INCONSISTENCIES AMONG PARANOID FUNCTIONING, PREMORBID ADJUSTMENT AND CHRONICITY: A QUESTION OF DIAGNOSTIC CRITERIA?

A Thesis presented to
the faculty of the Department of Psychology
University of Houston--University Park

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

By
Donna J. Sorensen
November, 1986

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ABSTRACT

Despite the widely held belief that paranoid behavior is associated with good premorbid adjustment, low chronicity and high current functioning in psychiatric inpatients, inconsistencies in the literature suggest that supportive evidence may be an artifact of the measurement model commonly employed to index paranoid status. This hypothesis was tested with 497 nonorganic psychiatric inpatients selected from 19 treatment units by employing a dimensional/cumulative model versus two forms of the traditional predominance-defined class model for indexing paranoid and nonparanoid status. As hypothesized, results found that paranoid behavior per se - - ie. measured by a dimensional/cumulative model - - is not indicative of higher functioning and associated relationships, but rather simply reflects a narrower class of problem behavior. Only when status was determined on the basis of the predominance of the defining class of behavior did paranoid subjects demonstrate better premorbid adjustment, lower chronicity, and higher levels of functioning than nonparanoid subjects. Not only were the latter relationships due to an artifactual exclusion of more disabled subjects from paranoid groups but conceptually relevant relationships were also obscured. Serious problems exist in the use of information obtained from traditional class models for either theoretical or practical purposes.

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CHAPTER I

INTRODUCTION

Paranoid functioning, "premorbid" adjustment, and chronicity have been among the most extensively investigated variables in research with hospitalized psychiatric patients, particularly those labelled schizophrenic. Relationships between individual differences and/or subtypes based on each of these three sets of variables and a number of behavioral, perceptual, cognitive, psychophysiological, and treatment response parameters have regularly been observed in research conducted over the last 30 years (see Berkowitz, 1981; Magaro, 1981; Neale & Oltmanns, 1980; Ritzler, 1981; Zigler & Glick, 1984). In some cases, multivariate typing based on two or more of these variables (i.e. paranoid/nonparanoid, good/poor premorbid adjustment, acute/chronic) has allowed for greater differentiation of performance on a number of theoretically and clinically relevant factors than has been obtained when typing has been based on only one dimension (e.g., Goldstein, 1970; Silverman, 1967). In addition, significant relationships between paranoid functioning, premorbid adjustment, and chronicity have been demonstrated in a number of studies (Goldstein, 1978; Goldstein, Held, & Cromwell, 1968; Zigler & Levine, 1973). With the exception

of classifications based on specific and detailed measurement of level and type of current functioning, subtyping based on these three dimensions has generally provided greater differentiation and prediction of performance than has been afforded by a host of other variables, including standard psychiatric diagnoses. To the extent that such findings are reliable, valid, and generalizable, they can provide important information for a variety of placement and disposition decisions in the ongoing operations of mental health services, represent critical control factors to be taken into account in program evaluation and research, aide in the theoretical understanding of psychopathology, and assist in the development of effective treatment interventions (see Paul & Mariotto, 1986).

Relationships to Level of Functioning

Premorbid adjustment and chronicity refer to patient characteristics based on historical factors which are theoretically and empirically related to patient level of functioning or degree of impairment. In contrast, paranoid functioning is defined in terms of current behavior and is based upon a particular conceptual class of performance. Clinical and scale definitions of paranoid functioning typically require presence of delusional beliefs--especially

persecutory ones--and, depending on the underlying theory, may also specify overcriticalness, rigidity, hostility, resentment, hypersensitivity, and hallucinations as inclusion criteria. Differences between subjects categorized as paranoid or nonparanoid have been obtained across a number of variables which taken together support the clinical lore that paranoid groups are higher functioning than nonparanoid groups (Meissner, 1981; Zigler, Levine, & Zigler, 1976). For example, a number of investigations have shown that compared to nonparanoid subjects, paranoid subjects evidence less formal thought disorder (Chapman & Chapman, 1973), appear less intellectually impaired (Magaro, 1981; Payne, 1961), and are less withdrawn with fewer bizarre behaviors (Lang & Buss, 1965; Tsuang & Winokur, 1974).

Studies examining the relationship between paranoid functioning, premorbid adjustment, and chronicity have also provided evidence to support the conclusion that paranoid subjects are higher functioning than nonparanoid subjects. Premorbid adjustment refers primarily to the level of social competence obtained by an individual prior to hospitalization, as measured by items reflecting prior interpersonal and occupational status (Strauss, Kokes, Klorman, & Sachsteder, 1977). Additional premorbid factors, such as type of onset (i.e. sudden or gradual) and presence

or absence of precipitating events, have also frequently been included in scale definitions of premorbid adjustment (e.g., see Garmezy, 1970). Premorbid adjustment has remained the single best predictor of chronicity for almost three decades (Cromwell, 1975). That is, research has demonstrated that regardless of treatment, individuals with a good premorbid adjustment history tend to experience fewer and briefer hospitalizations than those with a poor premorbid adjustment history. Inpatient groups differing in both length of hospitalization and premorbid adjustment show clear differences in current level of functioning, with poor premorbid and chronically hospitalized groups demonstrating both higher levels of maladaptive behavior and lower levels of adaptive functioning (Paul, 1987).

Numerous studies have also suggested that status on the paranoid functioning dimension interacts with premorbid adjustment and chronicity variables. In reviewing studies examining the relationship between paranoid functioning and premorbid adjustment, Ritzler (1981) concluded that "paranoia is directly related to good premorbid adjustment (pg. 710)." Specifically, these studies found that good premorbid subjects were either paranoid or nonparanoid, while poor premorbid subjects were primarily nonparanoid (Goldstein et al., 1968; Zigler & Levine, 1983). The paranoid

functioning/premorbid adjustment relationship appeared to be strongest among acute samples--moderate or insignificant relationships between paranoid functioning and premorbid adjustment were frequently obtained among chronic samples. Researchers have suggested that the reduction or absence of a paranoid functioning/premorbid adjustment relationship among chronic samples may in part be due to the underrepresentation of paranoid subjects in those samples (Cromwell, 1975). Several investigations have demonstrated that paranoid subjects experience fewer and briefer hospitalizations than nonparanoids (Ritzler, 1981; Sommer & Whitney, 1961; Strauss, Sirotkin, & Grisell, 1974). In addition, Depue & Woodburn (1975) reported a retrospective study in which 50% of those subjects with a first admission diagnosis of paranoid schizophrenia were rediagnosed nonparanoid at a later admission, suggesting that the underrepresentation of paranoid subjects among chronic samples might be a consequence of the reduction or loss of paranoid behavior with increasing chronicity. Though differing in how they account for the relationship between paranoid functioning and chronicity, these studies provide evidence of a negative correlation between paranoid functioning and chronicity.

Inconsistencies in the Literature

Despite a substantial body of literature demonstrating paranoid/nonparanoid differences which support the widely accepted belief that paranoid groups are higher functioning with better prognosis than nonparanoid groups, troubling inconsistencies and contradictions exist. Failures to replicate are very common as are failures to obtain significant paranoid/nonparanoid differences on variables conceptually similar to those on which differences have been found. Numerous studies have not obtained expected paranoid/nonparanoid differences in perceptual and cognitive performances (see Berkowitz, 1981); degree of withdrawal (Venables & Wing, 1962); and level of apathy, retardation, and motor and conceptual disorganization (Evans, Goldstein, & Rodnick, 1973). In addition, several investigations have failed to obtain a significant relationship between paranoid functioning and premorbid adjustment (Eisenthal, Harford & Solomon, 1972; Johannsen, Friedman, Leitschuh, & Ammons, 1963; Sanes & Zigler, 1971) or between paranoid functioning and components of premorbid adjustment, such as occupational and educational level (Lewine, Watt, & Fryer, 1978). Furthermore, insignificant or positive correlations between paranoid functioning and length of hospitalization have been obtained in some studies (Neale, Kopfstein, & Levine, 1972)

and between paranoid functioning and number of rehospitalizations in others (Evans et al., 1973). These discrepant findings have not only led some researchers to challenge the notion that paranoid groups are higher functioning than nonparanoid groups, but also to question the utility of the paranoid functioning dimension in research with psychiatric inpatients(Berkowitz, 1981).

