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FLAT AFFECT AS PHENOMENON AND PREDICTOR OF SHORT-TERM
OUTCOME IN PSYCHOSIS: WORDS WITHOUT FEELINGS, FEELINGS
WITHOUT WORDS

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FLAT AFFECT AS PHENOMENON AND PREDICTOR OF SHORT-TERM OUTCOME IN
PSYCHOSIS:
WORDS WITHOUT FEELINGS, FEELINGS WITHOUT WORDS

by

DIANA FOSHA

A dissertation submitted to the Graduate Faculty in Psychology
in partial fulfillment of the requirements for the degree of
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Abstract

FLAT AFFECT AS PHENOMENON AND PREDICTOR OF SHORT-TERM OUTCOME IN PSYCHOSIS: WORDS WITHOUT FEELINGS, FEELINGS WITHOUT WORDS

by

Diana Fosha

Advisor: Professor Harold Wilensky

A review of the literature on differential diagnosis and prognosis in the functional psychoses revealed that of all signs and symptoms in evidence during an acute psychotic episode, affect quality was the strongest predictor of outcome five, ten and twenty-two years later. This investigation addressed two questions: (1) What are flat and full affect states differentially associated with in the realms of psychotic symptomatology, formal thought disorder, verbal communication and kinesic activity; (2) Is flat affect also a predictor of short-term outcome, i.e., does flat affect on admission predict greater impairment at discharge? Twenty-two psychotic patients with few if any prior hospitalizations were evaluated on all measures twice, on admission when floridly psychotic and several weeks later, during partial remission.

The data suggest that phenomena in all four areas significantly differentiate the flat affect from the full affect state. Flat affect is accompanied by anergia, negative thought disorders,

low verbal productivity, absence of communicative hand movements and an isolated impersonal discourse style. Full affect is associated with high verbal productivity, high rate of communicative hand movements, and an interpersonally-related discourse style. Positive symptoms (e.g., hallucinations), positive thought disorders (e.g., derailment), body-focused hand movements (i.e., self-stimulation) and syntactic complexity do not distinguish flat from full affect states. Flat affect on admission predicts significantly more anergia, negative thought disorders and low verbal productivity at discharge; counter to hypotheses, it does not predict prevalence of positive symptoms, positive thought disorders, self-stimulation rate or syntactic complexity.

It is noteworthy that only 50% of patients with flat affect on admission exhibited flat affect on discharge; the remaining 50%, who demonstrated a marked brightening of affect, were indistinguishable from the full affect group on most measures by discharge.

The adaptive value of flat affect was conceptualized in terms of its own arousal properties as well as the information-processing characteristics of the interpersonal interactions it makes more probable: it is a strategy used by psychotic individuals to reduce internal and external stimulation, and to enhance the predictability of their intrapsychic as well as interpersonal worlds.

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Acknowledgments are like Academy award acceptance speeches: what one has already done gives one the right to wax on, even if unparsimoniously, and give thanks, and so I will.

This has been a long voyage and there are many --teachers, colleagues, friends-- who have contributed to its being the wonders-filled voyage of discovery that it has turned out to be. Its pursuit in the last year has been accompanied by unexpected pleasure, excitement and even occasional bouts of serenity. I feel lucky to have been given the opportunity, via the unlikely route of a requirement for a doctoral dissertation, to devote mind and heart to understanding one small piece of the turf that is inhabited by psychological man/woman. As a psychologist committed to psychotherapy, that funny enterprise of curing ills through understanding, it is an experience I will treasure. I wish to thank the faculty of CCNY's Clinical Psychology Training Program for the solid foundations they gave me and the values they helped me crystallize.

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CHAPTER I

PROLOGUE

The phenomenon of flat affect is taken here as a statement about just how difficult and complex is the psychological undertaking of having and expressing feelings. The disorder under study here is not the incapacity for feeling; rather, it is the dysfunction which becomes apparent when personal, internal experiences and feelings have to be transformed into words that are addressed to another human being. It is in the context of these processes of representation and communication that affective flattening is salient.

A full discussion of affect occurs only in the last two sections of the dissertation. The reason behind this organizational choice is simple: it seems most fitting that the presentation of my views on affect - what it is, how it works - follow, and not precede, a thorough presentation of the data which shaped these views. So at this point, I will only briefly delineate the boundaries of the construct I will be using throughout.

It is important to distinguish affect from emotion, as the two terms are often used interchangeably. Affect is an observable phenomenon; emotion is an internal experience which may or may not be observable, depending on whether it is expressed, or disguised, or kept to oneself, and so on. Affect is a term applied to the quality of the communication of an individual, and it is a term which is meaningful only in an interpersonal context. It implies that something is being communicated in

a particular way, and that it is being communicated to someone. Emotion is a term which applies to a particular kind of intrapsychic experience; it is used to refer to a psychological reaction, often accompanied by physiological correlates. Whereas emotion is a supraordinate term which subsumes under it many specific contents, i.e., specific emotions, affect is a term which is meaningless in the plural form. There aren't different affects: there are only different qualities or different intensities of affect. Thus, emotions are constructs which do not require an interpersonal context; affect does. Moreover, good or full affect is not synonymous with emotionality; one may speak with full affect about an emotionally neutral topic. A model of a person with full affect is a good speaker, regardless of what he or she may be talking about. This view of the distinction between affect and emotion owes a lot to Alpert's (1981) discussion where he defines affect as "feelings embedded in words."

A similar notion of affect is reflected in the title of this thesis, Words without Feelings, Feelings without Words. It suggested itself to me while I was reading a work by Helmuth Kaiser entitled Effective Psychotherapy (1965).

The phenomenon I have in mind here concerns the patient's inner attitude toward his own actions and words. My contention is that patients, according to the degree of their illness - however one may determine it - are far less "behind" their words and actions than healthy people...the characteristic flavor of the utterance is always the same. What the patient says is not quite representative of him, his own self, but something which the hearer experiences as distant, indirect and artifact, not as a straightforward self-expression. In other words, such a patient does not feel at one with his own words. It is the analyst's task...to help the patient feel increasingly responsi-

ble - that is, increasingly "behind" or at one with his words and actions. (Kaiser, 1965, p. 3-4).

This is a succinct conceptualization of what people with flat affect are afflicted with: a profound sense of not being "behind" their words, a sense of engaging in actions and saying words which they cannot experience (or won't allow themselves to experience) as their own. The first part of the title addresses this phenomenon; the second half of the title clarifies that the view of flat affect being proposed here by no means suggests that these are people who don't have feelings. To regard flat affect as a reflection of the inability to feel would be to commit the same error that, for example, Kraepelin committed at the beginning of the century when he assumed that the utterances of psychotic patients were meaningless verbiage, and primarily useful as reflections of a demented mind.

Sullivan (1953) once said, in talking about schizophrenics, "We are all much more simply human than otherwise." By virtue of belonging to the human race, people with flat affect can, and do, feel. The understanding of psychotic individuals which will be presented here is that they are people for whom the task of putting themselves, with feeling "behind their words and actions" is one fraught with immense difficulties.

CHAPTER II

INTRODUCTION

The literary critic Harold Bloom proposed the thesis that each artistic generation goes through a ritualized killing of its intellectual and artistic parents in the process of establishing itself. In that manner, each new generation acknowledges--even if through a process of negation--the emotional primacy of the tradition that fed it; it also thus establishes itself as the new order. This process is often accompanied by a rebirth of (uncritical) veneration for generations long past.

Thomas Kuhn (1962) advanced a similar thesis in a different context: discussing the mechanisms underlying scientific progress, he distinguished between "everyday science" and "paradigmatic shifts", the latter being the stuff of scientific revolutions. He described a non-linear, non-additive sequence of developments, an almost dialectic waxing and waning of spurts of new data and new conceptualizations which, when formalized, become the new paradigms of the particular discipline. Kuhn went to great lengths to substantiate his claim that this process of paradigmatic change, unlike that of everyday science, is not one of correction and direct replacement. The new paradigm does not gain ascendancy because it offers a better explanation of the same set of phenomena that the old paradigm accounted for; what happens instead is that the boundaries of the domain of explanation change with the paradigm. The inconsistencies, the peripheral issues, the small detail here and

there that the old paradigm could not quite explain and thus, tended to regard as inessential, these become the very stuff of the new model, stimulating new questions and reframings. The process of fully addressing these issues leads to a redefinition of the problem and of the limits of the area of inquiry that surrounds it. At times the old model becomes a particular subset, a special case, of the new paradigm, for example, as Newtonian physics became encapsulated within relativity theory. Kuhn makes another point of interest here, a point quite similar to Bloom's: in the process of establishing the new paradigm, the old paradigm has to be temporarily but vehemently dismissed. However, as that which was initially revolutionary becomes the mainstream --gaining popularity, respect and wide acceptance--it becomes possible to slowly reincorporate that which the model did well. In science, as in art and psychic life, one cannot afford to throw out the baby - in this case, the parent - with the bathwater.

For those who attempt to understand severe forms of psychopathology, three "parental" figures loom large: Bleuler, Kraepelin and, of course, Sigmund Freud. One could trace the development of the field in the last three quarters of the century by following the vicissitudes in the influence of each of these three men on the field of clinical psychiatry. Such an account, however tantalizing, is not the aim of this paper. However, as the background of this investigation into affect in schizophrenia is textured by shifts--drastic at times--of emphasis, by fads and currents in theory and clinical practice, it behooves us to attend to these factors. We are currently in the midst of major re-orientations

in the practice of "everyday" clinical psychiatry - for example, a shift of preference from a Bleulerian approach to a Kraepelinian approach to diagnosis, as well as from a psychodynamic to a biological model, to name only two aspects of this re-orientation. The profound and pervasive implications of psychopharmacologic advances are not to be underestimated. As the advent of the phenothiazines in the late '50's subsequently revolutionized hospitalization and aftercare practice, so currently the advent of lithium carbonate (coupled with reports of long-term side effects of anti-psychotic medications) is spurring an energetic reconsideration of diagnostic practice. DSM III reflects the current love affair with the affective disorders in its slicing of the diagnostic pie. It is important to understand the weak points of the older paradigms in order to appreciate the nature and significance of the new contributions. Yet, at the same time, we should retain a healthy appreciation of what the older model offered, if only to better understand the context in which the new contributions gained prominence.

At the beginning of the century, Emil Kraepelin brought order to the chaos of 19th century psychiatry when he introduced the notion of "dementia praecox". Attending to such factors as age of onset and characteristic course, he brought under the rubric of a single disease entity a variety of functional psychoses, which until then had been considered unrelated. This is how he described one common thread that ran through them: "Dementia praecox consists of a series of states the common characteristic of which is a peculiar destruction of the internal connections of the psychic personality. The effects of this

injury predominate in the emotional and volitional spheres of mental life" (Kraepelin, 1919, emphasis mine).

Kraepelin focused on the unremitting course of psychic deterioration which, he felt, singled out dementia praecox from other psychoses. He did recognize that there were patients who demonstrated what he identified as key symptoms in dementia praecox (e.g., catatonia, apathy, lack of insight) but who, nevertheless, recovered. Yet, he remained firm on one point, indeed making it the center of his differential diagnosis between dementia praecox and manic depressive psychosis: if there was remission between episodes - that is, if the individual returned to a premorbid level of functioning - then the diagnosis could not be dementia praecox.

Kraepelin's influence on European psychiatry has been great. Karl Jaspers, as well as Kurt Schneider and Gabriel Langfeldt, whose works will be discussed below, have developed and refined the Kraepelinian tradition. These "descendants" belong to schools variously labeled as phenomenology (Jaspers) or descriptive psychiatry (Schneider). These schools are defined by an emphasis on: (a) objective observation and description, thus the prominent role assigned to signs and symptoms; and (b) the identification of a homogeneous group of patients, a group of "genuine" schizophrenics (Langfeldt's 1969 term), characterized by the deteriorating course that Kraepelin described. The belief that recovery or remission automatically rules out the diagnosis of schizophrenia has informed the writings of these investigators. That belief is further reflected in their use of a third category of functional

psychosis, in addition to schizophrenia and manic-depressive psychosis. This third category, widely used in Europe but not used in the United States until the current DSM III, has been variously called reactive psychosis (Denmark), schizophreniform psychosis (Norway), boufees delirantes or acute delusional psychosis (France), cyclical psychosis (East Germany) or atypical psychosis (Japan). (The closest American DSM II equivalents were "acute schizophrenia" or "schizophrenia, schizoaffective type"). The referents of this diagnostic category are the presence of so-called "schizophrenic" signs and symptoms during the acute stages, accompanied by subsequent recovery, often with no further reoccurrence of psychotic episodes. Many of the studies rooted in this clinical tradition have aimed at uncovering those features present during the acute stage which are prognostically valuable (i.e., of remission vs. deterioration) and thus useful in the differential diagnosis between schizophrenia and one of these other psychotic disorders.

Eugene Bleuler was the other giant of European psychiatry. As the title of his major work Dementia Praecox, Or The Group of Schizophrenias (1950) indicates, Bleuler believed schizophrenia was a syndrome subsuming a number of different but related disorders. His central concern was with the study of the fundamental, invariant processes underlying all of these related disorders. He was specifically interested in distinguishing these fundamental processes (deep structure disturbances) from the secondary "accessory" manifestations they produced (surface structure disturbances). These

secondary manifestations, such as delusions and hallucinations for example, were common, dramatic and clinically prominent; nevertheless, according to Bleuler, they were not unique to the schizophrenic process, nor essential to its understanding.

Bleuler thought of the cognitive disturbance of associations as perhaps the most basic to schizophrenia. Autism, ambivalence and disturbances of affect were the syndrome's other primary features. For Bleuler, the differential diagnosis of schizophrenia vs. that of another functional psychosis rested on the identification of these four fundamental features, especially the loosening of associations. If loosening of associations was present, the patient was diagnosed schizophrenic, regardless of how pervasive "manic-depressive symptoms", for example, might be. Bleuler explicitly and emphatically stated that schizophrenia should be ruled out, i.e., that the absence of looseness of associations be conclusively established, before making any other diagnosis. In this respect, he stands in marked contrast with Kraepelin. However, he agreed with Kraepelin in one crucial respect: he also believed that failure to recover was a validating criterion for the diagnosis of schizophrenia. He wrote: "By the term 'dementia praecox' or 'schizophrenia' we designate a group of psychoses whose course is at times chronic, at times marked by intermittent attacks, which can stop or retrograde at any stage, but does not permit restitutio ad integrum" (Bleuler, 1950, p. 9).

Until very recently, Bleuler's stronghold on American psychiatry equaled Kraepelin's influence across the Atlantic. There are many

reasons why Bleuler's work was so compatible with the American zeitgeist. For example, in addition to the profound influence of psychoanalytic theory on American psychiatry, the work of Sullivan and Meyer held a fascination with the underlying processes of schizophrenia as well as a commitment to a symbolic understanding of aspects of the schizophrenic disturbance. Symptoms and thought-disordered utterances were seen as meaningful, even if distorted, communications. In this setting, Bleuler's notions, with their focus on underlying mechanisms and the importance he assigned to the "emotional complex" (a rather Freudian idea), found a receptive soil in which to grow and flourish.

Consequently, Bleuler significantly shaped the prevalent conceptualization of schizophrenia. Many clinicians followed his precedent and considered thought disorder pathognomonic of schizophrenia. The abundance of studies of the formal properties of schizophrenic thought is one reflection of this. Moreover, Bleuler's dictum has had deeply felt consequences on clinical practice. It contributed to: (a) a broad, frequently used, often not reliable, diagnosis of schizophrenia; (b) an infrequent diagnosis of affective disorders; and (c) the absence of the above-mentioned third category (for acute psychotic episodes, which remit).

An often-quoted study these days compared diagnostic practices in Britain and the United States (Cooper et al., 1972). For comparable groups of patients - comparable according to research diagnoses - Cooper et al. reported a ratio of approximately 1:1 of schizophrenia to affective disorder diagnoses in England. The ratio was 3:1 in the

United States as a whole; in New York, the ratio was approximately 9:1. The authors discussed Bleuler's influence in America, and his emphasis on looseness of associations in the differential diagnosis, in an attempt to account for the wide divergences they discovered.

Affect or the quality of affect accompanying the communications of a psychotic individual was another potential pathognomonic sign, but one which was not appreciated as such in this country until recently. Bleuler himself placed the disturbance of affect in schizophrenia a close second to the associational disturbance. Kraepelin discussed it at length. Furthermore, as will be seen in the next chapter, most outcome studies report some index of affect as a predictor of prognosis. Nevertheless, actual psychological investigations of the disturbance of affect in schizophrenia are almost non-existent. (A study conducted by Alpert and Anderson (1977) is a noteworthy exception). Given its prognostic value as well as the prominent role assigned to it by the most influential theoreticians in the field, the dearth of research into affect becomes a phenomenon that needs to be addressed.

