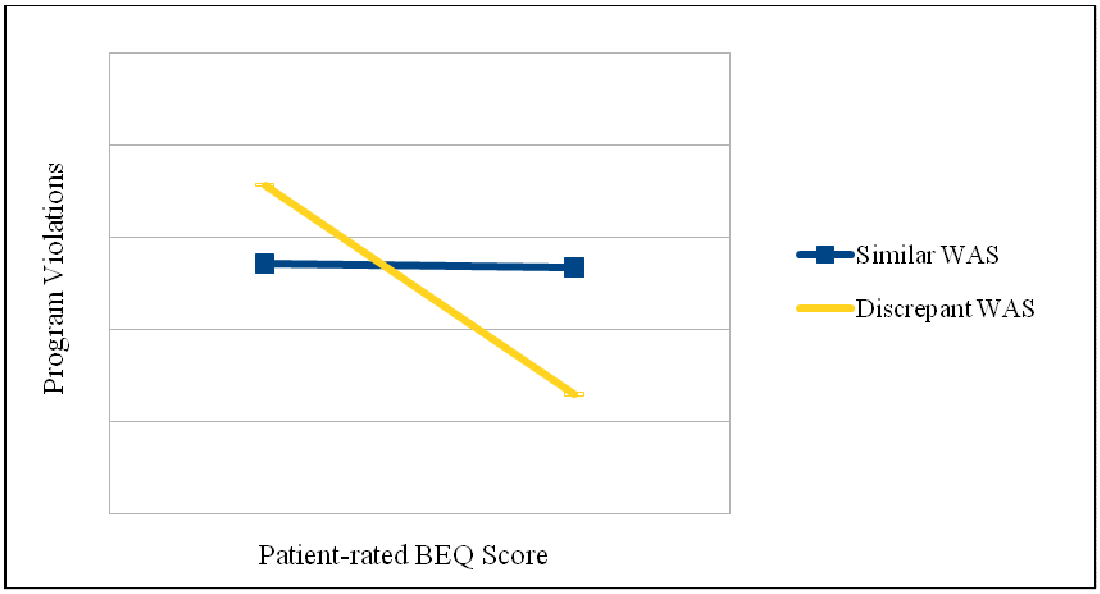
	Program A	Program B
GAF admit score	**37.28 (12.49)**	**44.35 (9.76)**
BPRS admit score	27.39 (8.44)	23.75 (5.38)
GAF recent score	50.42 (9.17)	55.20 (7.85)
BPRS recent score	**24.68 (4.75)**	**20.55 (2.95)**
LOFA recent level	**1.33 (.62)**	**1.89 (.83)**
Length of hospital stay[a]	**16.32 (18.76)**	**27.21 (17.63)**
Length of program stay[a]	9.97 (12.40)	16.20 (15.66)
Program violations	**11.78 (11.14)**	**3.45 (7.64)**

Note. GAF = Global Assessment of Functioning; BPRS = Brief Psychiatric Rating Scale; LOFA = Level of Functioning Assessment. Values in bold represent statistically significant findings.

[a] In months.