A Possible Basis for Inconsistencies

Recent reviews of the literature on paranoid functioning have either directly proposed or implied that inconsistent and contradictory results across studies may in part be a consequence of the wide range of operational criteria for paranoid functioning that have been used, as well as the carelessness with which criteria have been specified and reported. These reviews have called attention to the broad range of diagnostic criteria employed (Berkowitz, 1981; Ritzler & Smith, 1976); the low correlation among different classification criteria (Calhoun, 1971; Neale et al., 1972; Ritzler & Smith, 1976); and the frequent lack of specification of criteria (Ritzler & Smith, 1976).

Failure to specify criteria poses the greatest obstacle to replication efforts as well as to attempts to reconcile discrepant findings. In reviewing articles on paranoid

schizophrenia referenced in the January, 1971 through July, 1975 Psychological Abstracts, Ritzler & Smith (1976) judged two-thirds to be inadequate for scientific communication as a consequence of their failure to specify subtyping criteria. Included as unsatisfactory were those studies in which diagnosis was unspecified and those in which subtyping was based on staff or hospital diagnosis or on diagnosis confirmed by two clinicians without any reference to the actual criteria. In addition, reliability data were almost never reported. A survey of articles referenced in Psychological Abstracts following the period covered by Ritzler & Smith's review found that one-third of the articles fell into one or more of their three "unsatisfactory" groups. The remaining two-thirds referenced standard scales and checklists, cited official clinical or research classification systems, or listed specific inclusion and exclusion criteria. Examples of standard scales and checklists included the Maine Scale (Vojtisek, 1976), the Short Scale for Rating Paranoid Schizophrenia (Venables & O'Connor, 1959), and the Symptom/Sign Inventory (SSI; Foulds, 1965). Frequently referenced clinical or research classification systems included the second and third editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM-II & DSM-III; American Psychiatric Association [APA],

1968, 1980), the ninth revision of the International Classification of Diseases (ICD-9; World Health Organization, 1978), and the Research Diagnostic Criteria (RDC; Spitzer, Endicott, & Robins, 1978). This review suggests that there has been an increase in the reporting of criteria for paranoid functioning in articles published since the Ritzler & Smith survey. However, recent articles continue to be characterized by a failure to report reliability data and by wide variations in the criteria used to index paranoid functioning.

Measurement Models Used to Assess Paranoid/Nonparanoid Status

A review of studies conducted over the last 30 years in which criteria for paranoid functioning have been specified suggests that findings may be related to paranoid functioning in a systematic and identifiable way on the basis of the measurement model employed. Most classification operations for determining paranoid/nonparanoid status reflect either a class model, requiring predominance of paranoid behavior (paranoid-predominance criteria), or a cumulative model, in which paranoid status depends only on the demonstration of a specified level of paranoid behavior (nonpredominance criteria). Class and cumulative models for deriving scores to index phenomena differ both in terms of the procedures and

the underlying assumptions associated with them (see Paul, 1986; Wiggins, 1973).

Class model. In the class model, the phenomena of interest are judged to be "present" based on the simultaneous occurrence of a specified pattern of items or component scales. The class model for indexing phenomena is more often associated with a categorical rather than dimensional classification strategy. Accordingly, an individual is assigned to a single category or given a particular diagnosis (e.g. paranoid/nonparanoid) on an all-or-none basis with the assumption that the categories summarize the relevant information about that individual (Blashfield, 1984). In its strongest form, this classification approach involves the sorting of individuals into taxanomic categories that are viewed as in some sense "really in nature" (Meehl & Golden, 1982). The individual items that comprise the scale or combination of subscales to index the phenomena are often viewed as signs of a hypothetical internal disposition (e.g. trait or disorder). If the signs are present in the specified configuration for a given individual, that individual is said to have the internal disposition (see Paul, Mariotto, & Redfield, 1986).

Of particular significance for the present thesis is that most of the studies employing the class model for

deriving scores to index paranoid functioning require that only those subjects demonstrating a predominance of paranoid behavior may be assigned to the paranoid subgroup. In general, "paranoid" has been defined as present only when two conditions have been simultaneously met: (1) the amount of paranoid behavior displayed by the subject (number and/or intensity) has been judged to reach or exceed a specified cut-off point, and (2) the amount of paranoid behavior has been judged to be greater than that of other "nonparanoid" problem behavior. In other words, the decision rules for assigning subjects to paranoid and nonparanoid groups use predominance criteria that include not only the amount of paranoid problem behavior but the relative amount of paranoid to nonparanoid behavior as well.

In most instances, paranoid-predominance criteria greatly restrict the amount of nonparanoid behavior that may be demonstrated by subjects classified as paranoid. This restriction is accomplished in two ways. Either the criteria call for minimal or no demonstration of nonparanoid problem behavior or they require that subjects demonstrate a greater amount of paranoid behavior than nonparanoid behavior.

The majority of investigations of paranoid functioning have implicitly or explicitly employed a class model requiring predominance of paranoid behavior for the

paranoid/nonparanoid classification of subjects. Among the assessment systems which specify paranoid-predominance criteria in the classification of paranoid functioning are: (1) all three editions of the Diagnostic and Statistical Manual of Mental Disorders (APA, 1952, 1968, 1980) and; (2) Tsuang & Winokur's (1974) system for clinically differentiating hebephrenic and paranoid schizophrenia.

Recently, Magaro and his colleagues (see Magaro, Abrams, & Cantrell, 1981) developed a system for classifying subjects which represents a variation on the above described predominance criteria. Employed primarily in research investigating paranoid/nonparanoid differences in perceptual and cognitive abilities, Magaro's system extends the predominance requirement to the selection and assignment of subjects to the nonparanoid subgroup, such that both paranoid and nonparanoid groups are predominance-defined (paranoid/nonparanoid-predominance criteria). Scores on both the paranoid and nonparanoid subscales of the Maine Scale (Vojtisek, 1976) are used to classify subjects. Items on each subscale are summed to yield total subscale scores that may range from 5-25 points. Subjects are classified as paranoid only if they score at or above 12 points on the paranoid subscale and obtain a score at least three points higher on that scale than they score on the nonparanoid

subscale. Likewise, subjects are classified as nonparanoid only if they score at or above nine points on the nonparanoid subscale and obtain a score at least three points higher on that scale than they obtain on the paranoid subscale. Subjects scoring under the cut-off points on both subscales and/or demonstrating equal or similar amounts of paranoid and nonparanoid behavior are excluded from study. Thus, paranoid/nonparanoid-predominance criteria not only restrict the amount of nonparanoid problem behavior that may be demonstrated by subjects classified as paranoid, but they also restrict the amount of paranoid behavior that may be demonstrated by subjects classified as nonparanoid.

Cumulative model. A minority of investigators have employed a cumulative model for deriving scores to index paranoid functioning. In the cumulative model, the amount of the phenomena of interest, rather than its' presence or absence, is directly indexed by summing the number and/or intensity of items belonging to the relevant conceptual category. This measurement model is frequently associated with dimensional rather than categorical classification approaches, and with the assumption that the individual items that comprise the scale are samples of relevant classes of performance rather than signs of internal dispositions. In contrast to the class approach where individuals are assigned

to a category or diagnostic class on an all-or-none basis, the dimensional approach typically employs more-or-less continuous scores on variables for assessing and comparing individuals along each of the phenomena or dimensions of interest. When categories are formed on the basis of cumulative models, cut-off points based only on the amount of the particular phenomenon of interest are typically used.

Thus, scales comprised only of paranoid items are used to index paranoid functioning with the cumulative model. Subject assignment to paranoid or nonparanoid groups is based on the amount of paranoid behavior demonstrated, irrespective of amount or level of additional problem behavior. As such, the demonstration of a large amount of nonparanoid problem behavior would not preclude an individual's assignment to the paranoid group. In contrast to predominance criteria, nonpredominance criteria result in the assignment of subjects to the paranoid group based on the demonstration of paranoid behavior without the additional condition that such behavior predominates. Venables & O'Connor's (1959) Short Scale for Rating Paranoid Schizophrenia, the paranoid subscale of the Maine Scale when used alone (Vojtisek, 1975), and Rappaport's criteria for paranoid schizophrenia (Rappaport, Silverman, Hopkins, & Hall, 1971) are examples of scales specifying nonpredominance criteria for indexing paranoid functioning.