A couple of possible explanations come to mind. A principal reason, in my opinion, has to do with the basic nature of affect coupled with the pronounced defensiveness of clinical investigators with regard to the scientific status of their endeavors. Seen in the context of a striving for objectivity, and hence, for operationalizable variables, the marked preference for tackling the cognitive disturbance as opposed to the affective one becomes understandable. Things cognitive are either

directly available from the patient's report or verbalizations, or else from the patient's performance on tests; they can be more readily operationalized, categorized, counted and measured. On the other hand, affect is less naturally tailored to the demands of scientific pursuits. It almost automatically conjures up spectres such as subjectivity, reliance on the data of the clinician's empathic response, and similar nightmarish creatures to the already much taxed, positivist clinical investigator. Freeman, Cameron and McGhie (1966) probably accurately reflect the exasperation of many of their colleagues when they state: "The day has arrived when such concepts as flattening of affect must be discarded. Clinicians must confine themselves to data that are less dependent upon the subjective impressions of the examiner. There are enough discrete and definable phenomena which the patient manifests and which are independent of the interviewer's assessment. They can be recorded on tape, or merely noted down" (p.30).

Secondly, the constraints of reality invariably shape and color our idealistic pursuit of knowledge. It is quite true that until the advent of the videotape as a clinical tool, the reliable assessment of affect unlike the apprehension of a symptom or the detection of thought disorder, was a difficult task. Fortunately, the increasingly wide use of videotape recordings in clinical research and practice has gone a long way toward resolving that problem. Furthermore, two clinical rating scales of affect with satisfactory reliabilities have been developed and recently published (Abrams and Taylor, 1978;

Andreasen, 1979). One of them, the scale developed by Andreasen, will be used in this study. Lastly, the development and refining of an objective measure of affect, i.e., acoustic analysis, is being actively pursued (Alpert and Anderson, 1977; Andreasen, Alpert and Martz, 1981).

Diagnosis is becoming increasingly important as new, more specific treatments emerge. The current movement, away from a Bleulerian paradigm toward a Krapelinian paradigm, reflects a welcome resurgence of interest in phenomenology, and with it, a commitment to observational precision and reliability. However, in the enthusiasm for narrow criteria in the diagnosis of schizophrenia, we should not become swept up in Kraepelinian nihilism. There is a tendency for some working in that tradition to equate 'characteristic course' with 'inexorable destiny' and to consider an interest in signs and symptoms naturally exclusive with an interest in the function and meaning of those signs and symptoms, regarding the latter as, at best, epiphenomenal niceties. Bleuler understood that whatever the formal aspects of the schizophrenic disturbance, the specific form it took in any one person reflected the individual and his or her (psychic) concerns. The interest in the psychotherapeutic treatment of schizophrenic patients owes a lot to his commitment to the psychological understanding of their dysfunctions. It is important not to lose track of that.

In the next chapter, I will review the literature on differential diagnosis and outcome in the functional psychoses, paying particular attention to those variables about which some evidence from longitudinal studies has accrued. The spirit of the study to be presented is that

while outcome studies make it quite clear that in the long run affect matters, they do not tell us why. Furthermore, before mechanisms can be elucidated, the psychological and experimental correlates of this phenomenon called flat affect must be explored. It is the aim of this study to begin to do that.

CHAPTER III

REVIEW OF THE LITERATURE

A. Are Thought and Communication Disorders Pathognomonic of Schizophrenia?

As mentioned above, the concept of thought disorder was given primacy in Bleuler's influential conceptualization of the schizophrenic process. In his view, the characteristic disturbance of thinking was always present: "Certain symptoms of schizophrenia are present in every case and at every period even though, as with every other disease symptom, they must have attained a certain degree of intensity before they can be recognized with certainty. For example, the peculiar association disturbance is always present...As far as we know, the fundamental symptoms are characteristic of schizophrenia, while the accessory symptoms may also appear in other types of illness" (Bleuler, 1950, p. 13). Recently, a number of studies set out to evaluate this assertion experimentally. Before reviewing those studies, a clarification is necessary.

The "thought disorder" under discussion here is in effect what should be more rigorously referred to as a "formal thought disorder". In the past, the term "thought disorder" has been used by some so broadly and globally as to lose the discriminating meaning it was intended to have. In its extended sense, it has also been used to refer to psychotic symptoms, such as hallucinations and delusions. Both Bleuler and Kraepelin recognized that patients may have disorders in their form of thought as well as in the content of their

thought. As a matter of fact, Bleuler's distinction between fundamental and accessory symptoms rests upon this distinction between disorders of the form and content of thought (Andreasen, 1979b). The term "thought disorder" is used herein with the meaning of "formal thought disorder". Thus, it refers to a disturbance of the form, organization and structure of thinking, particularly involving the rules or processes by which people think, as manifested in their spoken language behavior.

Bleuler makes three claims, which, if substantiated, would demonstrate that thought disorder is pathognomonic of schizophrenia.

(1) A thought disorder will be present in every patient diagnosed schizophrenic and, by definition, will be absent in any patient otherwise diagnosed. (2) A thought disorder is present at "every period" of a schizophrenic's life, regardless of their clinical status (i.e., acutely psychotic or not) at the time. (3) Patients with a thought disorder will have a poor prognosis (by virtue of their being schizophrenic). The studies below will be evaluated to assess the validity of these statements.

I will review only those studies that identify the diagnostic criteria employed in the selection of the patient groups and that compare the thinking of schizophrenic with other psychiatric patients. Studies comparing schizophrenics with normals will not be reviewed here. Special attention will be paid to longitudinal investigations (those following the course of a thought disorder over time) and to studies which include schizophrenics not acutely psychotic at the time of

testing. When evaluating outcome studies, those studies of already chronic patients with many previous years of hospitalization will be excluded: regardless of the status of their thought disorder, it seems a foregone conclusion what the prognosis of this group will be.

1. Formal thought disorder and differential diagnosis.

Martin Harrow and his associates addressed this question in an impressive series of investigations assessing the thinking of schizophrenic and other psychiatric patients. The population studied was homogenous across investigations; the schizophrenic patients, diagnosed as manifesting "acute schizophrenia" included a sample of "classical" schizophrenics (paranoid, catatonic, undifferentiated) and a sample of "latent" schizophrenics. In most studies, the results for these two groups are combined. The diagnostic categories of the non-schizophrenic group included depression, personality disorders and severe neuroses. Patients with a diagnosis of mania were few, never accounting for more than 5 to 10 percent of the non-schizophrenic population in any of their studies. The majority of the patients in the non-schizophrenic group, not surprisingly given their diagnoses, did not exhibit clinical signs of psychosis, such as delusions or hallucinations. All patients had had few or no previous hospitalizations, were young and of average or above average intelligence. It should be kept in mind that many, if not a majority, of the schizophrenics in these studies would have a diagnosis of schizophreniform psychosis, schizoaffective disorder, or reactive psychosis if DSM III criteria were used.

Using a variety of measures and instruments (Object Sorting Test, Rorschach, WAIS, Proverbs Test, rating scales developed by the investigators, etc.), Harrow and his colleagues examined aspects of thinking which had been previously identified in the literature as characteristic of the schizophrenic thinking disorder. The following dimensions were assessed: behavioral overinclusion (Harrow et al., 1972c); conceptual overinclusion (Harrow et al., 1972a, 1972c, 1973; Harrow & Quinlan, 1977); concreteness and/or disturbances in the ability to maintain an abstract stance (Harrow et al., 1972b, 1974; also Shimkunas et al., 1966, 1967); bizarre, idiosyncratic thinking (Adler & Harrow, 1974; Harrow et al., 1972a, 1972b, 1972c, 1973, 1974; Harrow & Quinlan, 1977; also Shimkunas et al., 1967); personally overinvolved thinking (Adler & Harrow, 1974); primary process thinking (Harrow et al., 1976; Harrow & Prosen, 1978; also Ebert et al., 1977); looseness of associations (Reilly et al., 1975); peculiar autistic Rorschach verbalizations (Harrow & Quinlan, 1977); disturbances of boundary (Harrow & Quinlan, 1977; Quinlan & Harrow, 1974); disordered logic (Harrow & Prosen, 1978); emotional over-responsiveness (Harrow & Prosen, 1979); overelaborate thinking (Harrow & Prosen, 1979); and finally, intermingling (Harrow & Prosen, 1978, 1979).

All types of thought being assessed were found in both schizophrenics and non-schizophrenics. For each of these indices, there were some schizophrenics who did not exhibit them, as well as some non-schizophrenics who did. This already invalidates Bleuler's dictum. This is by no means to imply that these dimensions are irrelevant to

a differential diagnosis. Several important patterns emerge which discriminate between the groups. However, as both Harrow and Quinlan (1977) and Reed (1970) emphasize, the basis for the discrimination is not in the absolute terms of the presence vs. the absence of a given feature; rather it is more accurate to consider thought disorders as occurring on a continuum with normal thinking. In pathological states what is important is the frequency of severity of particular types of thinking.

Of the 13 measures of thought disorder studied during the acute phase (i.e., within ten days of admission), the following five measures were powerful discriminators between the schizophrenic and the non-schizophrenic groups: bizarre, idiosyncratic thinking; severe and moderate levels of looseness of associations; conceptual overinclusion; peculiar, autistic verbalizations on the Rorschach at the severe levels of pathology; severe disturbances of boundary on the Rorschach (i.e. contaminations). These five measures were found with significantly higher frequencies in the schizophrenic group, and while they were not totally absent, were relatively rare in the non-schizophrenic group.

More modest, but nevertheless significant differences between the groups were reported for moderate boundary disturbances on the Rorschach, as well as for idiosyncratic, autistic Rorschach responses at moderate levels of pathology.

On the other hand, the following types of thought disorder revealed no differences between the schizophrenic and the non-schizophrenic groups during the acute stage of their respective disorders: concreteness (IQ accounting for most of the variance); personally overinvolved thinking; peculiar autistic Rorschach responses at mid levels of pathology; milder disturbances of boundary on the Rorschach (i.e., fabulized combinations); disordered logic; emotional over-responsiveness; and overelaborate verbalization.

Thus, there are indices of thought disorder that discriminate between schizophrenics and other patients during the acute stages. However, even these are not exclusively present in schizophrenia. If one were to make that assumption of exclusivity, the consequence would be a not insignificant number of diagnostic errors. On the other hand, mild looseness of associations, mild levels of thought and boundary disturbances on the Rorschach, highly personalized responses, etc., appear to be relatively common features of the thinking of all acutely disturbed psychiatric patients, including a great many non-psychotic ones, and are not indicators of schizophrenia.

2. Formal thought disorder: acute psychosis vs. remission

After 7 weeks of hospitalization, the same patient population as in the above studies was evaluated and results were reported both for the changes taking place within each group, as well as the status of the between group differences. Harrow and his colleagues call this the period of partial recovery. (Adler & Harrow, 1974; Harrow

et al., 1972c, 1974; Harrow & Quinlan, 1977), Another study reports findings for a post-psychotic, post-hospitalization period, 11 months after the index hospitalization, and approximately 8 months after discharge (Harrow et al., 1973).

Clinical ratings of symptomatology at 7 weeks after admission justify calling this period of "partial recovery". Symptoms are rated as absent or significantly diminished. Both groups have improved. Within the schizophrenic group, there are significant decreases in conceptual overinclusiveness, as well as in idiosyncratic thinking. Though differences between groups diminish greatly, at this time, the schizophrenics still score higher as a group than the non-schizophrenics on measures of conceptual overinclusiveness, as well as on some measures of idiosyncratic thinking.

Almost a year after the index hospitalization, the schizophrenics show a significant reduction in their conceptual overinclusiveness; there are no longer any significant differences between them and the non-schizophrenics. On measures of idiosyncratic thinking, the schizophrenics, as a group, continue to have higher scores. However, a very interesting finding is reported: two subgroups emerge from within the schizophrenic sample, one subgroup not differing from the non-schizophrenics, whereas the members of the other subgroup continue to have high scores on idiosyncratic thinking. The authors state: "If idiosyncratic thinking is more characteristic of schizophrenics during the non-psychotic phase, this only applies to a limited group of patients" (Harrow et al., 1973). Thus, a year after an acute psychotic episode, a number of the patients with the diagnosis of acute

schizophrenia no longer differ from non-schizophrenics on any indices of thought disorder. One of the most powerful discriminators at both admission and during partial recovery, idiosyncratic thinking, no longer distinguishes them. Presumably, if the only information available was the quality of their thinking patterns at the time, they would be no more likely to be diagnosed as schizophrenic than any of the patients in the non-schizophrenic group.

3. Formal thought disorder and outcome.

Harrow, Bromet and Quinlan (1974) evaluated these patients' outcome in several areas, 2 years after the index hospitalization. There was no support for the hypothesized relationships between the extent of thought disorder at the acute stage and subsequent outcome for both the schizophrenic sample alone and for the total sample of patients. As a matter of fact, for the subsample of "classic" schizophrenics, there was a mild trend for the more thought disordered patients at the acute stage to have a more favorable outcome. While schizophrenics had a significantly poorer outcome than the non-schizophrenics, nevertheless the major finding of these investigators was that severity of thought disorder during the acute stage is not related to prognosis. To the degree that there is a trend, it is in the direction opposite from the one predicted. (The authors did not look at the relationship between severity of thought disorder during partial recovery or after 11 months, and outcome 2 years later. I would venture the guess that, had they done so, they would have obtained positive findings).

The three claims outlined above were not supported by these studies. (1) Patients with diagnoses other than schizophrenia do show patterns of disturbed thinking. (2) It is not the case that for individuals diagnosed as schizophrenic, a thought disorder is in evidence at "every period" of time in their life; it matters whether the patient is acutely psychotic or not. And finally, (3) thought disorder, or its severity during the acute stage, is not a predictor of outcome.

The studies reviewed above strongly suggest that disordered thinking is not unique to schizophrenia, though its severity is a useful source of diagnostic information. Secondly, these studies have documented in detail the process of recompensation. As schizophrenics enter into clinical remission, they show fewer signs of thought disorder, and some patients show no evidence of disorder of thought at all. Again, this suggests that there is danger in making inferences about the basic, underlying permanent features of the disorder from the clinical picture manifested during the acute phase. "Acute schizophrenics" seem to fall into two groups: one group does not exhibit evidence of disordered thinking when they are not acutely psychotic; the other group, does, though in milder form than during the acute phase.

Disorders of thinking appear to be the result of an interaction between the underlying personality structure of the individual (i.e., the organization of long-term adaptional patterns of action and psychological reaction) and the severity of the acute phase of the given disorder. One aspect of diagnosis (e.g., schizophrenia, depression,

personality disorders, etc.) addresses the severity of the disturbance, that is, the diagnosis says something about how profound the level of regression and disorganization of the acute phase is likely to be. In general, a hypothesis which needs more theoretical and empirical attention is that the severity of the disorganization accounts for a large part of the clinical picture observed at the acute stage, independent of either Axis I or Axis II diagnoses.

There are also several more specific conclusions from the Harrow et al. studies, which bear on the actual indices of thought disorder examined. (1) The dimension of concreteness is of little usefulness in the diagnosis of schizophrenia. (2) Conceptual overinclusion, a much-researched index, appears to result primarily from states of acute and agitated disorganization and does not appear to be a permanent feature of specifically schizophrenic thinking. (3) While the emphasis here has been on the formal aspects of the thinking disturbance, it is the index of idiosyncratic, bizarre thinking which emerged as the most powerful and consistent discriminator between schizophrenics and non-schizophrenics, and which continued to have some discriminatory power even 11 months after an acute episode. This is an aspect of thinking which may or may not involve a formal disturbance in the organization and structure of thinking. It appears as a specific type of content material which deviates from the usual norms or expectations. It is conceivable that the disturbance of content may be as important as the disturbance of form (cf., Gottschalk et al., 1964; Tucker & Rosenberg, 1975). Harrow and Prosen (1978, 1979) formulate

a hypothesis that a prominent aspect of schizophrenia is a disorder of the "executive power involved in maintaining perspective about the social appropriateness of one's behavior, and monitoring it to conform to the social demands of the situation". This also suggest that interpersonal difficulties could stem from a defect in the feedback mechanism involved in the sending and processing of social cues, and their use in guiding one's behavior.

Harrow and his associates believe that several indices of thought disorder at the severe level of pathology are characteristic of schizophrenia. One question remains: are they characteristic of schizophrenia or are they characteristic of acute psychosis? Could a severe level of looseness of associations, severe boundary and thought disturbances on the Rorschach, etc., successfully discriminate between a schizophrenic and a non-schizophrenic, though psychotic individual, for instance, a manic patient? Though their studies are not designed to answer this question, there are some hints that the answer is negative. For example, Harrow et al., (1972b) report that for the total sample of delusional patients, both schizophrenics and non-schizophrenics, "the correlation between delusions and idiosyncratic thinking was highly significant" (p. 436). Harrow and Quinlan (1977) suggest (with appropriate caution, given the small size of their sample) that their manic patients experienced difficulties with their thinking as severe as those of the schizophrenics. Finally, Harrow and Prosen (1979) write: "Non-schizophrenics also show disordered language, although in non-manic patients, this is less flagrant, less frequent and less severe" (emphasis mine) the implication being that in manic patients

it is just as 'flagrant, frequent and severe", as for the schizophrenic patients. The suggestions are clear, yet more solid evidence is needed.