Figure 2

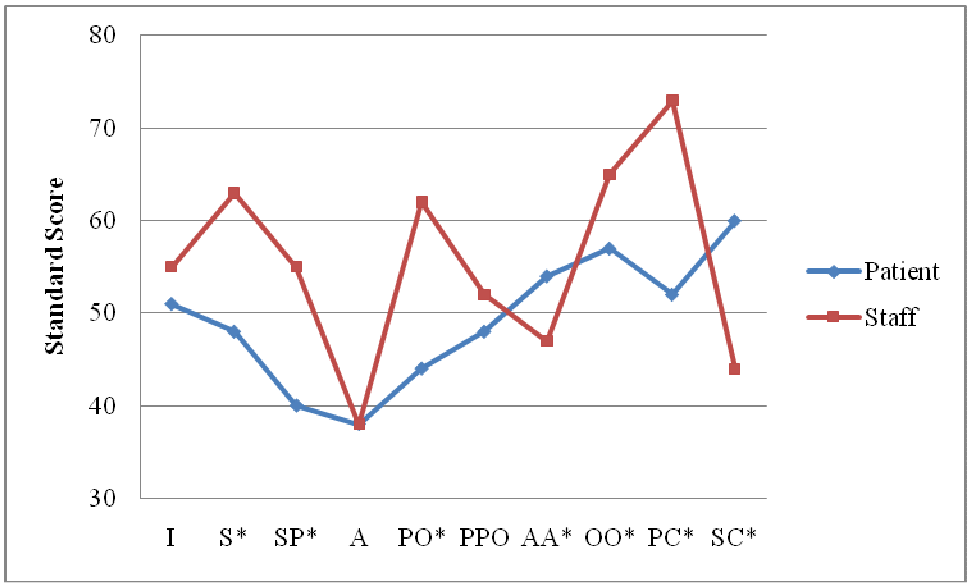
Effect of Patient BEQ by WAS Relationship to Predict Program Violations



Note. WAS = Ward Atmosphere Scale; BEQ = Berkeley Expressivity Questionnaire. The WAS variable in this analysis was defined as the difference between patient and staff scores on the Relationship domain.

Figure 3

WAS Patient-Staff Discrepancies - Program A

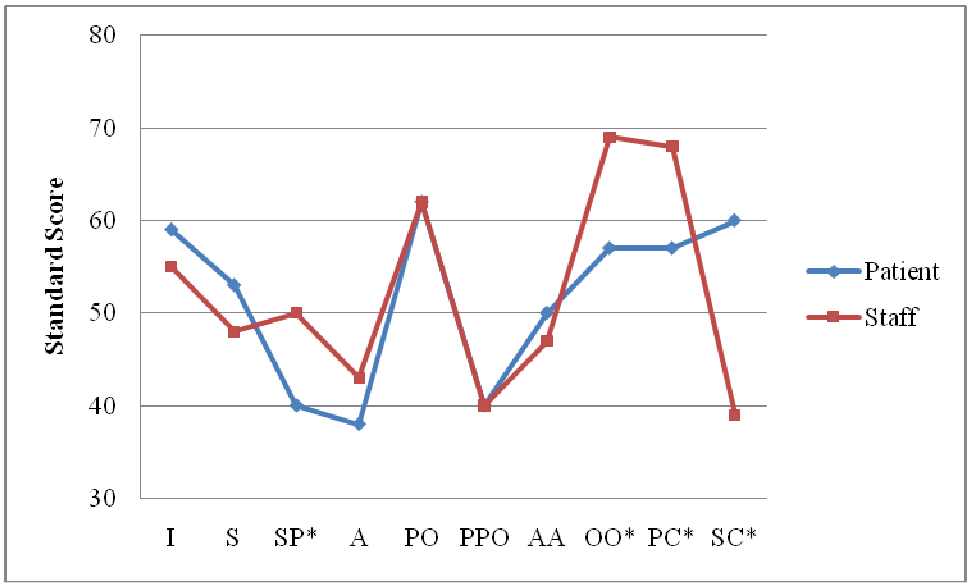


Note. WAS = Ward Atmosphere Scale; I = Involvement; S = Support; SP = Spontaneity; A = Autonomy; PO = Practical Orientation; PPO = Personal Problem Orientation; AA = Anger and Aggression; OO = Order and Organization; PC = Program Clarity; SC = Staff Control. The Relationship domain consists of I, S, and SP subscales.

* $p < .05$

Figure 4

WAS Patient-Staff Discrepancies - Program B



Note. WAS = Ward Atmosphere Scale; I = Involvement; S = Support; SP = Spontaneity; A = Autonomy; PO = Practical Orientation; PPO = Personal Problem Orientation; AA = Anger and Aggression; OO = Order and Organization; PC = Program Clarity; SC = Staff Control. The Relationship domain consists of I, S, and SP subscales.

* $p < .05$