Additional examples of nonpredominance criteria for indexing paranoid functioning include those in which presence (rather than predominance) of delusions is specified, if no explicit attempt is made to control for amount of nonparanoid problem behavior.

Potential Problems with Predominance Criteria

A central difference between paranoid-predominance, paranoid/nonparanoid-predominance, and nonpredominance criteria, then, relates to the role nonparanoid problem behavior plays in the assessment and assignment of subjects to paranoid and nonparanoid groups. As a result of this difference, the three procedures are likely to produce incomparable subgroups. For example, unless paranoid and nonparanoid problem behavior is highly negatively correlated, the employment of paranoid-predominance criteria could lead to assigning subjects to nonparanoid groups even when they demonstrate a large amount of paranoid behavior. Theoretically, two individuals demonstrating the same level of paranoid functioning could receive opposing classifications because they differ in the amount of nonparanoid behavior demonstrated. In some cases, groups defined by paranoid-predominance criteria might differ more in terms of the amount of nonparanoid behavior they

demonstrate than in terms of their level of paranoid functioning. On the other hand, paranoid/nonparanoid-predominance criteria would be expected to result in subgroups which, on the average, differ in the amount of paranoid and nonparanoid problem behaviors they demonstrate. However, these "cleaner" subgroups would be accomplished at the expense of reducing the clinical utility of the system since subjects demonstrating moderate, but equivalent or similar levels of paranoid and nonparanoid problem behavior would be excluded from classification. In contrast to both predominance systems, the level of nonparanoid problem behavior demonstrated by subgroups categorized according to nonpredominance paranoid criteria would be free to vary, reflecting actual relationships between paranoid functioning and broader classes of problem behavior.

An examination of the items typically designated as nonparanoid suggests the impact predominance requirements might have in studies of paranoid functioning. Items representing a wide range of excesses, deficits and bizarre behavior may be included in nonparanoid subscales and/or specified as exclusion criteria for the paranoid designation. Deficits in self-maintenance and interpersonal or social functioning as well as excessive and/or bizarre affective, cognitive, and motoric behavior are commonly specified

nonparanoid problem behaviors. The demonstration of a substantial amount of such problem behavior not only defines a poor level of functioning but would be expected to be associated with poor premorbid adjustment and chronic status. Because predominance criteria place restrictions on the amount of such behavior subjects assigned to paranoid groups can demonstrate, the paranoid group would by definition be higher functioning than the nonparanoid group. In other words, paranoid/nonparanoid differences obtained in studies employing predominance criteria may simply reflect an artifact of measurement introduced through the requirement that paranoid groups demonstrate more paranoid behavior than other types of problem behavior. Therefore, the relationship between paranoid functioning and a variety of variables tapping overall level of functioning may be confounded by the amount of nonparanoid problem behavior while relationships to other clinically and theoretically relevant variables may be obscured.

Comparison of the results from studies employing either predominance or nonpredominance criteria provides suggestive evidence that criteria are related in specific ways to outcome. Namely, studies employing predominance criteria (paranoid-predominance or paranoid/nonparanoid-predominance) obtain findings that support the clinical lore that paranoid

groups are higher functioning and have better prognosis. Compared to nonparanoids, predominance-defined paranoids demonstrate fewer perceptual and cognitive deficits (Cox & Leventhal, 1978; Finkelstein, 1983; Magaro et al, 1981; Winokur, Morrison, Clancy, & Crowe, 1974), show fewer behavioral excesses and deficits (Tsuang & Winokur, 1974; Winokur et al., 1974), have a better premorbid adjustment (Goldstein, 1970; Goldstein et al., 1968; Neale et al., 1972), have briefer hospital stays (Strauss et al., 1974; Tsuang & Winokur, 1974) and fewer rehospitalizations (Strauss et al., 1974). In contrast, studies employing nonpredominance criteria either fail to obtain paranoid/nonparanoid differences or provide evidence suggestive of poorer functioning among paranoid subjects. Significant differences between paranoid and nonparanoid groups have not been obtained on a number of measures of perceptual and cogitive abilities (Otteson & Holzman, 1976; Wells & Leventhal, 1984) nor have studies demonstrated a significant relationship between these measures and scores on a paranoid subscale (Magaro et al., 1981). Investigations of paranoid functioning defined by nonpredominance criteria have also failed to demonstrate significant paranoid/nonparanoid differences in severity of behavioral excesses and deficits (Evans et al., 1973) and/or have

found high levels of behavioral excesses and deficits among subsets of paranoid subjects (Lorr, 1966; Evans et al., 1973). In addition, such studies have failed to obtain a significant relationship between paranoid functioning and premorbid adjustment (McDowell, 1980; Neale et al., 1972), have found higher levels of paranoid functioning among poor premorbids than good premorbids (Goldstein, 1970), or have obtained high ratings of paranoid functioning among poor acutes and good premorbid chronics. Finally, investigations employing nonpredominance criteria have either failed to demonstrate a relationship between paranoid functioning and length of hospitalization (Neale et al., 1972; Eisenthal et al., 1972), or have demonstrated a positive relationship between paranoid functioning and number of rehospitalizations (Evans et al., 1973) and length of hospitalization (Neale et al., 1972).

The study by Goldstein (1970) is particularly noteworthy because it is one of the few that employed both paranoid-predominance and nonpredominance criteria. Goldstein reported a relationship between DSM-II diagnosis of paranoid schizophrenia and good premorbid adjustment. However, ratings of paranoid thought and perceptual distortion from the Inpatient Multidimensional Psychiatric Scale (IMPS; Lorr, McNair, Klett, & Lasky, 1962) were higher

among poor premorbid subjects than among good premorbid subjects. Predominance-defined paranoid functioning (DSM-II) was associated with good premorbid adjustment while paranoid functioning indexed by nonpredominance criteria (IMPS factors) was associated with poor premorbid adjustment.

The study by Magaro and his colleagues (Magaro et al., 1981) is also noteworthy as it provides data on group differences in perceptual and cognitive abilities as well as on the relationship between these variables and individual paranoid and nonparanoid subscale scores. The Maine scale was employed to select and assign subjects to paranoid and nonparanoid groups according to the paranoid/nonparanoid-predominance criteria outlined earlier. Compared to paranoids, nonparanoids performed more poorly on the Expanded Similarities Test as well as on measures of IQ, reaction time, total recall of word associations and recall to both weak and strong associates. Interestingly, correlational analyses suggested that the relative presence or absence of nonparanoid problem behaviors accounted for these group differences. That is, scores on each of the task variables were significantly correlated with nonparanoid subscale scores but were unrelated to scores on the paranoid subscale.

Summary and Significance of the Problem

In summary, numerous studies exist which challenge the widely accepted belief that paranoid behavior per se is indicative of higher overall levels of functioning, better premorbid history, and less chronic prognosis than broader classes of problem behavior. Examination of a number of studies in the literature suggests that an association exists between the type of measurement model employed to index paranoid status and the obtained relationship between that dimension and a number of variables related to overall level of functioning. Observed paranoid/nonparanoid differences in groups defined by predominance criteria support the clinical lore that paranoids are higher functioning with a better premorbid history and prognosis than nonparanoids, while groups defined by nonpredominance criteria tend not to demonstrate these differences. Items typically employed to index nonparanoid problem behavior both define broader classes of maladaptive behavior and correlate with numerous measures tapping overall level of functioning which may further moderate relationships between premorbid adjustment and chronicity. To the degree that predominance criteria place explicit or inadvertant restrictions on the amount of nonparanoid problem behavior a subject categorized as paranoid may demonstrate, paranoids will by definition

exhibit better functioning and prognosis than nonparanoids Under these circumstances, observed differences may be related to amount of nonparanoid problem behavior rather than to level of paranoid behavior. Furthermore, in this case actual relationships between paranoid functioning and other clinically and theoretically relevant variables might be obscured. If such an artifact is operating, confusion and misinformation resulting from these studies would have serious practical consequences, leading to inappropriate decisions and actions regarding the placement, disposition and treatment of psychiatric inpatients.