4. Formal thought disorder in schizophrenia and manic depressive illness.

The next series of studies I will review were designed to answer this narrower question. They were carried out by Nancy Andreasen and her colleagues at the University of Iowa Medical College. At this point, it is important to underscore the differences between Andreasen's schizophrenics and Harrow's schizophrenics. The boundaries of Andreasen's sample are narrowly drawn, specifically to 'exclude schizoaffective patients and other schizophrenics with only brief episodes of illness" (Andreasen & Powers, 1976, p. 526). Her criteria are furthermore, closer to DSM III criteria for schizophrenia, and thus, unlike Harrow's sample, hers probably includes a number of chronic patients. Thus, Andreasen's and Harrow's studies can be considered as complementing, but not overlapping, each other. Their very different results, far from being contradictory, are further evidence that, by and large, two different populations are being described.

Andreasen, Tsuang and Carter (1974) found that experienced clinicians, when asked to rate samples of proverb interpretations and spontaneous prose, checked more frequently characteristics of thought disorder in manics and in writers (e.g., James Joyce) than in schizophrenics. When asked to diagnose the author of the written sample,

these clinicians tended to misdiagnose manics as schizophrenics, and to underdiagnose schizophrenia in schizophrenics. This modest study sheds some light on the reasons behind the findings of Cooper et al., (1972) regarding the underdiagnosis of affective disorders in the U.S.: trained in a Bleulerian tradition, clinicians confronted with a clear case of loosening of associations, diagnose schizophrenia. The study also strongly suggests that loosening of associations -- or more generally, formal thought disorder--is prominent in mania.

In a second study, Andreasen and Powers (1975) compared the performance of manics, schizophrenics and writers on tests of overinclusiveness. Writers and manics showed conceptual overinclusiveness, with writers showing substantially more richness and manics showing significantly more idiosyncratic thinking. Schizophrenia tended to be underinclusive and idiosyncratic in their thinking, though not as idiosyncratic as the manics. Neither patient group was very rich in their associations. The authors compared their results with those of Harrow et al. They found their schizophrenic sample much lower in scores of overinclusiveness, but scoring similarly on indices of idiosyncratic thinking. Thus, overinclusiveness, prominent in Harrow's acute schizophrenic sample, appears to be related to an affective and/or acute component, whereas the index of idiosyncratic thinking appears to tap disturbances of thinking of psychotic proportions, independent of the status of affectivity. Two further investigations (Andreasen & Powers, 1974, 1976) report similar findings: manics are more overinclusive (and more autistic) than both normals and schizo-

phrenics, while schizophrenics are more underinclusive than normal adults.

Andreasen and Powers also compared their findings with those of Payne and his associates (1959, 1962) who were among the first to suggest that overinclusiveness was a key feature of schizophrenic thought. Andreasen and Powers point out that Payne obtained positive findings only with "acute schizophrenics" and that he could not demonstrate overinclusiveness in chronic schizophrenics. In a more recent study, Hawks and Payne (1972) compared a group of "clinically overinclusive" schizophrenics with a group who were "not clinically inclusive". They found that in the former group, overinclusiveness was correlated with motor activity, talkativeness, motor speed, hostility and verbal responsiveness. At this point, it is by no means an inferential leap to conclude that their overinclusive patients fall into the schizoaffective/schizophreniform group, i.e., a group of psychotic patients with a good prognosis, regardless of which diagnostic label one might choose. Further support for this conclusion comes from Freedman et al. (1967) who found that even among chronic schizophrenics, those characterized by "explicit oppositionalism" and an "angry, belligerent" style were least likely to be re-hospitalized. (They also showed more differentiated levels of cognitive and interpersonal functioning, as will be discussed below.)

Noting the similarity between the findings of Payne and those of Harrow et al., Andreasen and Powers (1974) conclude: "Since overinclusiveness has been noted in patients with mania and acute schizophrenia (or perhaps schizoaffective disorder) it may perhaps be more closely

related to affective disorder than to schizophrenia... These data suggest that overinclusiveness is associated with illnesses which remit or have a good prognosis". At this point, it is unclear whether affective disorders (an issue which will be discussed further in section B.)

Up to now, I have reviewed investigations examining test performance of psychiatric patients on tests specifically designed to measure various aspects of disordered thinking. The last studies I will summarize utilized as their data verbalizations made by patients during an interview, a naturalistic data base similar to the one I propose to use, (Andreasen, 1979c; Freedman & Steingart, 1975; Grand et al., 1973, 1975a, 1975b; Steingart, 1977; Steingart & Freedman, 1972; 1975; Steingart, et al., 1977.)

5. Positive and negative thought disorder: differential diagnosis.

Andreasen (1979b, 1979c) developed and employed the TLC, a reliable empirically derived system for the categorization of disorders of thought, language and communication (thus TLC) in naturally occurring speech (to be used in this study; see Method section on Assessment of Thought Disorder and Appendix for a description of the categories). In a study aimed at assessing the differences in the thought disorders exhibited by patients diagnosed as schizophrenic, manic and depressed, using the TLC, Andreasen (1976c) concluded: "These data indicate quite clearly that the concept of thought disorder as pathognomonic of schizophrenia is incorrect. Thought disorder also commonly occurs in mania". Tangentiality, derailment, incoherence, illogicality and loss of goal occurred

with equal frequency in both mania and schizophrenia.

Andreasen adds an interesting and, I think, crucial dimension to the conceptualization of thought disorder and its role in differential diagnosis. She introduces a qualitative distinction, that between a positive and a negative thought disorder. The negative thought disorder, inclusive of categories such as poverty of speech and poverty of content of speech, conveys a qualitative sense of emptiness and apathy; on the other hand, the positive thought disorder, inclusive of categories such as pressure of speech, derailment, tangentiality, etc. conveys the quality of "an abundance of thoughts and ideas which are flowing too quickly and tend to be associated with intact or excessive affect". This way of dividing up the categories of the TLC differentiated significantly between the groups: the schizophrenics obtained much higher negative thought disorder scores, whereas the manics, as expected, obtained significantly higher positive thought disorder scores. The results of this study clearly indicate that specifications of various types of thought disorder are of value in the areas of both diagnosis and prediction of outcome. Later, I will discuss in more detail the relationship between quality of affect and quality of thought disorder.

6. Language construction and kinesic activity: verbal and non-verbal communication and outcome.

Freedman (1977), Grand (1977) and Steingart (1977) have investigated both structural and functional aspects of thought organization in schizophrenia. They examined two types of communicative behavior occurring in the interpersonal context of an interview: (a) language behavior,

the complexity and differentiation of the underlying sentence structure being what was measured; and (b) non-verbal kinesic behavior, specifically, hand movements occurring during speech. This is how Freedman and Steingart (1977) conceptualize the function of this latter communicative behavior: "We view nonverbal behavior as a sign behavior providing a basis for inference making, especially inferences concerning the person's information-processing activities.... The actions of the body are but surface manifestations of a relatively independent strand of experiences which may facilitate or interfere with encoding."

The research of these three investigators and their colleagues is significant. It is particularly relevant to the issues under consideration here in three important ways. (1) Both the language construction measure and the kinesic behavior measure have proved useful both in the assessment of underlying psychic configurations (traits) as well as in the measurement of fluctuations and shifts in those configurations (states). (2) The kinesic measure is nonverbal and yet intimately related with the organization of thought. That it is non-linguistic is extremely important, for language is a highly organized system, further structured by being socially shared. Even during a regression, in verbal expression there is a powerful pull towards organization, due to the inherent properties of the linguistic system. As such, language is not the most sensitive medium for the reflection of the underlying states of disorganization and/or undifferentiation. The kinesic system on the other hand (no pun intended), has very different properties: Operating outside conscious awareness, it is only minimally, if at all, socialized; the

degree of organization and/or differentiation it exhibits reflects more purely the characteristics of the individual, being less colored by the properties of the system through which it is being studied. Data from both schizophrenic and clinically normal populations support the greater sensitivity of kinesic behavior in this area (Steingart, 1977). (3) Finally, an outcome measure, that of proneness to hospitalization, is built into the differentiation of the two groups of chronic schizophrenics: One group, the "socially isolated" schizophrenics, scored highest on hospital-proneness measures (they are sometimes referred to as the prone group); the other group, "the belligerent paranoid" schizophrenics, scored lowest on the hospitalization-proneness scale (they are sometimes referred to as the nonprone group).

Before summarizing some of the results obtained with these measures for these two patient groups, a few words are in order about the measures themselves which will be employed in this study. (See Method section for a more detailed description of each category). The developmentally-based language construction measure has four categories for the classification of sentences. They are, from the most primitive to the most complex: fragmented language; simple narrative language, complex portrayal language; and conditional language. There are two types of hand movements occurring during speech that have been identified: body-focused movements, seen as serving a tension-regulating function and as being related to the syntactic aspects of speech, and object-focused movements, seen as being related more to the semantic aspect of speech, more to object relations and social competence and less to psychopathological

states. Within each of these types, there are two major categories that comprise them. For the body-focused movements they are finger-to-hand activity (F/H) and continuous body touching. For the object-focused movements, the two categories are speech primacy movements and motor primacy movements.

Grand et al., (1973) found that the isolated prone patients utilized significantly more simple forms of language construction and exhibited significantly more body-focused gestures that appear unrelated to speech but appear related to linguistic encoding difficulties (F/H activity). Freedman and Steingart (1975) report that F/H movements co-occur with pausing and with low clause production. Steingart et al. (1976) conclude: "Simple narrative language is significantly and positively correlated with a kind of body touching that morphologically is completely unpatterned" (F/H movements). While Steingart and Freedman (1977) report the association of schizophrenic symptoms, such as hallucinations, with fragmented language (whereas more organized symptomatology, such as paranoid delusions, was associated with conditional language), Grand et al. (1975b) note its absence in their sample of chronic patients. They suggest that fragmented language is a type of language that is primarily associated with acute stages of disorganization. Finally, of all the patient groups assessed, the socially isolated schizophrenics had the highest prevalence of F/H movements and simple narrative language (Grand, 1977; Steingart, 1977).

The belligerent, nonprone patients, exhibited a much more differentiated level of functioning, both linguistically and kinesically. They

used significantly more complex forms of language construction and utilized object-focused gestures that were highly integrated with the flow of speech and "appear to be related to integrative processes involved in more effective linguistic encoding" (Grand et al., 1973). It is interesting to note at this point the findings of Steingart and Freedman (1975). Whereas linguistically, the group of schizophrenics who exhibited more paranoid symptomology appeared more differentiated than the group of schizophrenics who exhibited primarily undifferentiated symptomatology, kinesically, both groups operated at a primitive level. The F/H activity level was much higher in both these groups than in a group of non-psychotic depressed patients. F/H movements appear to reflect an interference with encoding (i.e., a failure in tension-regulation?) and are interpreted as reflecting a deficit in the psychic apparatus (Grand et al., 1973, 1975a, 1975b; Steingart et al., 1976; Steingart & Freedman, 1975).

Before going on to summarize this section, I want to briefly mention the findings of a study conducted by Siegel et al. (1976). Their population was comprised of chronic schizophrenics with a history of multiple hospitalizations. They found that looseness of associations was not a prominent finding in such patients. As a matter of fact, there were rough indications that the chronic schizophrenics exhibited less overt loosening of associations than Harrow's acute schizophrenics. On the other hand, the chronic schizophrenics were generally characterized by high degrees of perseveration and paucity of speech, variables which may be related to impoverished, deficient thinking.

7. Summary of findings on the pathognomicity of thought and communication disorders.

Thus, I have reviewed data for five groups of patients and aspects of the thinking disorders characteristic of each. The five groups are (1) chronic schizophrenics with many years of hospitalization (Siegel et al.'s group; Freedman, Grand and Steingart's hospital-prone group); (2) DSM III schizophrenics, i.e., patients exhibiting psychotic symptoms for six or more months in the absence of a major affective component, with a history of previous episodes, and with some impairment of functioning between episodes (Andreasen's population; Freedman, Grand and Steingart's non-prone group); (3) a group of good prognosis schizophrenics, schizophreniform or schizoaffective by DSM III criteria, acute schizophrenics by DSM II criteria, i.e., patients with good premorbid functioning, with an acute onset, and who exhibit a good deal of affect, agitation, etc. (Harrow's schizophrenics); (4) a group of DSM III manics (Andreasen's populations); and (5) a mixed group of non-schizophrenic, non-manic patients who were nevertheless sufficiently disturbed to require hospitalization, most of them diagnosed as depressive or severe character disorders.

The distinction between positive and negative thought disorders was also introduced. The positive thought disorder seems inextricably intertwined with the acute stage of a disorder, and also is likely to remit as the acute episode resolves. The negative thought disorder, on the other hand, is more notable for what it is lacking: Its characteristic feature is impoverishment in both formal and content aspects of thinking.

It seems that all acutely disturbed patients, regardless of their diagnosis, show some degree of positive thought disturbance. This can be seen as a reflection of disorganization and a generalized weakening of ego functions. However, manics, acute schizophrenics, and some DSM III schizophrenics (presumably in the hospital for an acute flare-up) exhibit such intense and severe degrees of the positive thought disturbance, as to be useful diagnostically. Up to this point, though, it is unclear whether there is any way to distinguish between a manic and an acute schizophrenic, solely on the basis of thinking ideces. We also have every reason to hypothesize that as the acute episode remits, so does the positive thinking disorder. There is an exception to the rule: Some acute schizophrenics will continue to show some aspects of it, e.g., idiosyncratic thinking, in the absence of acute psychosis. It has not yet been ascertained whether their idiosyncratic thinking is of a "positive" or "negative" type. A speculation would be that these patients are on their way to becoming DSM III schizophrenics and that their prognosis is worse than that of their other acute colleagues. Another speculation is that affective flattening is more prominent in this group. Finally, a large number of DSM III schizophrenics and all truly chronic schizophrenics manifest a negative thought disorder, an overall impoverishment of their thought and language, an underlying condition independent of whether the patient is acutely psychotic or not. The negative thought disorder is hypothesized to occur against the background of flattened effect.

In this context, it seems clear that Bleuler focused on a positive

thought disorder which is not a feature unique to schizophrenia, but rather to use his language, is an accessory feature, one common in all psychoses. On the other hand, the negative thought disorder seems to be a relatively good differentiator, e.g., manics do not exhibit this type of thinking. But lest we feel too quickly satisfied that we have at long last identified the pathognomonic type of thought disorder, yet another of the questions with which I started this section must be asked: Is a negative thought disorder present only in schizophrenics? Is it ever present in non-psychotic patients? For example, might it not be the case that individuals diagnosed as having an "inadequate personality" or a "schizotypal personality" also exhibit this type of thought disorder, especially since psychic impoverishment is a main aspect of the clinical picture they present? This remains a question to be answered by future studies.

B. Are Psychotic Symptoms Evident During an Acute Psychotic Episode Pathognomonic of Schizophrenia?

1. What is the role of psychotic symptoms in differential diagnosis and prognosis of schizophrenia?

As was mentioned in the Introduction, both Langfeldt (1969) and Schneider (1959) extensively described those features they believed to be crucial to the diagnosis of schizophrenia. Langfeldt distinguished between "true" or "typical" schizophrenia and "schizophreniform" states, stressing that his criteria were especially useful to the differential, in that they predicted a poor prognosis. He emphasized the pathognomicity of disturbances in the experience of reality - one's own and that of the

world one inhabits - experiences of depersonalization and derealization so severe and intense that they are believed by the person to be true (i.e., delusionally elaborated). He presented the results of a retrospective study of 200 patients. Their charts were reviewed and they were diagnosed according to Langfeldt's criteria: 132 were diagnosed as cases of typical schizophrenia, 68 were diagnosed as cases of schizophreniform psychosis. A ten year follow-up revealed that of the "typical" schizophrenics, 102 were found to be unchanged or worse, 23 had improved and only 7 were assessed as "recovered"; on the other hand, in the schizophreniform group, only 17 individuals were unchanged or worse ten years later, whereas 19 were improved and 42 had "recovered". Langfeldt (1969) states: "The results seem to indicate that by dividing the large schizophrenia group into typical and schizophreniform cases, we had succeeded in differentiating between two prognostically varying groups of psychotic disorders regularly diagnosed as schizophrenia".

Schneider (1959) identified 11 symptoms, to be referred to from here on as first-rank symptoms, which he similarly believed were highly specific. The first-rank symptoms are delusions and hallucinations characterized by an experience of having no control over one's own thoughts, feelings and actions, these being under the control of outside forces or individuals. An example would be the symptom labeled "thought insertion"; in this case, the person experiences his/her thoughts as alien, as having been put in his/her head by someone else. Another example would be a hallucination of hearing the voices of others discussing and commenting on one's actions. Schneider (1959) wrote: "When any of these modes of

experience is undeniably present, and no somatic illness can be found, we may make the decisive clinical diagnosis of schizophrenia" (p. 134, emphasis mine).

Carpenter, Strauss and their colleagues have published the results of a series of prospective studies designed to, among other things, test the validity of the diagnostic and prognostic claims made by Langfeldt and Schneider. These investigations were carried out as part of the IPSS (International Pilot Study of Schizophrenia), a project sponsored by the World Health Organization (WHO). There are nine countries participating in this longitudinal study which aims at enhancing the international comparability of clinical practice and research.

In three of their studies (Carpenter & Strauss, 1974; Carpenter, Strauss & Muleh, 1973; Hawk, Carpenter & Strauss, 1975) the diagnostic and prognostic validity of Schneiderian first-rank symptoms were assessed. The same cohort of patients was evaluated 3 times: first, on their admission to a psychiatric hospital (the index hospitalization), then two and five years later. Outcome was assessed in 4 areas: duration of intervening hospitalizations, status of symptoms, functioning at work and quality of social relations. The authors found that first-rank symptoms were an important source of diagnostic information. Their prevalence among patients independently diagnosed as schizophrenic was significantly higher than in any other diagnostic group. Nonetheless, these symptoms were also present in almost 25% of manic patients as well as in a small number of patients with other diagnoses (e.g., depression). While the presence of these symptoms should immediately raise the diagnostic sus-

picion of schizophrenia, nevertheless automatic reliance on them would clearly lead to a significant number of diagnostic errors.

The outcome findings, both two and five years later, were striking. The outcome of schizophrenic patients exhibiting Schneiderian first-rank symptoms was no different from the outcome of a group of schizophrenics without these symptoms. As a matter of fact, there was a non-significant trend for patients with first-rank symptoms to have a better outcome. Mellor (1970) reported essentially similar results. He also found no significant differences between groups though he, also, noted a trend for the patients with first-rank symptoms to have had more acute onsets (briefer periods of disturbed functioning prior to hospitalization) and thus somewhat better outcomes. Pope and Lipinski (1978), in their extensive review of the literature related to the differential diagnosis of schizophrenia and manic-depressive illness, summarized three studies which uncovered no differences in the outcome of manic patients exhibiting first-rank symptoms compared with manic patients who did not. Carpenter, Strauss and Muleh (1973) state: "We conclude that the postulated pathognomicity of first-rank symptoms is refuted". Pope and Lipinski (1978) wonder whether first-rank symptoms "have any differential diagnostic value at all, or whether they are merely non-specific phenomena of varying psychotic conditions". It must be remembered that in the IPSS, there is no third diagnostic category (e.g., schizophreniform psychosis, or reactive psychosis, etc.); as such, there is considerable doubt whether Schneider's criteria would have continued to show the discriminatory power reported by Carpenter et al. had there been a compari-

son group comprised of patients with diagnoses falling in this third diagnostic entity, instead of having a comparison group solely comprised of patients with non-psychotic diagnoses. A similar question was raised before in reference to Harrow's conclusion that certain indices of thought disorder are useful in the differential diagnosis of schizophrenia. The following question is being asked over and over: Are there positive features, be they symptoms or thought disorder types which are discriminating of schizophrenia in particular, or are they all more accurately described as manifestations of the acute non-specific psychotic process?

Langfeldt's criteria met with a similar fate when their pathognomicity was evaluated (Strauss & Carpenter 1974; Hawk, Carpenter & Strauss, 1975); they did not predict outcome. Once again, though there were no significant differences between the groups, schizophrenics with Langfeldt symptoms of depersonalization and derealization tended to do somewhat better two and five years later than their fellow schizophrenics without such symptoms.

Strauss and Carpenter accounted for the difference between their findings and those of Langfeldt and his colleagues by raising the possibility that, in the initial studies, there might have been unwitting contaminants which provided information beyond the stated criteria, for instance, longitudinal information about the patient, or as pedestrian a source of bias as the relative thickness of the charts under review. By conducting a prospective study, such pitfalls were avoided.

Further evidence strongly suggestive of the inadequacy of cross-

sectional symptoms comes from three other sources. Carpenter (1976; Carpenter et al., 1976) using a sophisticated discriminant function analysis arrived at 12 variables which were the most powerful discriminators between the schizophrenic and non-schizophrenic groups. Listed in descending order, i.e., the first being most powerful, the second adding most to the discriminating power of the first, etc., these variables were ("-" indicates that absence of the criterion favors a diagnosis of schizophrenia); restricted affect; poor insight, thoughts aloud, waking early (-); poor rapport; depressed facies (-); elation (-); widespread delusions; incoherent speech; unreliable information; bizarre delusions; nihilistic delusions (Carpenter, 1976, pp. 176-177). The more of these signs that were present in the clinical picture of a given patient, the more likely that patient was to be diagnosed schizophrenic. Yet, Hawk, Carpenter and Strauss (1975) discovered that this highly discriminating diagnostic system had no predictive power: Outcome for patients with eight or more signs was no different than outcome for patients with four or less signs; this system was not better at predicting outcome than a simple DSM II diagnosis of schizophrenia. Roff and Knight (1978) and Knight et al., (1979) conducted a follow-up study of first admission male schizophrenics admitted to a V.A. hospital. They used the New Haven Schizophrenia Index -- a symptom checklist -- and discovered that while the measures were highly reliable, they lacked predictive validity. The index of disturbance on admission was unrelated to any of the outcome measures 22 years later.

Finally, Freedman et al., (1976) describe their development of a

measure for the prediction of the hospitalization proneness of schizophrenic patients, a scale already mentioned in Section A of this chapter. They write: "It is of interest that none of the psychiatric variables defining the patient's nosology or salient symptom picture, that is the degree of paranoid or schizophrenic thought disorders, hallucinations and delusions, was significantly related to future hospitalizations".

The studies just reviewed yielded negative results regarding the prognostic value of disturbances in the perceptual and cognitive spheres, i.e., delusions and hallucinations. These are phenomena which arise and subside with the acute stages of the disorder; as a matter of fact, the appearance and then the subsequent remission of these symptoms delimit the acute psychotic episode. It is reassuring that these results are very much in agreement with those of Harrow and his colleagues. Thus, formal measures of thought disorder as well as clinical assessments of the manifestations of, we assume, the same process yield the same findings: The "positive" disturbances of cognition and perception, prominent during the acute stages of the disorder, have diagnostic significance at that time (though questions still remain regarding the extent of the discrimination); yet, they do not seem to correlate with baseline levels of functioning, and thus, they do not predict outcome. The implication is that these "positive" phenomena are very much the product of the acute phase and not primary manifestations of the fundamental "schizophrenic process".

In conclusion, recent, well-designed studies have failed to confirm

any symptom complex currently postulated as able to single out schizophrenic patients with a poor prognosis.

C. Is Flat Affect Pathognomonic of Schizophrenia?

As I have already mentioned in the Introduction, the importance of the disturbance of affect in schizophrenia has long been acknowledged, yet only minimally studied in a systematic fashion. The relative brevity of this section in comparison with that on thought disorder is an eloquent reflection of the situation. The data that will be reviewed below come from primarily two sources; (a) from studies concerned with the differential diagnosis of manic-depressive illness from schizophrenia, in light of the American tendency (prior to DSM III days) to under-diagnose affective disorders; and (b) from studies of outcome aiming to identify those features present during the initial stages of an acute psychotic episode which are valuable prognostic indicators.

Affect has a built-in advantage for the investigator of the phenomenology of schizophrenia: It is a cross-sectional symptom, one assessed on standard mental status examinations, but one which also seems to have a continuity and a temporal stability in the individual which transcend the limits of the acute psychotic episode (Knight et al. 1979; Roff & Knight, 1978). The advantage of being able to study a longitudinal feature cross-sectionally is not to be underestimated,

Empirical studies of the role of affect in the diagnosis of schizophrenia itself are few. With the exception of Carpenter's work (1976; Carpenter et al., 1976), to my knowledge all other studies are primarily

concerned with demonstrating why patients previously diagnosed as schizophrenic should be reassigned to either the manic-depressive category or else to another category (e.g., schizophreniform disorder) different from both schizophrenia and manic-depressive disorder. The reason for the re-assignment is usually to be found in the absence of flat affect in these patients.

Carpenter (1976) found restricted affect (characterized by a "blank, expressionless face; little or no emotion shown when delusional or normal material is discussed which usually brings emotion") to be the most powerful single cross-sectional symptom in the discrimination of schizophrenic patients from patients otherwise diagnosed.

Pope and Lipinsky (1978), after reviewing studies showing the lack of specificity of symptom complexes in identifying schizophrenics, state:

It will be recalled that flatness of affect has been excluded from our discussion of schizophrenic symptoms. In spite of reported low reliability in assessing this symptom, it may hold some specificity: it is not recorded in any of the phenomenologic studies of manic-depressive illness, and it figures prominently in one group of symptom-oriented research criteria that has been shown... to distinguish schizophrenia from mania. Finally, in contrast to schizophrenic symptoms, certain affective symptoms do show specificity in phenomenologic studies: two groups... independently offer validating evidence that the combination of mood change, hyperactivity and pressure of speech might be diagnostic of mania, regardless of the presence of schizophrenic symptoms. (p. 815).

Thus, in the area of the functional psychoses, it appears that flat affect is one important criterion for the diagnosis of schizophrenia and its differentiation from the affective disorders.

Studies examining the prognostic usefulness of affective symptoms arrive at different conclusions than those examining symptoms or positive thought disorder: affect is related to outcome and (positive) affective

symptoms during the acute psychotic episode have been consistently associated with good outcome. In a paper reviewing the literature on outcome in schizophrenia, Zubin et al. (1961) report nearly unanimous agreement (a thing rare in and of itself in this field, and as such, most noteworthy) that affective symptoms are related to good prognosis. For example, manic-depressive symptoms predicted good outcome in 19 out of 19 studies; the presence of intense affect (elation, depression, anxiety and general emotional reactivity) was correlated with good income in 64 out of 64 studies. Finally, feelings of guilt, considered an indirect index of affect, were found to be favorable in 9 out of 9 studies.

In the last two years, Klorman et al. (1977), Stephens (1978) and Vaillant (1978) have all reviewed the literature since 1960 on outcome and prognosis in schizophrenia. It should be noted that Stephens and Vaillant only included studies where the period of follow-up was no less than 5 years and preferably longer. They all reached conclusions similar to those of Zubin et al. (1961) reported above.

There are further indications of the association of positive affective symptoms with favorable outcome. Carpenter et al. (1976), Fowler et al. (1972) and McCabe (1976) reported data on the association of a favorable prognosis with the presence of either depressed or elated affect during the acute phase. Huber et al. (1975), Stephens et al. (1967) and Vaillant (1974, 1978) focused on the prognostic value of depressive features and the expression of guilt feelings. Lastly, Vaillant (1964) reports the additional prognostic usefulness of "concern with death", presumably also an affective variable.

A full affective range, and/or more specifically, the absence of flattened or blunted affect, has been one of several key factors that have been recently reported as successful in differentiating good and poor outcome groups among patients diagnosed as schizophrenic (Feighner et al. 1972; McCabe, 1976; McCabe and Stromgren, 1975; Taylor & Abrams, 1974, 1975; Tsuang et al. 1975).

Two other studies are of interest here. Harrow et al. (1978) and Hawk et al. (1975) report the results of outcome-by-diagnosis studies. Harrow et al. (1978) found that two years after an index hospitalization, as a group, schizophrenics fare worse on all outcome measures assessed than non-schizophrenics. However, within the schizophrenic sample, those patients diagnosed as having schizoaffective schizophrenia (as well as acute schizophrenia, a la DSM II) do significantly better on all outcome measures than those diagnosed as exhibiting paranoid schizophrenia (and chronic schizophrenia). Similarly, Hawk et al. (1975) report that there were small but significant differences between the outcome of schizophrenics and non-schizophrenics at five years after an index hospitalization, with the former having a worse outcome. But, they point out, the variance is probably accounted for by the absence of non-schizophrenics in the two worst (out of six) categories. A similar trend is present in another comparison: those patients given the schizoaffective diagnosis tend to do better than those diagnosed as exhibiting other subtypes of schizophrenia. The schizoaffective patients also do not figure in the two worst outcome categories. We can assume that the affective component accounted for at least part of the differences reported in the outcome of these groups.

The opposite side of the coin, the prognostic usefulness of negative affective symptoms, is discussed in Carpenter et al. (1976), as well as in the studies of Knight et al. (1979) and Roff and Knight (1978).

Carpenter et al. found restricted affect to be a powerful predictor of negative outcome five years after an index hospitalization. This finding becomes all the more important as flat (or restricted) affect was the only one of 12 signs and symptoms assessed at the index hospitalization which predicted outcome. Indeed the more restricted was an individual's affect on admission, the worse was their outcome five years later.

Despite the unequivocal nature of the results they obtained, Carpenter and his colleagues maintain an attitude of skeptical reticence toward the prognostic usefulness of affect. The question they have raised is whether restricted or flattened affect is a concomitant, or even a consequence of, chronicity and/or long-term institutionalization. If that were the case, then the predictive power of negative affective symptoms could be attributed primarily to chronicity predicting itself.

Data which are highly salient to this question, if not conclusive, come from the 22 year follow-up studies conducted by Knight and his colleagues (1979; Roff & Knight, 1978). Their sample seems uniquely uncontaminated by chronicity at the index admission: their population was comprised of first-admission male schizophrenics admitted to a VA hospital, for the first psychotic episode experienced while they were in the service. We can assume that the level of functioning of these men could not have been grossly impaired prior to their psychotic episode, inasmuch as they had been admitted into the service. Furthermore, it is likely that their

condition was identified with reasonable promptness, as they operated under close supervision in a setting requiring relatively high standards of performance. It is unlikely that a chronic psychosis was present in these men prior to their admission.

Type and severity of psychotic symptoms, as well as quality of affect were assessed at the index hospitalization, and then again, 22 years later. In addition, at the time of the follow-up study, outcome was evaluated. Unlike the type and severity of symptom measures, the affect measures showed "impressive temporal stability". The affect measures also predicted outcome significantly, 22 years later. Indeed, the affect measures at the index admissions predicted five out of six symptom measures at follow-up better than these scales predicted themselves. Those patients exhibiting most affective flattening at their first admission had the worst outcome. Moreover, they were rated as continuing to exhibit flattened affect two decades later. The more intact the affect, regardless of the severity of the acute psychosis, the better the outcome of those patients. The authors emphasize the "clear association of affective deficit" and poor outcome.

In summary, the findings of the studies reviewed above strongly indicate the prognostic value of the quality of affect during an acute psychotic episode. Full affective range is associated with a good prognosis, whereas flattened or restricted affect predicts a much poorer outcome in functional psychoses. The next logical step would be to argue that flattened affect is pathognomonic of narrowly defined schizophrenia, that is, poor prognosis schizophrenia, and to demonstrate how flat affect

can succeed where thought disorder, Schneiderian first-rank symptoms and Langfeldt's symptoms failed. However, whether that is the best conceptualization of the relationship between flat affect and schizophrenia or whether alternate conceptualizations are preferable will be discussed in the next chapter.

CHAPTER IV

AFFECT AND ITS RELATIONSHIP TO DIAGNOSIS AND PROGNOSIS IN PSYCHOSIS

A. Diagnosis and Prognosis as Independent Processes.

Before considering the role of flat affect in schizophrenia, several issues concerning prognosis and its relationship to diagnosis need to be addressed. Throughout the studies reviewed, prognosis has been used as a validating criterion for diagnosis. Especially in the current climate, when questions of differential diagnosis are very much in the forefront of clinical interest, any variable shown to be of prognostic import becomes a candidate for being considered a diagnostic criterion, i.e., an identifying feature of schizophrenia. For example, the work of those investigators of affective disorders tends to be informed by the belief that it is necessary to narrow the criteria for schizophrenia and broaden those for the affective disorders. These researchers rely heavily on outcome data: from their vantage point, flat affect is extremely promising diagnostically, as the only cross-sectional symptom to be differentially associated with prognosis.

There are three (unwarranted) conclusions that might be drawn from current state-of-the-art outcome studies regarding the nature of outcome as a process: that outcome is a global, unitary entity; that it is binary (good vs. bad); and that it is inextricably intertwined with diagnosis. According to Strauss and Carpenter (1972, 1974, 1977, 1978) these conclusions are inaccurate, being the result more of how outcome has been measured, than of the nature of the outcome itself. They propose instead, with empirical evidence to support their suggestions, that outcome be considered

as being composed of various processes, all of which occur on a continuum, and that diagnosis and prognosis be considered as independent, though clearly interactive processes.

Outcome is multidimensional: no single variable accurately defines the essential aspect of outcome functioning. Strauss, Carpenter and their IPSS colleagues evaluated outcome in four areas: severity of symptoms, duration of hospitalization, quality of social relations and occupational functioning. They found that, generally, the best predictor of an outcome function is the level attained by an individual in that area premorbidly. The highest predictor of overall outcome is the additive relationship between each of the four variables. The correlations obtained among the four outcome functions, though significant, were small. Recovery may, and usually does, take place along one dimension, but not another.