Although the literature is suggestive of the relationship between the measurement model for indexing paranoid status and observed relationships between that variable and numerous measures tapping overall level of functioning, no study has provided an explicit test of this hypothesis. The opportunity was presented to directly address the issue by the existence of a large data set which included information on premorbid adjustment and chronicity, as well as objective measures of current functioning in a large sample of psychiatric inpatients drawn from several different treatment units and facilities. Further, the existence of a common rating scale whose factor scores have been used in investigations of paranoid functioning

(Psychotic Inpatient Profile; Lorr & Vestre, 1968) made possible the formation of paranoid and nonparanoid subscales covering the content domains commonly used in previous studies of paranoid/nonparanoid differences.

In the study reported below, cut-off scores on respective subscales and a quantified index of predominance were employed to form paranoid and nonparanoid groups according to predominance (paranoid-predominance and paranoid/nonparanoid-predominance) and nonpredominance criteria from the same sample of psychiatric inpatients. These three sets of subgroups were then compared on measures of premorbid adjustment, chronicity, and current functioning to determine if the artifactual relationships suggested by the earlier review in fact obtained. Correlational analyses were also undertaken to provide information on the relationship between scores on the paranoid and nonparanoid subscales as continuous measures and the other variables. It is hypothesized that the composition of paranoid and nonparanoid subgroups as well as the obtained relationships between paranoid/nonparanoid status, premorbid adjustment, chronicity, and current level of functioning will vary according to the type of classification criteria employed to index paranoid functioning. Specifically, it is predicted that compared to nonparanoid groups, predominance-defined

paranoid groups will demonstrate better premorbid adjustment, less chronicity, and higher levels of current functioning whereas such relationships will not obtain for the paranoid group defined by nonpredominance criteria. Further, it is predicted that the most extreme differences will be obtained between predominance-defined paranoid/nonparanoid groups as a result of the overrepresentation of more severely disabled subjects in the predominance-defined nonparanoid group as well as the artifactual overrepresentation of less severely disabled subjects in the predominance-defined paranoid groups as compared to nonpredominance-defined groups.

CHAPTER II

METHOD

All data for the present investigation were collected as part of a multi-institutional normative-validity study of observational assessment instruments. In the overall normative-validity study, data were obtained from 35 treatment units representing the full range of available residential treatment programs and populations of mentally disabled adults in public mental hospitals, mental health centers, and community residential facilities in the state of Illinois (see Paul, 1987, for a complete description of data collection design and procedures). Although data were collected on both staff and residents at each site in the parent study, only resident data were selected for this investigation. Full-week observational data were collected by trained independent noninteractive observers on resident functioning. In addition, clinical staff provided standardized rating-scale data on residents at each site. Finally, archival data from medical records provided information on relatively stable personal-social characteristics of the inpatient sample. Prior to data collection at each site, meetings were held to explain the purposes and procedures of the normative-validity study,

including staff and resident anonymity.

Variables and Instruments

Paranoid Subscale. In the parent study, the 96 items of the Psychotic Inpatient Profile (PIP) (Lorr & Vestre, 1968) were completed on each resident by one day- and one evening-shift clinical staff member in order to maximize the representativeness of the times and situations covered. In the present study, the scores on 3 of 12 PIP higher-order factors were used to form the paranoid subscale, paralleling the content domain found in commonly employed measures of paranoid functioning (e.g. see Maine Scale, Vojtisek, 1976; Short Scale for Rating Paranoid Schizophrenia, Venables & O'Connor, 1959; SSI, Foulds, 1965). The Paranoid Projection, Grandiosity, and Perceptual Distortion factors were combined to create a 19-item paranoid subscale, with Paranoid Scores derived by summing the item scores and multiplying the total by two, resulting in a possible range of 0 to 114 points. The intraclass interrater reliability yielded r = .57 for the preselected sample employed in the present study (see Subject Selection later). While Paranoid Scores should provide maximum validity of ratings, the interrater reliabilities are underestimated due to ratings being based upon different settings and time periods.

Nonparanoid Subscale. Four PIP higher-order factors were used to form the nonparanoid subscale, paralleling the content domain found in commonly employed measures of nonparanoid problem behavior in the paranoid functioning literature (e.g. see above references). The Anxious Depression, Care Needed, Psychotic Disorganization, and Retardation factors were combined to yield a 35-item nonparanoid subscale, with Nonparanoid Scores derived by summing the individual item scores, resulting in a possible range of 0 to 105 points. The intraclass interrater reliability calculated between day and evening shift raters yielded r = .76 for the preselected sample employed in the present study. As with Paranoid Scores, Nonparanoid Score interrater reliabilities are underestimated due to ratings covering day and evening shifts.

Premorbid Adjustment. Trained record readers transcribed archival data from medical records to obtain information on a number of personal-social and/or demographic variables in the parent study. Overlapping samples of 20 records at each site found the agreement of transcriptions of archival data to exceed 99 % in all cases. A premorbid adjustment scale similar to the commonly employed Social Competence Scale (Phillips, 1968) was created with a subset of these variables. Premorbid Adjustment Scores were derived by

combining the individual records obtained on years of education, marital status, nature of symptom onset (gradual-sudden; presence of precipitating factors) and age of first hospitalization, resulting in a scale with a theoretical range of 5 to 19 points (for a complete description of components and scale characteristics, see Paul, 1987).

Chronicity. Archival data were also used to index chronicity, which was defined as the total number of lifetime days in mental hospitals (accumulated days in hospital). This variable was selected on the basis of regression analyses that found it to account for the majority of variance among a number of variables reflecting prior treatment history and chronicity (for details, see Paul, 1987).[1]

Current Functioning. The Time-Sample Behavioral Checklist (TSBC) provided objective data on individual resident functioning. Trained observers recorded the presence or absence of 69 low-inference codes for each resident over stratified hourly time-samples covering 16 hours per day for a full seven-day week (see Paul, 1987; Power, 1979). Computer summarization provides scores indexing the actual rate of occurrence of each code as well as higher-order scores that group conceptually similar discrete behavior codes into indexes that parallel those

obtained from standardized psychiatric interviews and rating scales. In the present study, the highest-level total scores, Total Appropriate Behavior and Total Inappropriate Behavior Indexes, were employed as the primary measures of level of current functioning.

In addition, more fine-grained analyses of inappropriate behavior were provided by scores on the three component indexes within the Total Inappropriate Behavior Index--Bizarre Motor Behavior, Bizarre Facial & Verbal, and Hostile-Belligerence Indexes. Behaviors coded under Bizarre Motor Behavior include rocking, repetitive-stereotypic movements, posturing and other motor behavior frequently included as indications of "schizophrenic" disorganization and incorporated in scale definitions of nonparanoid problem behavior. Included in the Bizarre Facial & Verbal Index are verbalized delusions, hallucinations, talking to self and additional behaviors indicative of cognitive disorganization. Finally, among the behaviors coded by the Hostile-Belligerence Index are screaming, swearing and verbal and physical intrusion. Behaviors coded under both the Bizarre Facial & Verbal, and Hostile-Belligerence Indexes are frequently associated with and/or included in scale definitions of paranoid functioning.

Due to the low level of inference required by observers

using this system and to the high levels of observer training, the TSBC has shown excellent interobserver reliability. For the units from which the sample used in the present investigation was drawn, $\underline{r} > .99$ average intraclass reliability coefficients were obtained for all TSBC scores employed.

Subject Selection

The subjects for the present investigation were preselected from the total data set of 1205 subjects comprising the overall normative-validity sample to include only residents of public mental hospitals and inpatient units of mental health centers with "mentally ill" diagnoses, excluding all with diagnoses of organicity, mental retardation and alcohol or drug abuse recorded in the charts. In addition, subjects from community residential facilities were excluded due to the absence of recorded information that would allow for the identification of individuals with serious organic impairments. Finally, a subset of subjects meeting the above inclusion criteria were excluded from the present sample because they had been assessed on an instrument other than the PIP.