The authors introduce the notion of open-linked systems: "the concept postulates the existence of a number of systems. Each system is open in the sense of influencing and being influenced by outside variables. The systems are linked in the sense of having definite but incomplete interdependence" (Strauss and Carpenter, 1974). The different areas of outcome dysfunction seem to operate as open systems all partly interrelated and affected by psychiatric disorder, but each area also affected by variables specific to it alone. Strauss and Carpenter (1977) also suggest that these four functions, especially social and occupational functioning, reflect longitudinal psychological processes, with separate lines of development, with different determinants and conditions being essential to each of them.

When several degrees of outcome dysfunction are used (for instance, six categories instead of "good" vs. "bad") a continuum of outcomes is obtained: outcomes do not fall naturally into a bimodal distribution. Even when schizophrenics and manic-depressives were included together in the analysis, the same pattern was noted: there was a heterogeneous set of outcomes for each group, with considerable overlap between the groups. Differences emerged primarily at the negative extreme, as there were no patients with affective disorders in the two worst outcome categories. There were, however, patients with diagnoses of schizophrenia in the best outcome categories.

Finally, Strauss and Carpenter (1978), as well as Vaillant (1978) argue convincingly that there is no overwhelming evidence in support of dichotomizing schizophrenia into two disorders, good prognosis schizophrenia and bad prognosis schizophrenia. The data point toward one disorder with a heterogeneous set of outcomes. "Patients who have poor prognostic traits plus schizophrenic symptoms do not necessarily have a different disease anymore than a debilitated, elderly person with pneumococcal pneumonia has a different form of the disease than a younger, more vigorous individual" (Strauss and Carpenter, 1978, p. 61). Moreover, they suggest that variables that are prognostically important in schizophrenia are not specific to schizophrenia alone but, instead, have the same prognostic importance in any other functional psychiatric disorder, regardless of its specific diagnosis.

Considering the prognostic and outcome research described above, we believe that conceptualizing poor prognosis as part of the disease schizophrenia, or even one type of schizo-

phrenia, is not the most parsimonious interpretation of the current information. Rather, it appears to us that prognostic factors reflect psychobiological systems that are probably important in many psychiatric disorders. When poor functioning is predicted by prognostic factors, then a chronic course is more likely regardless of the type of functional psychiatric disorder.

(Strauss and Carpenter, 1978, p.63-4)

B. Aim and Hypotheses of the Investigation

The aim of the investigation to be reported below was twofold:

- (1) The first aim was to study some aspects of the interaction of flat affect - understood as a prognostic process - with different stages of functional psychosis in order to test some hypotheses regarding the power of affect as a predictor of short-term outcome that were suggested by the literature reviewed. Will knowing patients' affect quality on admission improve the ability to differentially predict the quality of their functioning at discharge, a few weeks later?
- (2) The second aim of the study was descriptive: it was to articulate some of the psychological and, where possible, experiential correlates of the phenomenon of flat affect.

The studies reviewed made it clear that a number of criteria had to be fulfilled in order to be able to address these questions of interest. Chronic patients had to be excluded; the florid stage of the acute psychosis had to be compared with another stage in the psychotic process when those features characteristic only of the acute stage (and not at all specific to the underlying psychotic disorder) were in at least partial remission. Finally, a value inherent in the design of the study was the importance of an interpersonal setting to conduct the investigation in, hence the choice of the interview as the primary source of data.

This study set out to investigate the relationship between different qualities of affect and various aspects of psychic functioning as reflected in psychotic symptomatology, formal thought disorder, language construction and kinesic activity during talking; it also set out to examine the changes in that relationship depending on whether the period of acute psychosis or the period of partial recovery was under study. I should mention at this point that it had been an assumption underlying the design that affect quality would remain stable over the relatively short period of time covered, such that patients rated as exhibiting either flat or full affect on admission would continue to be rated similarly at discharge.

The principal hypotheses of the study were:

- (1) The process of acute psychosis will account for most of the variance observed on admission: patients with flat affect and patients with full affect will perform similarly on most measures. The exceptions will be in the area of "negative" symptoms, such as anergia, negative thought disorder and finger-to-hand self-stimulation, where the flat affect patients are expected to score significantly higher than the full affect patients.
- (2) There will be an improvement in the entire cohort from admission to discharge on all those measures associated with acute psychosis: there will be reductions in psychotic symptomatology, formal thought disorder, fragmented language and self-stimulation, especially finger-to-hand self-stimulation. In language construction, there will be a greater proportion of syntactically complex sentences at discharge than at admission.

(3) At discharge, the flat affect group will differ from the full affect group in the following ways: it will exhibit more overall psychotic symptomatology, especially negative symptoms; more global thought disorder, more positive as well as negative thought disorder; more fragmented language and a smaller proportion of syntactically complex utterances; as well as more self-stimulation, especially more finger to-hand activity, than the full affect group. A more general way of stating this hypothesis is that flat affect on admission is expected to be a predictor of greater impairment in performance in all realms at discharge, whereas full affect on admission is expected to be a predictor of greater improvement and generally better performance in all areas of the investigation at discharge.

CHAPTER V

METHOD

Patients

The sample of this investigation consisted of 22 psychotic inpatients admitted to the inpatient psychiatric service of a teaching hospital in New York City between January 1980 and August 1981. The unit to which they were admitted was a relatively short-term treatment unit where the length of stay averaged about 5-6 weeks. All patients were admitted voluntarily.

The selection criteria were as follows: (1) clear-cut presence of positive psychotic symptoms, i.e., hallucinations and/or delusions; (2) age between 15 and 45 years; (3) no more than one previous psychiatric hospitalization in the year prior to the index admission and no more than a lifetime total of 3 previous psychiatric hospitalizations; (4) absence of any medical illness known to produce psychiatric symptoms; (5) no evidence of organic brain disorder; (6) no history of alcoholism or drug abuse in the year prior to the index admission, and thus, no evidence of an alcoholic or a drug-induced psychosis; (7) no evidence of substandard intelligence, as determined on the admission interview mental status; and (8) English as a primary language. All those who fulfilled the selection criteria were informed of the study and of its methodology (i.e., two videotaped interviews) and were asked to volunteer. The cohort of 22 patients includes all those who agreed to take part in the study and who

completed it. Nine patients refused to participate altogether; another six patients started the study but did not complete it because of unscheduled discharges against medical advice.

The cohort of 22 patients was divided into two groups, a flat affect group and a full affect group, based on quality of affect on admission (see Procedure, for a description of how affect assessments were made). The demographic and clinical characteristics of the two groups, including diagnoses, are presented in Table 1; their neuroleptic (antipsychotic) and antiparkinsonian medications are presented in Tables 2 and 3, respectively.

As intended, the selection criteria excluded chronically psychotic patients (that is, patients with multiple prior hospitalizations) and led to a relatively acutely psychotic cohort, most of whom had few, if any, prior hospitalizations; indeed, as can be seen from Table 1, for almost half the sample the index admission was their first. A broad spectrum of functional psychotic disorders -including affective disorders- was represented.

The two affect groups did not differ significantly with respect to age ($t=1.3$; $p=.21$), sex ratio, racial composition, years of education ($t=1.0$; $p=.32$), or number of previous hospitalizations ($t=1.1$; $p=.26$). It is noteworthy that the groups did not differ in antipsychotic medication doses at either admission ($t=0.1$; $p=.94$) or discharge ($t=0.6$; $p=.56$). Yet, it does appear that a much smaller percentage of flat affect patients received antiparkinsonian medication in the first week of their hospitalization than did full affect

Table 1

Demographic and Clinical Characteristics of the Full and Flat Affect Groups

	Full Affect	Flat Affect
No.	8	14
Sex		
Percentage of women	62.5%	50%
Race		
Percentage of blacks	62.5%	78.5%
Marital Status		
Percentage single	50%	64.2%
Percentage married	37.5%	0
Percentage separated or divorced	12.5%	35.8%
Age		
Mean (in years)	26.9	23.9
Range	18-38	16-30
Education		
Mean (in years)	12.0	13.1
Range	10-18	10-19
Number of Prior Hospitalizations		
Mean	1.5	0.9
Percentage with no prior hosps.	37.5%	50%
Percentage with one prior hosp.	0	21.5%
Percentage with two prior hosps.	50%	14.25%
Percentage with three prior hosps.	12.5%	14.25%
Diagnoses (DSM-III)		
Schizophrenia, paranoid type	25%	35.7%
Schizophreniform disorder	25%	28.5%
Schizophrenia, undifferentiated type	12.5%	21.5%
Schizoaffective disorder	12.5%	7.15%
Bipolar affective disorder	25%	0
Major depression with psychosis	0	7.15%

Table 2

Mean Milligrams of Neuroleptic Medications (in chlorpromazine equivalents) Received by the Full and Flat Affect Groups at Admission and Discharge

	Full Affect	Flat Affect
Neuroleptics		
Mean at admission	956 mgs	978 mgs
Mean at discharge	925 mgs	1093 mgs

Table 3

Percentage of Patients in the Full and Flat Affect Groups Receiving Antiparkinsonian Medication at Admission and Discharge

	Full Affect	Flat Affect
Antiparkinsonian Agents		
Percentage of pts. at admission	62.5%	35.7%
Percentage of pts. at discharge	62.5%	78.5%

patients. The meaning of this discrepancy is uncertain. However, by the last week of hospitalization, the percentage of patients receiving antiparkinsonian medications was no longer significantly different for the two groups. Lastly, the only other significant difference between the affect groups was in length of stay: the hospitalizations of flat affect patients were significantly longer than those of the full affect patients, that is, 55.8 days vs. 35.8 days, respectively ($t=2.5$; $p=.02$).

Procedure

Interviews. I conducted two videotaped interviews with each patient. Each interview lasted approximately 30 minutes. The first interview (from now on, the admission or Time 1 interview) was conducted as close to the day of admission as the patient's clinical condition allowed: 19 out of 22 patients were interviewed within a week of their admission. The second interview (from now on, the discharge or Time 2 interview) was conducted as close as possible, but prior to, the day of discharge from the hospital. On the average, 43 days elapsed between the admission and discharge interviews.

A part of each of the two interviews were devoted to obtaining information relevant to a symptomatic evaluation and to a mental status. Otherwise, the admission interview focused on the precipitants leading to the index admission, while the discharge interview focused on the patient's reactions to the hospitalizations and his or her post-discharge plans. Approximately 20-25 minutes into the interview, at both Time 1 and Time 2, the patient was asked to try to talk

without interruption, for about 5 minutes, about "something personally meaningful and significant". During these 5 minutes, the interviewer said nothing outside of occasional prompts to keep going. These 5 minute personal verbalization samples constitute the principal data base for this study.

Recording Equipment and Setting. The physical setting in which both interviews were conducted was a soundproof recording room, with 2 video-cameras in full view. Patient and interviewer sat facing each other. Both cameras were focused on the patient. The patient sat on a hard-backed chair which had wooden armrests. Approximately 6 inches from either side of the patient's face were 2 microphones, mounted on floor stands. The video equipment consisted of 2 Dage Vidicon solid state cameras with pan/tilt and zoom lens located in the recording room and a Sony 3600 videorecording system with remote control, located in the adjacent control room. A video-technician operated and monitored the 2 cameras from the control room. The recorded image was made up of two component images, each occupying half the screen: the left half was a full length frontal view of the seated patient; the right half was a close-up of the patient's face in full view. Each view originated from a different camera. This combination of views was selected to increase the range and subtlety of the cues available for the affect ratings. I did not appear on the screen, though my voice is clearly heard.

Assessment

Each patient was evaluated at admission and then, again, at discharge, in each of the 5 principal areas of the investigation (affect, psychotic symptomatology, formal thought disorder, language construction and kinesic activity during talking). With the exception of the

symptomatic evaluation which, of necessity, was based on the entire videotaped interview, the remaining assessments of affect, formal thought disorder, language construction and kinesic activity during talking were all done from personal verbalization samples obtained from each patient.

I. Assessment of Affect. The ratings of affect were done from composite working tapes, that is, videotapes which contained only the 5 minute personal verbalization samples. Two such composite tapes were made: each of the two 5 minute personal verbalization samples from each patient were randomly assigned to one or the other of the working tapes, the only constraint being that on each tape there be equal numbers of admission and discharge samples. The sequence of the personal verbalization samples on each tape was randomly determined. In this way, the raters were kept blind not only to a patient's diagnosis, treatment, prior history etc., but also to whether they were scoring a sample from an admission or a discharge interview. The raters were asked to complete the ratings of all 5 minute personal verbalization samples on one composite tape before going on to the samples on the second composite tape. These procedures were instituted to minimize interview or prior ratings bias.

Raters. The raters were 2 board-certified psychiatrists who worked as attending psychiatrists on the unit from which the patient cohort was drawn. Each rater had more than 5 years continuous experience in working with a severely disturbed inpatient population.

Instrument. Andreasen's (1979a) Affect Rating Scale was used in the evaluation of affect. The version of the scale used in this study consisted of 7 items. These were: (1) unchanging facial expression; (2) decreased spontaneous movement; (3) paucity of expressive gestures; (4) inappropriate affect; (5) lack of vocal inflection; (6) slowed speech; and (7) global rating of affective flattening. (Andreasen's original scale contained 3 additional items, poor eye contact, affective nonresponsivity, increased latency of response, which were not used here; their evaluation required access to an active patient/interviewer interaction, which was not available, given both the uninterrupted personal verbalization situation -instead of a dialogue- and the kind of videotape image used, i.e., with only images of the patient). Each item was rated on a four-point scale of intensity, a score of 1 indicating essentially normal, or full, affect, and a score of 4 indicating most severe flattening of affect. The scale contained both definitions of the items and instructions for severity ratings, which had been operationalized as much as possible (see Appendix A).

Group assignment was made according to the rating obtained on item #7, the global rating of affective flattening: all those who obtained scores of 1 and 2 were the members of the full affect group, while all those who obtained scores above 2 became the members of the flat affect group. The group assignment took place after all ratings and scoring were completed. Affect ratings of the 5 minute personal verbalization samples from the admission interview were used for this purpose.

The interrater reliabilities obtained at both admission and discharge interviews are presented in Table 4. Most of them are above

Table 4

Interrater Reliabilities* for The Affect Rating Scale at Admission and Discharge (N=22)

	<u>Admission</u>	<u>Discharge</u>
1. Unchanging facial expression	.582	.740
2. Decreased spontaneous movement	.734	.689
3. Paucity of expressive gestures	.869	.672
4. Innappropriate affect	.613	.795
5. Lack of vocal inflection	.626	.771
6. Slowed speech	.665	.689
7. Global rating of affective flattening	.771	.798

*Spearman correlation coefficients with p values $\leq .05$.

.60, the acceptable threshold for scales of this kind. The interrater reliability for the global rating of affective flattening was .77 for the admission interview, and .80 for the discharge interviews. These figures are comparable to those obtained by Andreasen (1979a) with the 10-item version of this scale, and to those obtained by Abrams and Taylor (1978) with another clinical rating scale of flat affect.

II. The Assessment of Symptoms. The Overall and Gorham Brief Psychiatric Rating Scale (BPRS) has been described in detail elsewhere (e.g., Overall & Gorham, 1962) and since its conception in 1962, it has been widely used. Briefly, the scale permits the clinical evaluation, from a clinical interview, of 18 relatively independent symptom areas on a seven-point scale of intensity. The 28 symptom areas are: (1) somatic concern; (2) anxiety; (3) emotional withdrawal; (4) conceptual disorganization; (5) guilt feelings; (6) tension; (7) mannerisms and posturing; (8) grandiosity; (9) depressive mood; (10) hostility; (11) suspiciousness; (12) hallucinatory behavior; (13) motor retardation; (14) uncooperativeness; (15) unusual thought content; (16) blunted affect; (17) excitement; (18) disorientation (see Appendix B for a description of each symptom area, with guidelines for their rating). This instrument has 2 additional features: (a) an overall global psychopathology score, arrived at by summing the scores on all individual items; and (b) a 5 factor factor-structure. The 5 symptom clusters and the individual symptom areas that compose them (whose summed scores yield the cluster score) are: (1) Anxiety and

Depression (somatic concern + anxiety + guilt feelings + depressive mood); (2) Anergia (emotional withdrawal + motor retardation + blunted affect + disorientation); (3) Thought Disturbance (conceptual disorganization + grandiosity + hallucinatory behavior + unusual thought content); (4) Activation (tension + mannerisms and posturing + excitement); and (5) Hostile Suspiciousness (hostility + suspiciousness + uncooperativeness).

The symptomatic assessment was performed from the entire 30 minute interview. All BPRS ratings were done by the author, from the videotapes, after all interviews with all members of the cohort had been completed. The interviews were split into two groups, each group containing 11 admission and 11 discharge interviews, each patient contributing one interview to each group. Within each group, admission and discharge interviews were mixed and thus viewed and scored in random order. BPRS ratings of the first group were completed before any of the interviews in the second group were evaluated. Thus, halo effects arising from either interview or patient bias were minimized.

III. Assessment of Formal Thought Disorder. Andreasen's (1979b) Scale for the Assessment of Thought, Language and Communication (TLC) Disorders were used here. The ratings were done from the same composite working videotapes described in the section on the assessment of affect. The raters were the same two board-certified psychiatrists who performed the affect ratings.