A total of 497 subjects drawn from 19 treatment units had complete data and met the above preselection criteria.

Although somewhat more resticted in range of functioning, this sample was generally comparable to the larger normative nonorganic sample within public mental institutions from which it was drawn. Subjects for the present study ranged in age from 18 to 69 years (M=36.3 years), 44% were male, 35% were black, mean education was 10.9 years, and the mean score on the Hollingshead Socio-Economic Index (Hollingshead & Redlick, 1958) was 60.8, indicating low socioeconomic status. Ninety percent of the sample carried psychotic diagnoses (83% Schizophrenic and related), with the remainder falling into neurotic and lesser disorder categories. Premorbid Adjustment Scores ranged from 5-19, with M=10.9 indicating a low to intermediate level of premorbid adjustment in the total group. The sample was fairly evenly divided with respect to acute/chronic status, with 54 % falling in the acute range as defined by having spent 90 or fewer continuous days, and less than 730 total lifetime days, in mental hospitals. Previous admissions ranged from 0 to 25 (M=4.1), with 3 days to 39 years of continuous hospitalization (M=2.1 years, Mdn=51 days) and from 3 days to 50 years of accumulated time in mental hospitals (M=4.3 years; Mdn=1 year) at the end of the assessment week. Individual subject TSBC scores ranged from 0.457 to 4.318 (M=2.7481; Mdn=2.721) for the Total Appropriate Behavior Index and from 0 to 1.815 (M=.5002;

Mdn=.444) for the Total Inappropriate Behavior Index. Individual subject scores on the TSBC component inappropriate behavior indexes ranged from 0 to 1.458 (M=.3953; Mdn=.341) for Bizarre Motor Behavior, from 0 to .968 (M=.0445, Mdn=.011) for Bizarre Facial & Verbal, and from 0 to .054 (M=.0009, Mdn=0) for Hostile-Belligerence Indexes. Paranoid Scores ranged from 0 to 86 (M=17.1; SD=15.64) while Nonparanoid Scores ranged from 0 to 77 (M=19.1; SD=14.80).

Paranoid/Nonparanoid Classification Rules. The one-sided 95% confidence intervals for the total preselected sample on the paranoid and nonparanoid subscales (based on each scale's standard error of measurement) were established as cut-off scores to insure positive evidence of the presence of paranoid and/or nonparanoid problem behavior. This amounted to a score of 17 on the paranoid subscale and 12 on the nonparanoid subscale. The one-sided 95% confidence interval based on the standard error of the difference between scores on the paranoid and nonparanoid subscales was established as the number of points required to indicate predominance. This resulted in a difference score of 14 points. Nonpredominance-defined paranoid and nonparanoid subgroups were formed by assigning all subjects scoring at or above 17 on the paranoid subscale to the paranoid group, with the remainder of the subjects assigned to the nonparanoid group.

Subgroups defined according to paranoid-predominance criteria were formed by assigning all subjects scoring at or above 17 points on the paranoid subscale and at least 14 points higher on that scale than on the nonparanoid subscale to the paranoid group. Subjects not meeting these criteria were assigned to the nonparanoid group only if they scored at or above the cut-off point on the nonparanoid subscale. Thus, subjects failing to score at or above the cut-off points on one or both of the subscales were excluded from classification employing paranoid-predominance criteria. Finally, subgroups defined according to paranoid/nonparanoid-predominance criteria were formed by including only those subjects that were predominant on one of the scales: subjects were assigned to the paranoid group if they scored at or above 17 on the paranoid subscale and at least 14 points higher on that scale than on the nonparanoid subscale; subjects were assigned to the nonparanoid group if they scored at or above 12 on the nonparanoid subscale and at least 14 points higher on that scale than on the paranoid subscale (subjects scoring between 12 and 14 on the nonparanoid scale required a "0" Paranoid Score for inclusion).

Data Collection Procedures

Professional observers were present on each unit for 10 consecutive days, with day- and evening-shift observers covering all patient waking hours. The first three days were spent familiarizing observers with the unit, acclimating patients and staff to the presence of observers and collecting a reliability sample of concurrent TSBC observations on a full shift for all observer pairs. During the remaining 7-day period, hourly observations were made on the TSBC,time-sampling 16 waking hours each day. Excluding illnesses, passes, and days absent due to admission or discharge during the assessment week, the mean number of complete observations for patients included in the study was 68.8 (SD=24.32). Midway through the week, observers traded shifts. At the end of the assessment week, observers collected biographical data on each patient from on-site medical records, with independent observer pairs overlapping across 20 records on each unit to insure reliability of the record checking. Data obtained from the on-site medical records for each resident were then compared for accuracy (validity) to that provided by a centralized Management Information System (MIS). PIP ratings for each patient were also obtained at the end of the assessment week. In order to increase the validity of these ratings, one day- and one

evening-shift clinical staff member provided ratings on each patient, selecting the staff who were most familiar with specific patients as the raters. Raters were instructed to complete the instrument based on resident behavior and self-report during the three days preceding the rating. These three days were overlapped by the TSBC data-collection period (see Paul, 1987, for details of all procedures).

CHAPTER III

RESULTS

Intercorrelations among all variables were first examined to determine whether the consistent relationships reported in the literature between premorbid adjustment, chronicity, and patient level of functioning were obtained among the 497 subjects in the present study. Although of a lower magnitude than those obtained among the full normative nonorganic sample within public mental institutions, the intercorrelations found the expected relationships (see Table 1). That is, subjects with a poorer premorbid history tended to be more chronic and to demonstrate poorer overall functioning in terms of displaying more maladaptive and fewer adaptive behaviors. Surprisingly, Accumulated Days in the Hospital and the Inappropriate Behavior Index were not significantly related, suggesting that in the present sample, deficits in adaptive behavior related more highly to staying in and/or returning to the hospital than did excesses in maladaptive behavior.

In spite of the more restricted range of functioning in the present sample, the pattern of intercorrelations among Paranoid and Nonparanoid Scores was consistent with the proposal that paranoid functioning and nonparanoid problem

Table 1

Intercorrelations Between All Variables for Total Preselected Sample (N=497)

Measure	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Premorbid Adjustment	-	-.313*	.002	-.191*	.183*	-.154*	-.117*	-.076	.009
2. Accumulated Days In Hospital		-	-.068	.244*	-.125*	.017	.043	.044	-.028
3. Paranoid Score			-	.404*	-.061	.055	-.001	.126*	.148*
4. Nonparanoid Score				-	-.370*	.305*	.218*	.282*	.121*
TSBC Indexes									
5. Total Appropriate Behavior					-	-.720*	-.712*	-.192*	-.078
6. Total Inappropriate Behavior						-	.907[a]*	.402[a]*	.044[a]
7. Bizarre Motor Behavior							-	.125*	-.042
8. Bizarre Facial & Verbal								-	.132*
9. Hostile-Belligerence									-

[a]part-whole correlations

*Individual Pearson Product-Moment Correlations different from zero, $p < .01$.

behavior represent classes of problem behavior which differ primarily in breadth rather than kind. That is, the Nonparanoid Score relates in expected directions to all historical and current functioning variables, with the pattern of relationships indicative of a broad class of maladaptive behavior that defines and/or is associated with a low level of functioning. The Paranoid Score, in contrast, relates significantly only to the Nonparanoid Score and to those TSBC component indexes directly relevant to paranoid functioning; Paranoid Scores per se were not related to higher levels of functioning on any measure. Rather, these relationships indicate that when dimensionally measured, paranoid functioning represents a relatively narrower class of problem behavior which is unrelated to premorbid adjustment, chronicity, or adaptive functioning.

Impact of Decision Rules on Subgroup Membership

The three sets of paranoid and nonparanoid subgroups formed by employing the classification rules described earlier were next examined to determine if shifts in membership occurred as hypothesized. The number of subjects falling into each subgroup as well as means and standard deviations for Paranoid and Nonparanoid Scores for each subgroup are presented in Table 2.

Table 2

Mean Paranoid and Nonparanoid Scores for Subgroups Within Each Classification System

CLASSIFICATION	MEASURE: Paranoid Score	MEASURE: Nonparanoid Score
Nonpredominance		
Paranoid (n=204)		
M	32.1	25.0
SD	13.33	15.24
Nonparanoid (n=293)		
M	6.6	15.1
SD	4.84	13.06
Paranoid Predominance		
Paranoid (n=71)		
M	41.4	17.4
SD	15.51	13.49
Nonparanoid (n=264)		
M	16.8	27.6
SD	12.30	13.37
Paranoid/Nonparanoid Predominance		
Paranoid (n=71)		
M	41.4	17.4
SD	15.51	13.49
Nonparanoid (n=101)		
M	10.5	35.9
SD	10.11	14.82

Since the criteria for assignment to paranoid subgroups were identical across the paranoid-predominance and paranoid/nonparanoid-predominance classification systems, these two paranoid subgroups were identical. Otherwise, nonpredominance, paranoid-predominance and paranoid/nonparanoid-predominance criteria produced sets of paranoid and nonparanoid subgroups that were not identical (i.e. shift in subgroup membership from one classification system to the next). Particularly noteworthy was the exclusion of 65% of the total preselected sample of 497 subjects from assignment to subgroups employing paranoid/nonparanoid-predominance criteria as a consequence of their failure to achieve cut-off scores and/or predominance requirements.

Univariate tests (Student's t) of paranoid/nonparanoid differences on Paranoid and Nonparanoid Scores (see Appendix A) were significant for subgroups within each of the three classification systems (all t's $1,x > 5.74$, p's $< .0001$). Interestingly, examination of means indicates that nonpredominance-defined paranoid subjects were not only characterized by higher Paranoid Scores but also by higher Nonparanoid Scores than their nonparanoid counterparts --a finding consistent with the positive relationship observed between Paranoid and Nonparanoid Scores in the earlier

correlational analyses and in opposition to the clinical lore. As hypothesized, predominance requirements led to a reversal in this pattern such that the nonparanoid subgroups in both the paranoid-predominance and paranoid/nonparanoid-predominance systems demonstrated both lower Paranoid Scores and higher Nonparanoid Scores than their paranoid counterparts, with the predominance-defined nonparanoid subgroup demonstrating the highest Nonparanoid Scores of the six subgroups.

Differences in Premorbid Adjustment, Chronicity, and Current Functioning as a Result of Classification Rules

Means and standard deviations for the three sets of paranoid and nonparanoid subgroups on Premorbid Adjustment, Accumulated Days in the Hospital, and the Total Appropriate Behavior and Total Inappropriate Behavior Indexes are presented in Table 3. Due to the discrepant numbers of subjects, multivariate analyses (Hotelling T^2) followed by univariate analyses to determine the source of significant effects (Student's t) were performed to determine the nature of paranoid/nonparanoid differences on the dependent measures within each classification system. In addition, multivariate and follow-up univariate two-way (Subgroup Status X Classification System) Analyses of Variance were performed on

Table 3

Mean Scores on Premorbid Adjustment, Chronicity, and Current Functioning Measures for Subgroups Within Each Classification System

CLASSIFICATION	MEASURE			
	Premorbid Adjustment	Chronicity	Current Functioning	
		Accumulated Days in Hospital	Appropriate Behavior	Inappropriate Behavior
Nonpredominance				
Paranoid (n=204)				
M	11.0	1254.2	2.7210	.5357
SD	2.47	2096.28	.55858	.37004
Nonparanoid (n=293)				
M	10.9	1789.0	2.7669	.4755
SD	2.82	3097.39	.47421	.35665
Paranoid Predominance				
Paranoid (n=71)				
M	11.3	989.1	2.8342	.4615
SD	2.05	1430.42	.58540	.38252
Nonparanoid (n=264)				
M	10.5	2061.0	2.6133	.5842
SD	2.79	3251.73	.46254	.37011
Paranoid/Nonparanoid Predominance				
Paranoid (n=71)				
M	11.3	989.1	2.8342	.4615
SD	2.05	1430.42	.58540	.38252
Nonparanoid (n=101)				
M	10.2	3244.0	2.4643	.6637
SD	2.86	4014.49	.39263	.41195

the dependent measures to determine whether the shift in the obtained pattern of paranoid/nonparanoid differences from one classification system to the next was statistically significant (i.e. significant interaction effects, which are relatively unaffected by the discrepant numbers of subjects). Since paranoid-predominance and paranoid/nonparanoid-predominance criteria resulted in identical paranoid subgroups, interaction tests directly comparing the pattern of paranoid/nonparanoid differences obtained in these two classification systems were not performed.[2]

Nonpredominance Subgroups. Examination of differences between paranoid/nonparanoid means in Table 3 for groups formed without predominance criteria being involved reveal minimal differences on Premorbid Adjustment scores and differences on TSBC Indexes measuring current functioning in the opposite direction to that expected from the clinical lore. The only difference in the direction expected on the basis of clinical lore is the relatively greater chronicity of the nonparanoid group. However, as hypothesized, the multivariate test of the difference between nonpredominance-defined subgroups across the best-weighted combination of the four dependent measures was not statistically significant: T^2 (4,492) = 8.16, $p > .08$.

Paranoid-Predominance Subgroups. In contrast, the means presented in Table 3 for paranoid/nonparanoid groups formed on the basis of paranoid-predominance criteria show all differences to be as expected from the clinical lore. The multivariate test for differences between paranoid and nonparanoid subgroups as defined by paranoid-predominance criteria was statistically significant, T^2 (4,330) = 18.45, $p < .001$, as were the univariate tests on each of the four dependent measures: Premorbid Adjustment, t (147.3) = 2.54, $p < .02$; Accumulated Days in Hospital, t (264) = -4.08, $p < .0001$; Total Appropriate Behavior Index, t (94.8) = 2.94, $p < .005$; and Total Inappropriate Behavior Index, t (333) = 2.46, $p < .02$.[3] Compared to their nonparanoid counterparts, predominance-defined paranoid subjects demonstrated a better premorbid adjustment, were less chronic and displayed a higher level of current functioning.

As indicated by the above analyses, nonpredominance and paranoid-predominance classification systems differed in the pattern of paranoid/nonparanoid differences they produced, with clear evidence of higher functioning among predominance-defined paranoids but not among nonpredominance paranoids. The multivariate test of the interaction between paranoid/nonparanoid subgroup status and nonpredominance/paranoid-predominance classification systems

(see Appendix B), found the shift in the best-weighted pattern of paranoid/nonparanoid differences to be statistically significant ($p < .02$). Univariate interaction tests (see Appendix B) found the basis for the significant shift to be primarily a function of the Total Appropriate Behavior and Total Inappropriate Behavior Indexes, which were themselves statistically significant (p's $< .003$).

Paranoid/Nonparanoid-Predominance Subgroups. As shown in Table 3,the groups formed on the basis of both paranoid- and nonparanoid-predominance criteria result in even greater differences in the direction expected from clinical lore as a result of the restriction of nonparanoid subjects to those who turn out to demonstrate the poorest functioning on all measures. The multivariate test and all four of the univariate tests of differences between paranoid/nonparanoid-predominance-defined subgroups were highly significant: T^2 $(4,167)=43.94$, $p < .0001$; Premorbid Adjustment t $(169.9) = 2.83$, $p < .006$; Accumulated Days in the Hospital t $(133.2) = -5.19$, $p < .0001$; Total Appropriate Behavior Index t $(113.3) = 4.64$, $p < .0001$; Total Inappropriate Behavior Index t $(170) = -3.26$, $p < .002$. Compared to predominance-defined paranoids, predominance-defined nonparanoids were characterized by a poorer premorbid adjustment, greater chronicity, and poorer current functioning.