The 16 items of the version of the scale used in this study were 15 subtypes of thought disorder, as well as a global rating of thought

disorder item. The 16 items were: (1) poverty of speech; (2) poverty of content of speech; (3) pressure of speech; (4) distractible speech; (5) derailment; (6) incoherence; (7) illogicality; (8) clanging; (9) neologisms; (10) word approximations; (11) circumstantiality; (12) loss of goal; (13) perservation; (14) blocking; (15) stilted speech; (16) global rating of thought disorder. (Andreasen's original scale contained 3 additional items, tangentiality, echolalia, and self-reference, which were not used here for the same reasons that some of her items on the Affect Rating Scale were not used). Items are rated on a five-point scale of intensity (see Appendix C, for a description of each item and guidelines for its rating). In addition, the instrument contains 2 summary scores: a positive thought disorder score, arrived at by summing the scores obtained on pressure of speech, distractible speech, derailment, illogicality and loss of goal; and a negative thought disorder score, arrived at by summing the scores for the poverty of speech and poverty of content of speech subtypes.

The interrater reliabilities obtained for admission and discharge interviews are presented in Table 5. The less reliable thought disorder subtypes were those which occurred infrequently in this sample. The interrater reliability for the global rating of thought disorder is .89 on admission, and .74 at discharge. As with the interrater reliabilities on the affect scale, these are comparable with figures obtained by other investigators in these areas. In addition, they suggest the soundness of 5 minute personal verbalization samples in yielding sufficient information to make the kind of discriminations with comparable reliability as can be done from a 45 minute interview. As such, the interrater reliabilities attest to the experimental

Table 5

Interrater Reliabilities* for the Formal Thought Disorder (TLC) Rating Scale on Admission and Discharge (N=22)

	<u>Admission</u>	<u>Discharge</u>
1. Poverty of speech (-)	.799	.793
2. Poverty of content of speech (-)	.897	.736
3. Pressure of speech (+)	.596	.794
4. Distractible speech (+)	.665	.629
5. Derailment (+)	.865	.799
6. Incoherence	.690	.490
7. Illogicality (+)	.787	.785
8. Clanging	**	**
9. Neologisms	**	**
10. Word Approximations	**	**
11. Circumstantiality	.442	.582
12. Loss of goal (+)	.644	.627
13. Persevation	.773	.494
14. Blocking	**	**
15. Stilted speech	**	**
16. Global rating of thought disorder	.896	.736

* Spearman correlation coefficients with p values $\leq .05$

** thought disorder item occurred infrequently or not at all; correlation coefficient could not be calculated

(-) thought disorder item included in negative thought disorder summary score

(+) thought disorder item included in positive thought disorder summary score

viability of the 5 minute personal verbalization samples.

IV. Assessment of Language Construction. The system used here was developed by Steingart and Freedman (1972) to study various aspects of language construction, labelled code, focus and status. The categories aim to capture different levels of complexity present in the utterances of adult speakers, as well as some qualitative differences in object relations and representations as reflected in noun and pronoun development.

The language construction ratings were done from typed transcripts of the 5 minute personal verbalization samples. The same principles of sequence were applied here as in the ordering of samples on the composite working videotapes. Since the interrater reliabilities obtained by the original authors were consistently high (.90), only one rater, a skilled editor, was used. The rater's first task was to break up the samples into the most parsimonious, well-formed grammatical sentences. The procedure, similar to Hunt's (1970) procedure, was to start at the beginning and stop as soon as one well-formed sentence ended and another began. The second step was to subdivide the newly formed sentences into their component clauses, these being the units of the scoring system. The third, final and crucial task was to assign each sentence a language code score (which would be shared by all clauses making up the sentence) and subsequently, to assign each clause a language status and focus score.

I will describe in some detail the categories of the language construction system, and later, the categories of the kinesic activity system in order to familiarize readers with the referents of the terms which will be used throughout. Unlike the terms of the affect, thought disorder and symptom scales, which are the familiar terms of clinical discourse,

these terms have a specific meaning which needs to be clearly described.

Language Code is the aspect of language construction which deals with the syntactic complexity of language. Its categories, in order of increasing complexity, are described below. The examples used to illustrate the categories are all from the personal verbalization samples of the patients in this study.

(1) Fragmented Language. This category consists of grammatically incoherent or incomplete utterances. Lack of completion can be due either to absent or incomplete predication of a proper noun or pronoun subject term ("I was gett..."), or because a word or clause is uttered without any readily evident subject term (e.g., "Aspects of looking at things differently").).

(2A) Specified simple narrative language. This category also consists of surface simple sentence structures; however, these contain at least one word or phrase conveying information about time or quantity, including intensity and much evaluation of the sort that is often called quality (e.g., "Great men can be broken easily".; "I want to leave this hospital as quick as possible.").

(3) Complex portrayal language. These are sentences which contain at least one dependent clause in addition to the main clause. These sentences contain various sorts of grammatical devices which can produce many different configurations among main and dependent clauses, and thus enable articulation of patterned interrelations among experiences, though only descriptively (e.g., "I can remember it now like it was maybe 3 weeks ago, maybe four."; "I lost my baby when I heard my father

died."). All clause units that participate in such sentences are summed.

(4) Complex conditional language. This category includes surface complex sentence structures which also achieve patterned interrelations among experiences. However, this category identifies instances in which an individual chooses appropriate grammatical devices which can bring about a causal, deductive or purposive matrix which is applied to immediate experience. This can be accomplished through one sentence (e.g., "Somebody must have ripped the laces off my shoes while I was sleeping because they didn't just come off this way".) or through the contiguous placement of two sentences (e.g., "I was getting along well. That's because I had some rest"). In the latter case, the syntax of the second sentence can establish a conditional framework, for example, by the introduction of a causal coordinating conjunction. All clauses that participate in such complex sentences or contiguous arrangement of sentences are summed.

Specified language is a composite category in which all the clauses that participate in categories (2B), (3) and (4) are summed.

Language Status and Language Focus refer to those aspects of language that deal with object representations and relations between or among them.

Language Status. The grammatical subject term of all clauses (excluding fragments) is assigned to one of two classes: self or object. Self status consists of those clauses in which the head element of the subject term involves some description of the self

(e.g., "I just about told you everything".; "We live a pretty normal life with our little girl".). Object status consists of those clauses in which the head element of the subject term involves a representation of an object other than the self, an object which can be animate or inanimate, noun or pronoun (e.g., "Everyday it gets more complicated, more strange, more impossible".; "Right now, he's working a lot".).

Language Focus deals with two kinds of relational options: monadic or dyadic. Monadic focus is assigned to those clauses involving content that describes only one isolated representation, self or object (e.g., "I can control myself".; "That's what happens".) Dyadic focus is assigned to those clauses that convey a description of an interactional content between a self representation and an object representation (e.g., "I had started to preach to people".), or between two different object representations (e.g., "Guys wanna kill for girls, girls wanna kill for guys".).

Thus there are 16 dependent variables in the realm of language construction. These are: (1) productivity (i.e., number of words in the 5 minute personal verbalization monologue); (2) percentage of fragmented language utterances; (3) percentage of simple narrative clauses; (4) percentage of simple specified narrative clauses; (5) percentage of complex portrayal clauses; (6) percentage of conditional language clauses; (7) percentage of specified language clauses; (8) clause: sentence ratio; (9) percentage of self status clauses; (10) percentage of Object status clauses; (11) percentage of Monadic focus clauses; (12) percentage of Dyadic focus clauses; (13) percentage of Self/

Monadic clauses; (14) percentage of Self/Dyadic clauses; (15) percentage of Object/Monadic clauses; (16) percentage of Object/Dyadic clauses.

The percentage of fragments was calculated by dividing the number of fragments in a personal verbalization sample by the total number of clauses, including fragments, and then multiplying the product by 100. The remaining percentages were calculated by dividing the number of clauses in the category being calculated by the total number of clauses in the sample, excluding fragments, and then multiplying that product by 100.

V. Assessment of Kinesic Activity during Talking: Hand Movements.

A detailed and, by now, widely employed method for the scoring of hand movements that occur during speech has been developed by Freedman and his colleagues (e.g., 1972). All hand movements are classified into 2 major classes: body-focused movements and object-focused movements.

The data consisted of the prevalence of these classes -and the categories that make them up- observed during the 5 minute personal verbalization samples. As in the assessment of affect and thought disorder, the ratings were done from composite working videotapes, where the samples were arranged in the sequence described above. The interrater reliability of this coding system is very high (above .90) as reported in Freedman et al (1972), as well as replicated by others, recently, for example, by Barroso et al (1978). In this study, one rater, the author, scored kinesic activity.

Body-focused movements, or self-stimulation, have as their defining characteristic the involvement of the hands in the direct stimulation of the body and/or its clothing and adornments. Typically, body-focused movements are not single acts: rather they occur continuously over a given amount of time. They can occur, and often do, during silences. Two subtypes of body-focused movements were scored: continuous finger-to-hand activity and continuous body-touching. Finger-to-hand (F/H) activity consists of repetitive and often unpatterned continuous stimulation of the finger and hands. Either one or both hands can be involved in it. The movements can be small, such as lightly rubbing together the tips of the index finger and thumb of one hand, or large, such as vigorous wringing of the hands. The amount of time spent in this activity was recorded. Continuous body-touching consists of continuous stimulation of some body part, other than the hand, as well as of the hair, clothing or body adornment (jewelry, glasses), etc. The amount of time spent in this activity was recorded. The total body-focused movements score was obtained by adding the amount of time spent in F/H activity and continuous body touching. All three categories were expressed as time scores in seconds which refer to the amount of time spent in the particular activity during the 5 minute personal verbalization sample. The distribution of the scores was then normalized, using the formula $X + 0.5$, where X was the number of seconds.

Object-focused movements, or communicative gestures as they will be referred to here, occur only during periods of active verbalization.

They are never encountered during pauses. They are those movements which, as their name suggests, have a characteristic directionality in space, away from the body, toward the interlocutor. The two major types of object-focused movements are speech-primacy movements and motor primacy movements. Speech-primacy movements are characterized by their subordination to the spoken word. They closely parallel the rhythmic aspects of speech. There are two specific categories of speech primacy movements: punctuating movements and minor qualifiers. Punctuating movements accentuate and highlight what is being said, enhance vocal intonation and lend the verbal message some of its characteristic color. Typically, they occur in bursts. Minor qualifiers tend to be conventionalized, small movements, involving a small turning of the wrist; they tend to be well delineated and crisp. The other major type of object focused movements, motor-primacy movements, in addition to being closely phased in with the tempi of speech, also carry some aspect of the meaning (the content of) the utterance, which is, in these instances, being partially delegated to the motor realm. There are three kinds of motor-primacy movements: representational movements are those movements in which images or ideas, objects or situations are characterized by some physical characteristic which is being given motor expression, e.g., accompanying a verbal description of a narrow corridor by moving the palms close together and parallel to each other and holding them for a moment in that position, at chest level; pointing movements are gestures used to refer to a person or thing, or the temporal or spatial referents of a person or a thing,

such as, for example, someone using their thumb to point away from the speaker and behind them, to indicate "back there"; finally, groping movements are the movements that appear during speech failures, when the person is actively struggling to find the right word.

As object-focused movements are scored in relation to speech, so they are computed as rates per 100 words, thus controlling for variations in the speaker's verbal productivity.

Presentation of Results and Data Analysis. The assumption that affect would remain stable during the course of the hospitalization was justified only in the case of the full affect group. The flat affect group, at discharge, became evenly divided between those (N=7) whose affect remained flat and those (N=7) whose affect was judged to be within normal limits. The affect data will be discussed fully in the first section of the Results; the other four sections of the Results will deal with psychotic symptomatology, formal thought disorder, language construction and kinesic activity, respectively.

Because of the unpredicted further subgrouping, the results for sections I through V will be presented in two parts. Part A will be devoted to testing the proposed hypotheses for the flat affect group and the full affect group, based on admission affective ratings. The data will be analyzed by comparing those two groups for differences between their means using t-tests (correlated t-tests for the admission vs. discharge comparisons). Part B will be devoted to a post-hoc analysis of the three groups that emerge if combined admission/

discharge affective ratings are used. The three groups will be referred to as Group 1, the full affect group (the same group as part A), Group 2, the flat/flat group, and Group 3, the flat/full group. (It should be kept in mind that, what in part A is referred to as the flat affect group, in part B, becomes Groups 2 and 3). One way ANOVAs and a posteriori Tukey tests will be used in part B, along with t-tests, where relevant.

Data were analyzed using packaged programs from the Statistical Package for the Social Sciences.

CHAPTER VI

RESULTS

Section I - AffectIA. A comparison of the Full Affect Group vs. the Flat Affect Group

IA.1. Admission. The means and standard deviations obtained by the two groups on admission are presented in Table 6. The full affect group showed significantly greater facial expressiveness, spontaneity of movement, expressiveness of gesture and inflection of voice than did the flat affect group. Given that group assignments were made on the basis of the global rating of affective flattening item, it is not surprising to note the highly significant difference between the two groups at Time 1. Inappropriate affect and slowed speech did not distinguish the two groups.

IA.2. Admission vs. Discharge. Table 7 illustrates that, when examining the affective behavior, only two items are significantly reduced. These are inappropriate affect and slowed speech. It is interesting that those two items were the only ones which did not significantly differ between the groups at Time 1. There were no other significant changes.

IA.3. Discharge. Though the global rating of affective flattening of the full affect group was still significantly lower than that of the flat affect group, and though differences between means were consistently if not significantly in that direction, nonetheless, by discharge, the pronounced differences that were observed between the two groups on admission were no longer present, (See Table 6).

Affect Ratings for the Full vs. Flat Affect Groups at Admission and Discharge

Affect Rating Scale Item		Full Affect N = 8		Flat Affect N = 14		$\frac{t}{\text{value}}$	p^* value
		Mean	S.D.	Mean	S.D.		
1. Unchanging facial expression	Admission	1.6	0.4	2.9	0.7	4.8	<.001
	Discharge	1.8	0.6	2.5	1.0	1.6	(.08)
2. Decreased spontaneous movement	Admission	1.1	0.2	2.2	0.9	4.7	<.001
	Discharge	1.6	0.6	1.9	0.9	0.7	NS
3. Paucity of expressive gestures	Admission	1.1	0.2	2.9	0.7	9.4	<.001
	Discharge	1.9	0.6	2.3	1.1	1.0	NS
4. Inappropriate affect	Admission	1.2	0.4	1.5	0.8	1.1	.15
	Discharge	1.1	0.4	1.1	0.3	0.1	NS
5. Lack of vocal inflection	Admission	1.0	0	2.4	0.7	4.9	<.001
	Discharge	1.2	0.3	1.8	1.0	1.4	(.08)
6. Slowed speech	Admission	1.1	0.2	1.4	0.7	1.2	NS
	Discharge	1.0	0	1.1	0.3	1.3	NS
7. Global rating of affective flattening	Admission	1.1	0.2	3.0	0.4	11.4	<.001
	Discharge	1.7	0.3	2.2	1.0	1.8	.04

*1-tailed p values

Table 7

Admission vs. Discharge Affect Ratings for Entire Cohort (N=22)

Affect Rating Scale	<u>Admission</u>		<u>Discharge</u>		<u>t</u> value	<u>p</u> [*] value
	Mean	S.D.	Mean	S.D.		
1. Unchanging facial expression	2.4	0.9	2.2	0.9	0.9	NS
2. Decreased spontaneous movement	1.8	0.9	1.8	0.8	0.1	NS
3. Paucity of expressive gestures	2.2	1.0	2.1	0.9	0.4	NS
4. Inappropriate affect	1.4	0.7	1.1	0.3	1.7	.05
5. Lack of vocal inflection	1.8	0.9	1.6	0.9	1.1	NS
6. Slowed speech	1.3	0.6	1.1	0.3	1.7	.05
7. Global rating of affective flattening	2.3	1.0	2.0	0.8	1.2	NS

* 1-tailed p values

IB. Analysis of the performance of the three post-hoc groups.

IB.1. Admission. On admission, with one exception, the flat/affect group and the flat/full group (i.e., Groups 2 and 3, respectively) were indistinguishable from each other on the Affect Rating Scale, both being rated as significantly more flat than Group 1 on five out of the seven items of that scale. However, there was a tendency for the flat/full group to exhibit more inappropriate affect than the flat/flat group (Table 8).

IB.2. Admission vs. Discharge. In examining the changes in affect quality from admission to discharge, the significant decreases in affective flattening that the flat/full group underwent are striking (see arrows in Table 8). The dramatic reduction they exhibited in their ratings of affective flattening was reflected in facial expressiveness, vocal inflection, presence of expressive gestures and spontaneous movement. Group 2, the flat/flat group, exhibited no shifts in their affective demeanour. However, Group 1, the full affect group, demonstrated mild, though statistically significant, increases in their affective flattening on four out of the seven items of the scale, including the global rating.

IB.3. Discharge. Essentially, the pattern observed on admission had been re-aligned: by discharge, Group 1 and Group 3 (i.e., the full affect and the flat/full affect group) were indistinguishable from each other and significantly different - less affectively flat - than Group 2, the flat/flat affect group. This was true for facial expression, expressive gestures, vocal inflection and the global affective

Table 8

ANOVA of Affect Ratings at Admission and Discharge for the Three Post hoc Affect Groups

		Full/Full N = 8	Flat/Flat N = 7	Flat/Full N = 7	F value	p value	Subsets*
Affect Rating Scale Items		Mean	Mean	Mean			
1. Unchanging facial expression	Admission	1.6	3.1	2.7	12.8	<.001	1/2;1/3
	Discharge	1.8	3.3	1.6	14.9	<.001	1/2;3/2
2. Decreased spontaneous movement	Admission	1.1	2.2	2.2	6.1	.01	1/2;1/3
	Discharge	1.6	2.4	1.4	3.9	.04	3/2
3. Paucity of expressive gestures	Admission	1.1	3.0	2.9	25.7	<.001	1/2;1/3
	Discharge	1.9	3.2	1.4	23.8	<.001	1/2;3/2
4. Inappropriate affect	Admission	1.2	1.1	1.9	3.1	(.07)	(2/3)
	Discharge	1.1	1.0	1.2	0.9	NS	
5. Lack of vocal inflection	Admission	1.0	2.3	2.3	11.7	<.001	1/2;1/3
	Discharge	1.2	2.4	1.2	6.2	.009	1/2;3/2
6. Slowed speech	Admission	1.1	1.4	1.4	0.5	NS	
	Discharge	1.0	1.2	1.1	1.5	NS	
7. Global rating of affective flattening	Admission	1.1	2.9	3.1	67.5	<.001	1/2;1/3
	Discharge	1.7	3.0	1.4	22.8	<.001	12/;3/2

*pairs significantly different at the .05 level; Tukey test

↑increase from Admission to Discharge significant at the .05 level (t-test)

↓decrease from Admission to Discharge significant at the .05 level (t-test)

rating. As far as spontaneous movement was concerned, it was the difference between the two groups who had been so similar on admission which contributed most to the significant ANOVA. Though much closer to the flat/full group, the score of the full affect group on that item was between that of the flat/full group and the flat/flat group.

Comments on Findings on Affect.

The findings yielded by the assessment of the affective quality of the cohort and changes experienced between admission and discharge by subgroups within it suggest that face, voice and hands, as well as spontaneity and mobility of the body in general, are all sensitive channels for affect expression. There is a suggestion that inappropriate affect might be the specific result of an interaction between an affective disturbance and the actively psychotic state. For this sample, slowed speech was not a manifestation of affective flattening.

In light of the dramatically different courses taken by the two subgroups of the initially flat affect group in the process of recompensation, and given that the only difference between them picked up by the Affect Rating Scale on admission was a tendency for the flat/full subgroup to show more inappropriate affect, demographic and clinical characteristics of these two groups were compared. The flat/flat group tended to be somewhat younger than the flat/full group. Though the difference in the two means was not significant ($t=1.3$; $p=.11$), this is mentioned because it is in accord with reports by Harris and Metcalfe (1956) and Alpert and Anderson (1977) of increased frequency of young patients in the affectively flattened group. The

only difference between the flat/flat group and the flat/full group that approached acceptable levels of statistical significance was a tendency for the flat/flat group to have had a longer period of deteriorated functioning prior to admission (11.6 months) than the flat/full group (4.3 months) did ($t=1.5$; $p=.08$).

In the review of the literature presented earlier, the most striking findings were those showing the power of affect to predict outcome and quality of functioning many years later (e.g., Knight et al., 1979; Vaillant, 1978). It seemed to follow that the ability to predict functioning was, at least in part, based on its own stability over time; hence, it seemed quite reasonable to expect that affect quality would not drastically alter over the period of a few weeks that this investigation would cover. Furthermore, at the time that the review of the literature was written and this study began, there had been no studies that measured affect at two points¹ in time; when affect was measured, it was measured once, and usually soon upon admission to a psychiatric hospital for an acute psychosis.

In retrospect, especially given the affective shift demonstrated by Group 3, the flat/full group, several issues have become clearer. First, the outcome studies reported not findings about the prognostic power of affect per se, as much as findings about the prognostic power of

1. At this writing, Möller and von Zerssen (1982) have just published a study where clinical ratings and self-reports of affective states on admission and discharge were performed. Their results are strikingly similar to the ones being presented here: on admission, 62% of their patients gave evidence of what they call "depressive-apatetic syndrome" (63% of this sample exhibited flattened affect on admission); at discharge, only 22% of their sample continued to exhibit that syndrome (only 32% of this sample continued to show flattened affect on discharge).

flat affect in the presence of psychosis. Second, even if flat affect on admission predicted flat affect on subsequent admissions, it does not of necessity follow that affect was likely to have been flat at all times during the intervening period; to my knowledge, there is no empirical basis on which to base predictions about what affect quality is likely to be when the individual is in a different state (e.g., in remission, as opposed to acute psychosis).

The affective shift experienced by some patients in this cohort is in no way at odds with the well-established conclusions about flat affect, psychosis and outcome. It does however raise questions about the implications of flat affect during acute psychosis for affect quality in the absence of psychosis. This question will be further discussed in the Discussion.

Section II - Affect and Symptomology

IIA. Hypothesis Testing: The Full Affect Group vs. the Flat Affect Group.

IIA.1. Admission. The means and standard deviations obtained by the two groups on the BPRS symptom clusters are presented in Table 9. As hypothesized, there were no differences between the two groups in symptoms not related to affect (see item #7), but the flat affect group did manifest significantly more anergia than the full affect group. The only exception to the above came in the individual symptom area of unusual thought content: the flat affect group was rated significantly higher ($t=2.4$; $p=.01$) than the full affect group. As far as global psychopathology score, the flat affect group exhibited significantly higher levels than the full affect group.

On admission, the correlation between anergia and the global rating of affective flattening - on the Affect Rating Scale - was .83 ($p=.001$).

Table 9

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BPRS Cluster Score for the Full vs. Flat Affect Groups at Admission and Discharge

BPRS Cluster Scores		Full Affect N = 8		Flat Affect N = 14		<u>t</u> value	p* value
		Mean	S.D.	Mean	S.D.		
1. Anxiety and Depression	Admission	10.0	4.3	10.1	4.1	0.1	NS
	Discharge	8.9	3.1	7.2	1.8	1.6	(.06)
2. Anergia	Admission	5.6	2.1	12.1	2.1	7.0	<.001
	Discharge	4.7	1.2	9.5	3.4	4.8	<.001
3. Thought Disturbance	Admission	16.9	3.2	18.1	4.4	0.7	NS
	Discharge	8.9	2.4	9.3	3.9	0.3	NS
4. Activation	Admission	4.9	1.7	4.5	1.9	0.5	NS
	Discharge	4.0	0.9	3.9	1.7	0.1	NS
5. Hostile Suspiciousness	Admission	9.4	3.4	9.0	2.4	0.3	NS
	Discharge	5.4	2.1	5.9	2.7	0.4	NS
6. Global psychopathology	Admission	46.7	9.0	53.7	7.0	2.0	.03
	Discharge	31.9	4.4	35.8	7.2	1.4	(.09)
7. Total non-affect related psychopathology score	Admission	41.1	7.7	41.6	7.3	0.2	NS
	Discharge	27.1	3.9	26.3	5.9	0.4	NS

*1-tailed p values

Table 10

Admission vs. Discharge BPRS Cluster Scores for the Entire Cohort (N=22)

BPRS Cluster Score	<u>Admission</u>		<u>Discharge</u>		<u>t</u> value	<u>p</u> value
	Mean	S.D.	Mean	S.D.		
1. Anxiety and Depression	10.0	4.1	7.8	2.4	2.8	.01
2. Anergia	9.7	3.8	7.8	3.6	2.4	.01
3. Thought Disturbance	17.6	3.9	9.1	3.4	9.1	<.001
4. Activation	4.6	1.8	4.0	1.5	1.6	(.06)
5. Hostile Suspiciousness	9.1	2.7	5.7	2.4	6.3	<.001
6. Global psychopathology	51.2	8.3	34.4	6.5	9.5	<.001
7. Total non-affect related psychopathology score	41.5	7.2	26.6	5.2	9.3	<.001

*1-tailed p values

IIA.2. Admission vs. Discharge. As predicted, the entire cohort experienced highly significant reductions in global psychopathology as well as in all but one symptom cluster of the BPRS (Table 10). Compared to admission, at discharge the cohort manifested significantly less thought disturbance, hostile suspiciousness, anxiety and depression as well as significantly less anergia.

IIA.3. Discharge. At discharge, the full affect group continued to show significantly less anergia than the flat affect group. There was a trend in the direction hypothesized for the flat affect group to exceed the full affect group in global psychopathology ratings. They also tended to show less anxiety and depression at discharge (Table 9). An examination of the individual symptom items revealed them to also show more suspiciousness ($t=1.5$; $p=.05$).

IIB. Post-hoc Analysis of the Three Groups.

IIB.1. Admission. The flat/flat group and the flat/full group were indistinguishable from each other on BPRS symptom clusters, and were both significantly more anergic than Group 1, as the results of the ANOVAs presented in Table 11 indicate. However, it was Group 2, the flat/flat group, who had the highest global psychopathology at admission, and thus tended toward a significant difference from Group 1, the full affect group. It is noteworthy that, in examining individual symptom areas, the flat/flat group exhibited more unusual thought content ($t=2.8$; $p=.01$) and more suspiciousness ($t=2.0$; $p=.04$) than the flat/full group.

IIB.2. Admission vs. Discharge. While all three groups registered significant drops in global psychopathology, as well as in non-affect related symptoms, only Group 3, the flat/full group, exhibited a significant decrease in anergia (see arrows in Table 11).

IIB.3. Discharge. By discharge, Group 3, the flat/full group, was indistinguishable from Group 1, the full affect group. They were both rated as significantly less anergic than Group 2, the flat/flat group. There was a significant difference between groups in ratings of global psychopathology, accounted for by the ratings for the flat/flat group being significantly higher than those for the full affect group (Table 11).

Comments on Affect and Symptomology

As hypothesized, when patients were floridly psychotic, most of the variance was accounted for by the acute stage of the disorder: for the most part (exceptions to be discussed below), patients whose affect was flat did not differ from patients whose affect was full in either type or severity of (non-affect related) symptoms exhibited. Furthermore, as expected, psychotic symptomatology decreased markedly from admission to discharge. The third hypothesis regarding the role of affect as a predictor of poorer, ie., more psychotic performance at discharge, was only partially confirmed: there was a tendency for those patients who showed affective flattening on admission to have higher global psychopathology scores at discharge. However, two qualifications must be made: those higher scores at discharge applied largely to those patients whose affective flattening continued to be prominent at discharge (i.e., Group 2); in addition, those higher scores primarily reflected differences in the

Table 11

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ANOVA of the BPRS Cluster Scores for the Three Post-hoc Affect Groups at Admission and Discharge

		Full/Full Group 1 N=8 Mean	Flat/Flat Group 2 N=7 Mean	Flat/Full Group 3 N=7 Mean	F value	P value	Subsets*
1. Anxiety and Depression	Admission	10.0	11.6	8.3	1.4	NS	
	Discharge	8.9	8.0	6.4	2.1	NS	
2. Anergia	Admission	5.6	11.1	13.0	28.4	<.001	1/2;1/3
	Discharge	4.8	12.1	6.9	33.0	<.001	1/2;3/2
3. Thought Disturbance	Admission	16.9	19.1	17.0	0.7	NS	
	Discharge	8.8	8.9	9.7	0.2	NS	
4. Activation	Admission	4.9	4.4	4.6	0.1	NS	
	Discharge	4.0	3.6	4.3	0.4	NS	
5. Hostile Suspiciousness	Admission	9.4	9.7	8.3	0.5	NS	
	Discharge	5.4	6.7	5.0	1.0	NS	
6. Global Psychopathology	Admission	47.7	56.3	51.1	2.9	(.08)	(1/2)
	Discharge	31.9	39.3	32.3	3.7	.04	1/2
7. Total non-affect related psychopathology score	Admission	41.1	45.1	38.1	1.8	NS	
	Discharge	27.1	27.1	25.4	0.3	NS	

* pairs significantly different at the .05 level (Tukey test)

↑ increase from Admission to Discharge significant at the .05 level (t-test)

↓ decrease from Admission to Discharge significant at the .05 level (t-test)

anergia cluster, inasmuch as there were no significant differences between any of the groups in overall ratings of symptomology, once anergia scores were subtracted from the analysis. Positive symptoms appeared to be largely uncorrelated with affect and its vicissitudes. These findings suggest that "positive" and "negative" symptoms have different courses, are influenced by different sets of factors, and, at least in the short run, seem to be independent of each other.

The exceptions occurred in the areas of unusual thought content and suspiciousness, symptoms in which the flat/flat affect group was higher than the other groups. Unusual thought content on the BPRS is synonymous with what Harrow and Prosen (1978, 1979) call idiosyncratic thinking. It is possible that these two symptom areas suggest the beginning of a differentiation between Group 2 and Group 3, both of which demonstrated affective flattening on admission: one hypothesis would be that the flat affect of the flat/flat group, stable throughout the hospitalization reflects an internalized, more engrained adaptational style aimed at reduced interpersonal contact, with a distinctly paranoid coloring to it. On the other hand, the flat affect on admission of the flat/full group, which brightens as the psychosis lifts, in the absence of its being associated with any particular style or pattern, can be regarded as a reactive response to overwhelming stress.

Section III - Affect and Formal Thought Disorder

IIIA. Hypothesis Testing: The Full Affect Group vs. The Flat Affect Group

IIIA.1. Admission. The means and standard deviations for the major categories of thought disorder (positive and negative) of the full affect

and the flat affect groups are presented in Table 12. As predicted the flat affect group showed significantly greater global thought disorder on admission, as well as significantly higher negative thought disorder ratings. There were no differences between the groups in the summary scores for positive thought disorder subtypes.

IIIA.2. Admission vs. Discharge. Table 13 depicts the significant decrease in the global rating of thought disorder of the entire cohort. There was also a highly significant reduction in positive subtypes of thought disorder (derailment, loss of goal, illogicality, etc.), as well as a trend toward a decrease in negative subtypes of thought disorder. This latter finding was due to the significant decrease in negative thought disorder from admission to discharge that only a subgroup of the flat affect group experienced, as will be discussed below.

IIIA.3. Discharge. At discharge, the same pattern characterized the relative performance of the two groups as did at admission: the flat affect group, as had been hypothesized, showed greater negative thought disorder as well as significantly greater global thought disorder than the full affect group. There was no difference in the positive thought disorder ratings of the two groups (Table 12).

IIIB. Post-hoc Analysis of the Three Groups.

IIIB.1. Admission. The results of the ANOVAs among the three groups at Time 1 are shown in Table 14. The full affect group was rated as having significantly less global thought disorder than either of the two groups (both of which had flat affect on admission). There was

Table 12

Formal Thought Disorder Summary Scores for the Full vs. Flat Affect Groups at Admission and Discharge

TLC Scale Summary Scores		Full Affect N=8		Flat Affect N=14		<u>t</u> value	p* value
		Mean	S.D.	Mean	S.D.		
1. Total positive thought disorder	Admission	43.1	32.3	56.8	39.3	0.8	NS
	Discharge	20.0	23.1	27.5	33.2	0.6	NS
2. Total negative thought disorder	Admission	6.2	11.9	26.8	24.1	2.3	.02
	Discharge	3.7	4.4	17.1	17.8	2.7	.01
3. Global rating of thought disorder	Admission	16.9	11.9	28.6	6.3	2.6	.01
	Discharge	8.7	5.8	15.4	9.3	1.8	.04

*1-tailed p values

Table 13
Admission vs. Discharge Summary Scores for the Entire Cohort (N=22)

TLC Scale Summary Scores	Admission		Discharge		t value	p* value
	Mean	S.D.	Mean	S.D.		
1. Total positive thought disorder	51.8	36.7	24.8	29.6	3.3	.01
2. Total negative thought disorder	19.3	22.5	12.3	15.7	1.4	(.08)
3. Global rating of thought disorder	24.3	10.3	13.0	8.7	4.6	<.001

*1-tailed p values

Table 14

ANOVA of the Formal Thought Disorder Summary Scores for the Three Post-hoc Affect Groups at Admission and Discharge

		Full/Full N=8 Group 1	Flat/Flat N=7 Group 2	Flat/Full N=7 Group 3			
TLC Scale Summary Scores		Mean	Mean	Mean	F value	P value	Subsets*
1. Total thought disorder	Admission	43.1	68.6	45.0	1.1	NS	
	Discharge	20.0	↓ 29.3	25.7	0.2	NS	
2. Total negative thought disorder	Admission	6.2	22.1	31.4	2.8	(.08)	(1/3)
	Discharge	3.7	29.3	↓ 5.0	12.8	<.001	1/2;3/2
3. Global rating of thought disorder	Admission	16.9	28.6	28.6	4.4	.03	1/2;1/3
	Discharge	↓ 8.7	↓ 20.7	↓ 10.0	6.2	.01	1/2;3/2

* pairs significant at the .05 level (Tukey test)

↑ increase from Admission to Discharge significant at the .05 level (t-test)

↓ decrease from Admission to Discharge significant at the .05 level (t-test)

also a tendency for the full affect group to have exhibited less negative thought disorder, primarily as a result of the difference between it and the flat/full group. It is interesting to note that it is the flat/full group who had the greatest amount of negative thought disorder on admission. A comparison of Groups 2 and 3 on individual subtypes of thought disorder found the flat/flat group to evidence significantly more illogicality ($t=1.8$; $p=.05$).