The multivariate test of the shift in differences between paranoid/nonparanoid subgroup status and nonpredominance/ paranoid/nonparanoid-predominance classification systems was significant ($p < .0001$), as were all four of the follow-up univariate interaction tests (all p's $< .05$; see Appendix B). As hypothesized, the addition of a predominance requirement for assignment to the nonparanoid subgroup resulted in the overrespresentation of the most severely disabled subjects in that group, and hence greater paranoid/nonparanoid differences across the four dependent measures than had occurred when subgroups were formed according to nonpredominance or paranoid-predominance criteria. This in turn, led to an even greater discrepancy between the nonpredominance and paranoid/nonparanoid-predominance systems in terms of the pattern of paranoid/nonparanoid differences they produced than had occurred in the comparison involving the paranoid-predominance system.

Differences on TSBC Component Inappropriate Behavior Indexes

More detailed information on the nature of paranoid/nonparanoid differences in inappropriate behavior was provided by univariate tests (Student's t) on Bizarre Motor Behavior, Bizarre Facial & Verbal, and Hostile-

Belligerence Indexes for subgroups within each classification system. Means and standard deviations for paranoid and nonparanoid subgroups within each classification system on the three TSBC component inappropriate behavior indexes are presented in Table 4. Since the Bizarre Facial & Verbal and Hostile-Belligerence Indexes code behaviors conceptually related to or included in measures of paranoid functioning, paranoid subgroups should obtain higher scores on these indexes than nonparanoid subgroups. In contrast, the Bizarre Motor Behavior Index taps a more general class of nonparanoid problem behavior which would not necessarily be expected to be related (either positively or negatively) to paranoid functioning.

Nonpredominance Subgroups. In keeping with hypothesized theoretical relationships, the nonpredominance-defined paranoid group obtained significantly higher means than the nonparanoid group on Bizarre Facial & Verbal and Hostile-Belligerence Indexes: t (343.7) = 2.55, $p < .02$; and t (495) = 3.11, $p < .002$, respectively, without differences on the Bizarre Motor Behavior Index: t (495) = .42, $p > .66$.

Paranoid-Predominance Subgroups. In contrast to the above findings, paranoid predominance-defined subgroups did not differ on either the Bizarre Facial & Verbal or Hostile-Belligerence Indexes (t = -1.18, df=333, $p > .23$, and t =.03,

Table 4

Mean Scores on Component Inappropriate Behavior Indexes for Subgroups Within Each Classification System

CLASSIFICATION	MEASURE		
	Bizarre Motor Behavior	Bizarre Facial & Verbal	Hostile Belligerence
Nonpredominance			
Paranoid (n=204)			
M	.4020	.0591	.0017
SD	.29350	.11884	.00685
Nonparanoid (n=293)			
M	.3906	.0344	.0004
SD	.29709	.08519	.00228
Paranoid Predominance			
Paranoid (n=71)			
M	.3699	.0434	.0011
SD	.30699	.10500	.00495
Nonparanoid (n=264)			
M	.4445	.0620	.0011
SD	.29534	.12104	.00564
Paranoid/Nonparanoid Predominance			
Paranoid (n=71)			
M	.3699	.0434	.0011
SD	.30699	.10500	.00495
Nonparanoid (n=101)			
M	.5108	.0782	.0009
SD	.33195	.15477	.00602

df=333, $p > .96$, respectively), while differences on the Bizarre Motor Behavior Index approached statistical significance ($t= -1.87$, df=333, $p<.07$). Examination of the means presented in Table 4 show that nonparanoid subjects tended towards higher levels of bizarre motor behavior than their paranoid counterparts within this classification system. Interestingly, although the groups were not significantly different on the two component inappropriate behavior indexes most closely linked to paranoid functioning (Bizarre Facial & Verbal, and Hostile-Belligerence), the group means show that nonparanoid subjects tended towards higher scores on the Bizarre Facial & Verbal Index than their paranoid counterparts within the paranoid-predominance classification system.

Thus, nonpredominance and paranoid-predominance systems produced incomparable patterns of paranoid/nonparanoid differences on the three component inappropriate behavior indexes. Univariate tests of the interaction between paranoid/nonparanoid status and nonpredominance /paranoid-predominance classification systems (Appendix B) found this shift in the pattern of differences to be statistically significant for the Bizarre Facial & Verbal Index ($p < .02$), and to approach statistical significance for the Bizarre Motor Behavior Index ($p < .08$), but not for the Hostile-

Belligerence Index ($p > .10$).

Paranoid/Nonparanoid-Predominance Subgroups. Subgroups defined according to paranoid/nonparanoid-predominance criteria were found to differ only on the Bizarre Motor Behavior Index: t (170)= -2.82, $p < .006$. Group differences were not statistically significant on the Bizarre Facial & Verbal Index (t = -1.76, df=169.8 $p>.08$), or the Hostile-Belligerence Index(t =.25, df= 170, $p > .80$). Predominance-defined nonparanoids demonstrated significantly higher levels of bizarre motor behavior than their paranoid counterparts. Interestingly, while paranoid/nonparanoid-predominance subgroups did not significantly differ on the Bizarre Facial & Verbal Index, the predominance-defined nonparanoid group obtained the highest mean score on this index of the six subgroups. Univariate tests of the interaction between paranoid/nonparanoid status and nonpredominance /paranoid/nonparanoid-predominance classification systems (see Appendix B) found the shift in the pattern of differences to be statistically significant for the Bizarre Facial & Verbal Index ($p < .003$) as well as for the Bizarre Motor Behavior Index ($p < .005$), but not for the Hostile-Belligerence Index ($p > .20$).

Thus, the group differences on the three TSBC component inappropriate behavior indexes found only nonpredominance-

defined paranoids to demonstrate significantly higher levels of behaviors conceptually related to paranoid functioning than their nonparanoid counterparts. In contrast, predominance-defined subgroups were differentiated primarily in terms of the amount of bizarre motor behavior they demonstrated, with nonparanoid subgroups displaying a higher level of this broad class of problem behavior indicative of poor functioning and severe impairment.

CHAPTER IV

DISCUSSION

While the particular PIP scales used in this study to index paranoid and nonparanoid functioning are not recommended in place of specific instruments explicitly constructed to assess delusional and/or more broadly defined paranoid behavior (e.g. Maine Scale, Venables & O'Connor's Short Scale for Rating Paranoid Schizophrenia), the interrelationships among variables clearly support their coverage of relevant content domains. As such, the findings with regard to the influence of the measurement models and classification rules explicitly or implicitly employed for assignment of mental patients to paranoid/nonparanoid groups are directly applicable to the great majority of clinical and research practices in the area.

In keeping with widely held assumptions, paranoid subjects demonstrated better premorbid adjustment, lower chronicity, and higher levels of current functioning than nonparanoid subjects -- but only when paranoid/nonparanoid status was determined on the basis of class measurement models in which predominance criteria were employed. As hypothesized, a different pattern emerged when a dimensional measure of paranoid functioning was employed and when subgroups were formed on the basis of a cumulative

measurement model in which only the level of paranoid behavior was taken into account. Under these circumstances, paranoid subjects did not demonstrate a consistent pattern of better performance than nonparanoid subjects, with differences in current functioning actually indicating greater impairment among paranoids than nonparanoids. In contrast to the assumption that paranoid behavior is associated with higher functioning, the present findings indicated that paranoid functioning reflects a relatively narrow class of problem behavior which frequently occurs in conjunction with significant amounts of additional, "nonparanoid" problem behavior.

The relationship between measurement model and pattern of paranoid/nonparanoid differences emerging in the present study replicates that occurring in previous literature and raises serious concerns about the validity of findings from studies employing predominance criteria. Specifically, although individuals often demonstrate significant levels of both paranoid and nonparanoid problem behavior, predominance criteria artificially restrict the amount of nonparanoid problem behavior among subjects designated as paranoid and insure the overrepresentation of severely impaired subjects in the nonparanoid subgroup. As a result, the relationship of paranoid functioning to premorbid adjustment and

chronicity is confounded by artifactually created paranoid/nonparanoid differences in overall level of functioning.

The findings from the present study suggest that research employing predominance criteria to index paranoid functioning may misinform our theoretical understanding of psychopathology as well as lead to inappropriate decisions and actions regarding placement, disposition and treatment of psychiatric inpatients. For example, a sizeable literature has accumulated over the last 20 years focussed on developing and advancing theories to account for supposed paranoid/nonparanoid differences in premorbid adjustment which may simply reflect the well-known relationship between overall level of functioning and premorbid adjustment (e.g. Zigler & Levine, 1983). Furthermore, predominance criteria may obscure actual relationships between paranoid functioning and other theoretically and practically relevant variables. In the present study, for instance, predominance-defined subgroups did not differ on those variables which are conceptually related to paranoid functioning and on which clear paranoid/nonparanoid differences in the expected direction were demonstrated when groups were formed according to nonpredominance criteria. The failure to obtain paranoid/nonparanoid differences on either the bizarre facial

and verbal or hostile behavior measures was particularly surprising in the case where predominance criteria were applied to both paranoid and nonparanoid subgroups. While reduced in clinical utility, this strategy was expected to lead to greater isolation of the phenomena of interest and thus represent a cleaner, more precise research approach than either nonpredominance or paranoid-predominance systems. Instead, the current findings suggest that such a strategy may serve to further enhance differences in overall level of functioning while reducing group differences on parameters which are conceptually similar or identical to the phenomena of interest.

Cumulative measurement models and class models requiring predominance of paranoid behavior lead to shifts in group membership and incomparable paranoid/nonparanoid differences across a number of important dimensions. As such, findings from studies employing one measurement model are not generalizable to research or clinical situations in which subjects or clients have been differentiated on the basis of the opposing model.For example, placement or disposition decisions are likely to be inappropriate if, on the basis of findings from studies employing predominance criteria, clinicians assume that the presence of paranoid behavior per se, signifies higher functioning. Rather, on the basis of

findings from the present study, one would expect more significant impairment from most individuals demonstrating paranoid functioning.

The development and implementation of treatment interventions is also expected to be impacted in a number of ways, primarily in terms of misinterpretations surrounding what classes of behavior are effected by a given intervention and inappropriate treatment ommissions and commissions. For example, class models requiring predominance tend to obscure the presence of significant levels of paranoid behavior among individuals diagnosed as nonparanoid, with the result that treatment procedures shown effective with delusions and/or hostility might not be applied. Furthermore, differential responsiveness among predominance-defined paranoid and nonparanoid subgroups to psychosocial and/or pharmacological interventions might relate more to the impact of those interventions on nonparanoid classes of behavior than their effectiveness in modifying paranoid behavior.

Contradictions and inconsistencies in future research on paranoid functioning may be avoided by paying greater attention to measurement issues such as those explored in the present study. While the present study focussed specifically on the impact of the class measurement model on research in paranoid functioning, similar concerns regarding the

appropriateness of class models of measurement in general, have been raised elsewhere (e.g. Blashfield, 1984; Neale, Oltmanns, & Harvey, 1985). Perhaps of greatest concern, is that comparison groups which have been formed on the basis of the class measurement model typically demonstrate significant inter-group heterogeneity as well as substantial between-group overlap in type and level of behaviors they display. Efforts to account for observed differences on a phenomena of interest, as well as to understand failures to obtain differences are thus hindered. For example, Neale and his colleagues (1985) point out that while most researchers of cognitive processes among mental patients have proposed that such processes underly or mediate specific behavioral impairments, they have chosen to examine these proposed relationships by comparing heterogeneous groups of individuals (i.e. schizophrenics who may or may not display the impairment of interest) to control groups (who also may be heterogeneous and may or may not display the impairment of interest). Furthermore, relative to cumulative models of measurement, class models tend to be associated with less sophisticated measurement systems and to retain less information in the classificatory process (Blashfield, 1984).

Findings from the present study support a number of concerns about class models in general, as well as about the

particular examplar of this model frequently employed in studies of paranoid functioning. On the basis of these findings, a number of recommendations regarding future research and the clinical application of information from studies employing predominance criteria can be made. It is suggested that researchers specifically interested in the impact of paranoid behavior on other, theoretically or practically relevant parameters, differentiate groups on the basis of amount of paranoid behavior they demonstrate while controlling for differences in overall level of functioning. Even more specifically, consideration ought to be given to whether delusions per se, rather than paranoid functioning in general, is actually of greater conceptual relevance to a given research effort. Although paranoid functioning represents a relatively narrow class of problem behavior, hostility and hallucinations are frequently included along with delusions in scale definitions, each of which may differ in the patterns of relationships they demonstrate to other variables of interest. Clinicians should be careful to avoid overgeneralizing findings from previous literature to their decision-making tasks. In fact, if clinical work is to approach the status of an applied science, decisions regarding the placement, disposition and treatment of psychiatric inpatients should be based upon specific and

detailed measurement of level and type of current functioning rather than broad diagnostic categories formed by predominance-contaminated class models (see Paul & Mariotto, 1986).

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FOOTNOTES

FOOTNOTES

[1] Previous number of admissions was also considered as a chronicity variable but examination of correlational analyses indicated that it was unrelated to all demographic variables and had no meaningful relationship to level of functioning variables in the present sample.

[2] Although overlapping subjects occurred across the subgroups available for these latter analyses, violations of assumptions regarding the independence of groups are not a concern since the purpose of the analyses is to evaluate the impact of the classification systems on the pattern of relationships between subgroup status and the dependent measures rather than to make inferential statements regarding relationships in a population.

[3] Degrees of freedom less than 333 for t-test analyses involving paranoid-predominance subgroups, and less than 170 for t-test analyses involving paranoid/nonparanoid-predominance subgroups represent adjustment due to unequal variances based on Satterwaite's approximation.

APPENDIX A

Paranoid/Nonparanoid Differences on Paranoid and Nonparanoid Scores Within Each Classification System

Table A1

Paranoid/Nonparanoid Differences on Paranoid and Nonparanoid Scores Within Each Classification System

Measure	N	df	t	p
		Nonpredominance Subgroups		
Paranoid Score	497	240.6	26.17	.0001
Nonparanoid Score	497	392.3	7.54	.0001
		Paranoid-Predominance Subgroups		
Paranoid Score	335	95	12.37	.0001
Nonparanoid Score	335	333	-5.74	.0001
		Paranoid/Nonparanoid-Predominance Subgroups		
Paranoid Score	172	111.2	14.71	.0001
Nonparanoid Score	172	170	-8.36	.0001

Note. Denominator degrees of freedom less than 495 for nonpredominance subgroups, less than 333 for paranoid-predominance subgroups, and less than 170 for paranoid/nonparanoid-predominance subgroups reflect adjustment due to unequal variances.

APPENDIX B

Tests of the Interaction Between Subgroup Status and Classification System

Table B1

Multivariate and Univariate Tests of the Interaction Between Subgroup Status and Classification System

Test of the Interaction	df	F	p
Paranoid/Nonparanoid Status By Nonpredominance /Paranoid-Predominance Systems			
Multivariate	4/825[a]	3.31	.0106
Univariate			
Premorbid Adjustment	1	2.20	.1380
Accumulated Days in Hospital	1	1.38	.2407
Total Appropriate Behavior	1	10.76	.0011
Total Inappropriate Behavior	1	9.51	.0021
Paranoid/Nonparanoid Status By Nonpredominance /Paranoid/Nonparanoid-Predominance Systems			
Multivariate	4/662[a]	7.77	.0001
Univariate			
Premorbid Adjustment	1	3.91	.0485
Accumulated Days in Hospital	1	11.18	.0009
Total Appropriate Behavior	1	21.14	.0001
Total Inappropriate Behavior	1	15.38	.0001

[a] Denominator degrees of freedom reflect treatment of subgroups in each classification system as separate samples.

Table B2

Univariate Tests of Interaction Between Subgroup Status and Classification System on Component Inappropriate Behaviors

TSBC Component Index	df	F	p
Paranoid/Nonparanoid Status By Nonpredominance / Paranoid-Predominance Systems			
Bizarre Motor Behavior	1	3.21	.0736
Bizarre Facial & Verbal	1	6.18	.0131
Hostile-Belligerence	1	2.58	.1086
Paranoid/Nonparanoid Status By Nonpredominance / Paranoid/Nonparanoid-Predominance Systems			
Bizarre Motor Behavior	1	7.84	.0053
Bizarre Facial & Verbal	1	8.94	.0029
Hostile-Belligerence	1	1.58	.2090