IIIB.2. Admission vs. Discharge. All three groups evidenced significant reductions in their global ratings of thought disorder (see arrows in Table 14). They also demonstrated sizeable decreases in the amount of positive thought disorder, though only that of the flat/flat group reached significance. However, only the flat/full group manifested a significant lessening in negative thought disorder: their discharge rating was 1/6 of their rating on admission.

IIIB.3. Discharge. At discharge, the thought disorder ratings of the flat/full group were comparable to those of the full affect group: both differed significantly from the ratings of the flat/flat group, which were much higher both in negative thought disorder and in global thought disorder.

Comments on Affect and Formal Thought Disorder

In this part of the investigation, most of the hypotheses were confirmed. There was an extremely strong relationship between flat affect and negative thought disorder: flat affect went along with a general impoverishment in both the quantity (poverty of speech) and quality (poverty of content of speech) of thought, as reflected in

spoken language. Like flat affect, negative thought disorder was believed to be a reflection of chronicity, i.e., institutionalism, as well as possibly its consequence. In at least one group of patients -- the patients of the flat/full group -- this was shown not to be the case.

I should emphasize that, at the other end of the continuum, the relationship between affect and thought disorder did not apply, that is, positive thought disorder subtypes occurred independent of affect quality. Patients with flat affect exhibited derailment, loss of goal, even pressure of speech, for the most part just as much as the patients with full affect, if not on occasion, more. It is possible that severe chronicity may play a role here: the flat affect patients in this study spoke enough, even though relatively less, for the raters to be able to form reliable judgments as to the quality of their thought processes; thus both negative and positive types of thought disorder could be evaluated. In this cohort, not only were they not mutually exclusive, but they tended to co-exist pari passu in most of the flat affect patients on admission. It is quite conceivable that in more advanced stages of chronic psychosis, if patients are almost mute, their much more limited productions would make an evaluation of positive thought disorder an impossible task.

Thus, I would conclude that, flat affect and negative thought disorder are closely intertwined. Positive thought disorder, on the other hand, seems an entirely different process: unrelated to affect but related to acute psychosis and the information-processing difficulties that characterize states of severe cognitive disorganization, it is an invariant feature of the thinking of all those patients who are in that state, regardless of the quality of their affect.

The three (post-hoc) groups were indistinguishable in most subtypes of positive thought disorder, with the notable exception of one subtype, illogicality. Given the number of comparisons carried out, this result could be expected to occur by chance. However, it does resonate with the BPRS symptom areas of unusual thought content and suspiciousness; on admission in all three areas, the flat/flat group was shown to hold the edge over the other two groups. Illogicality would seem like the kind of thought process that would lead to unusual thought content as well as delusional thinking. The relationship between affect and aspects of paranoid traits will be explored below, in Discussion.

Another parallel finding on both the TLC and the BPRS was the following: on admission, there was a tendency for Group 3, the flat/flat group, to exhibit those features associated with flat affect - anergia, negative thought disorder - even more strongly than the flat/flat group. Though the difference did not reach satisfactory levels of statistical significance, nonetheless they occurred consistently in the same direction (cf. also affect ratings on admission for Group 3 vs. Group 2).

Section IV - Affect and Language Construction

IVA. Hypothesis Testing: The Full Affect Group vs. The Flat Affect Group

IVA.1. Admission. The hypothesis that on admission, the language construction activities of the two groups would not differ was confirmed as far as the code aspect of language was concerned: with the exception of a tendency for the flat affect group to have more fragments in their

verbalization samples than the full affect group, there were no differences in syntactic complexity between them (Table 15). However, the two groups did differ on productivity and in the status and focus aspects of language construction (Tables 15 and 16). The full affect group was significantly more productive than the flat affect group. The flat affect group showed a significantly higher prevalence of utterance that were Object/Monadic in their status and focus, as well as a tendency to prefer Monadic focus clauses with either kind of status noun.

IVA.2. Admission vs. Discharge. As hypothesized, there was a significant drop in fragmentation for the entire cohort (Table 17). However, contrary to expectations, there was no concomittant increase in the proportion of syntactically more complex clauses. The status and focus aspects were more sensitive to the nuances of the process of recompensation from psychosis. There were significant increases in the use of utterances that were Dyadic in focus, as well as of Self/Dyadic utterances, more specifically. There was a significant reduction in the reliance on Monadic focus utterances for the cohort as a whole. There were trends in the direction of a rise in Self status and a lowering in Object status utterances.

IVA.3. Discharge. Full affect on admission did not predict a higher proportion of syntactically complex clauses, nor did flat affect on admission predict a higher proportion of syntactically primitive clauses. There were no syntactic patterns which distinguished the two groups, but the difference was in the direction opposite from the one hypothesized: it was the full affect group who had significantly

Table 15

Productivity (number of words) and Language Construction (Code) of the Full vs. Flat Affect Groups at Admission and Discharge

Language Code		Full Affect N=8		Flat Affect N=14		t value	p* value
		Mean	S.D.	Mean	S.D.		
1. Productivity (no. of words)	Admission	699.2	205.8	495.7	266.2	1.9	.04
	Discharge	691.5	91.8	541.7	232.6	2.1	.02
2. Fragments (% of clauses)	Admission	5.3	3.9	8.0	4.4	1.4	(.08)
	Discharge	5.9	3.7	2.9	2.9	2.1	.02
3. Simple narrative (% of clauses)	Admission	27.9	8.2	30.4	20.8	0.4	NS
	Discharge	24.5	7.6	26.5	18.0	0.4	NS
4. Specified language (% of clauses)	Admission	72.1	8.2	69.6	20.8	0.4	NS
	Discharge	75.5	7.6	73.5	17.9	0.4	NS
5. Clause: sentence ratio	Admission	1.6	0.2	1.6	0.4	0.4	NS
	Discharge	1.6	0.3	1.7	0.5	0.4	NS

* 1-tailed p values

Table 16

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Language Construction (Status and Focus) of the Full vs Flat Affect Groups at Admission and Discharge

Language Status and Focus		Full Affect N=8 Mean	S.D.	Flat Affect N=14 Mean	S.D.	t value	p value
1. Self status (% of clauses)	Admission	54.5	13.5	52.0	15.1	0.4	NS
	Discharge	62.7	8.1	55.0	18.1	1.4	(.09)
2. Object status (% of clauses)	Admission	45.6	13.5	48.5	14.8	0.5	NS
	Discharge	38.2	8.5	45.2	18.6	1.2	NS
3. Monadic focus (% of clauses)	Admission	48.7	9.1	55.0	9.9	1.5	(.08)
	Discharge	45.9	5.6	48.7	11.7	0.6	NS
4. Dyadic focus (% of clauses)	Admission	51.4	9.1	45.5	10.0	1.4	(.09)
	Discharge	55.0	5.6	51.5	11.6	1.0	NS
5. Self/Monadic (% of clauses)	Admission	26.4	12.4	25.8	8.4	0.1	NS
	Discharge	25.9	6.4	22.6	10.9	0.8	NS
6. Self/Dyadic (% of clauses)	Admission	28.1	4.4	26.2	11.4	0.6	NS
	Discharge	36.8	6.4	32.4	12.7	0.6	NS
7. Object/Monadic (% of clauses)	Admission	22.3	5.0	29.2	10.2	1.8	.04
	Discharge	20.0	3.8	26.1	11.4	1.8	.04
8. Object/Dyadic (% of clauses)	Admission	23.3	9.2	19.3	10.8	0.9	NS
	Discharge	18.2	8.3	19.1	11.1	0.2	NS

* 1-tailed p values

greater evidence of fragmentation in their verbalization samples than did the flat affect group. The full affect group significantly exceeded the flat affect group in productivity, and they also tended to use more Self status utterances. The flat affect group, on the other hand, used a significantly higher proportion of Object/Monadic clauses (Tables 15 and 16).

IVB. Post-hoc Analysis of the Three Groups

IVB.1. Admission. Tables 18 and 19 summarize the results of the ANOVAs conducted for the three groups. Differences among the groups approached significance for three variables, with the full affect group and the flat/full affect group (Group 3) differences accounting for most of the explained variance. Group 2, the flat/full affect group, was between them. It was Group 1 who had the highest productivity and Dyadic focus clauses percentage means, and Group 2 that had the highest Monadic focus clause percentage means. In a comparison of the two groups characterized by affective flattening at admission, the flat/full group showed significantly more monadic focus utterances ($t=1.8$; $p=.05$) and less dyadic focus ($t=2.1$; $p=.03$) utterances than the flat/flat group.

Examining the raw data on verbal productivity on admission, it became evident that the scores of the patients in the flat/flat group (Group 2) split into two non-overlapping groups. Three of the patients were low on verbal productivity: their 5 minute personal verbalization samples ranged from 197 words to 413 words, with a mean of 297 words. The remaining four patients in Group 2 were high on verbal productivity:

Table 17

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Admission vs. Discharge Productivity and Language Construction (Code, Status and Focus)
for the Entire Cohort (N=22)

Language Code, Status and Focus	Admission Mean	S.D.	Discharge Mean	S.D.	t value	p* value
1. Productivity (no. of words)	569.7	260.9	596.2	204.3	0.5	NS
2. Fragments (% of clauses)	7.0	4.3	4.0	3.5	2.4	.01
3. Simple narrative (% of clauses)	29.5	17.1	25.8	14.8	1.1	NS
4. Specified language (% of clauses)	70.5	17.1	74.2	14.8	1.1	NS
5. Clause: sentence ratio	1.6	0.3	1.6	0.4	0.6	NS
6. Self status (% of clauses)	52.9	14.2	57.8	15.4	1.4	(.09)
7. Object status (% of clauses)	47.4	14.1	42.6	15.6	1.3	(.09)
8. Monadic focus (% of clauses)	52.7	9.9	47.7	9.8	1.9	.03
9. Dyadic focus (% of clauses)	47.6	9.9	52.8	9.9	1.9	.03
10. Self/Monadic (% of clauses)	26.0	9.8	23.8	9.4	1.2	NS
11. Self/Dyadic (% of clauses)	26.9	9.4	34.0	10.9	2.6	.01
12. Object/Monadic (% of clauses)	26.7	9.2	23.9	9.7	1.1	NS
13. Object/Dyadic (% of clauses)	20.8	10.2	18.8	10.0	0.8	NS

* 1-tailed p values

their personal verbalization samples ranged from 625 words to 925 words, with a mean of 797 words. It further appeared that the Group 2 patients with high productivity (and generally with pressure of speech) primarily dwelt on delusional material, while the Group 2 patients with low productivity did not. Investigating this impression statistically, on admission, a correlation of .70 ($p=.04$) was obtained between the number of words spoken and the global rating of thought disorder, as well as a correlation of .70 ($p=.04$) between the number of words and global psychopathology score on the BPRS, for Group 2 only. This relationship between verbal productivity and psychopathology at Time 1 was nonexistent for both Group 1 and Group 3.

In order to convey the flavor of the 5 minute personal verbalization samples, below are the first 6 lines from the transcripts of patients with full and flat affect and high and low productivity. Clearly, they took very different amounts of time to speak what in the transcript are 6 lines.

First, the patient with the highest productivity from the flat/flat group (925 words):

Well what's important to me is that Russia don't create war with the US and make things worse off than they are and that people love each other and understand each other and be free to talk in the streets with one another, share things they have in common or even not in common you know. Because what isn't in common with another person can be turned into common good (goes on to talk about the Mafia...etc.)

Second, the patient with the lower productivity from the flat/flat group (197 words):

Talk about myself? Well, I like dancing and singing. And I have a daughter. And I hope she is growing into a grown woman, (pause) Being..I like to be myself, I'm a talkative person. When I am with friends. And uh (pause) I like to socialize a lot but I never get the opportunity to do so. And uh (pause) I can't think of anything else (pause) I'm from a big family and uh (pause),....

Third, the patient with the highest productivity from the full affect group (954 words):

I am very afraid of a man bigger than me because I feel I was telling the doctor the other day that if a man is bigger than me and he was a homosexual and he tried to beat me up to give him sex or make me have sex with him I would become weak and I wouldn't like it. It would blow my mind. (he crosses himself). I don't like nobody telling me what to do. I've lived with my family all my life.

Fourth, the patient with the lowest verbal productivity from the full affect group (455 words):

Well, what I'd like to do is maybe do the same thing my mother do, right? Cuz uh my mother's a diet aide. So I wanna like... Before 2 years ago, maybe four years, I went down there to fill the application, you know. That was around four years ago. I'd already had my daughter. Yeah (pause) well, anyway my mother told me to come down there to fill the application to take her place...

At Time 1, note that only the low productivity patient with affective flattening ran out of what to say almost immediately upon beginning to talk.

IVB.2. Admission vs. Discharge. Different patterns of recompensation emerged for each of the three groups, Group 1, the full affect group, did not show any significant changes in either productivity or syntactic complexity; they exhibited a heightening of their preference for Self Status as well as Self/Dyadic utterances, and decreased even

further their reliance on Object Status and Object Dyadic clauses. The flat/full group significantly lowered their productivity (6 out of the 7 patients in the group showed low productivity by discharge. Only one patient continued to have high productivity; this patient was rated as most psychotic and most thought disordered of the entire sample at discharge). They also significantly and dramatically reduced the proportion of fragments in their language. The flat/full group showed a marked increase in verbal productivity, as well as in their use of Dyadic focus and Self/Dyadic utterances. They also exhibited a significant reduction in their use of Monadic focus clauses (see arrows in Tables 18 and 19).

IBV.3. Discharge. By discharge, both the full affect group and the flat/full group were significantly more verbally productive than the flat/flat group. However, the latter had a significantly smaller proportion of fragments, that difference being most pronounced with regard to the full affect group. Group 3, the flat/flat group, also tended to use a greater proportion of Object/Monadic clauses, especially when compared with Group 1 (see Tables 18 and 19).

Comments on Affect and Language Construction

In studying language construction, the strongest and least ambiguous finding that emerged was the relationship between fluency, or verbal productivity, and affect. It is not to oversimplify matters but rather to clarify them to say that people whose affect is full tend to find a lot to say, whereas people whose affect is flat - in the absence of a push from a delusional psychosis - find little to say to someone else. The previously discussed anergia cluster on the BPRS

as well as the negative thought disorder subtypes on the TLC scale both capture the qualitative as well as the quantitative aspects of flat affect that were also reflected in the language construction style of the patients in this study.

Quantitatively, there was an actual paucity of words that characterized the productions of patients with affective flattening. Qualitative differences also emerged. These patients seemed to exhaust a topic after only a few phrases, usually relatively stereotyped and unrevealing. Their 5 minute personal verbalization samples were strewn with "I don't know" and "nothing comes to mind" and the like. It should be made clear that this is not a discussion of slowed speech: for the most part, when they did utter their sentences, the rate of speech of the flat affect patients was within normal limits. It was the many pauses between their sentences and their apparent lack of interest in anything enough to wish to tell someone else about it that produced an impression of something tangibly absent. For the most part, when talking to them, one had the feeling of people who were being compliant. It occurred to me that, in this context compliance was less psychologically demanding than outright refusal or active protest.

It is a similar factor of striving versus adopting the path of least resistance that, I would hypothesize, accounts for the unexpectedly higher proportion of fragments observed in the language of the full affect group at discharge. The fragments represent failures in language construction, attempts made that could not be successfully completed. However, it is exactly the making of attempts which differentiates full affect patients in the flat affect state. I am using

Table 18

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ANOVA of Productivity and Language Construction (Code) for the Three Post-hoc Affect Groups at Admission and Discharge

Language Code		Full N=8 Group 1	Flat/Flat N=7 Group 2	Flat/Full N=7 Group 3	F value	P value	Subsets*
		Mean	Mean	Mean			
1. Productivity (no. of words)	Admission	699.2	582.6	408.9	2.7	(.09)	(1/3)
	Discharge	691.5	396.6	687.9	8.5	.01	1/2;3/2
2. Fragments (% of clauses)	Admission	5.3	6.7	9.2	1.7	NS	
	Discharge	5.9	1.2	4.6	5.0	.02	1/2
3. Simple narrative (% of clauses)	Admission	27.9	30.3	30.6	0.1	NS	
	Discharge	24.5	31.3	21.6	0.8	NS	
4. Specified language (% of clauses)	Admission	72.1	69.7	69.4	0.1	NS	
	Discharge	75.5	68.7	78.4	0.8	NS	
5. Clause: sentence ratio	Admission	1.6	1.6	1.7	0.1	NS	
	Discharge	1.6	1.6	1.8	0.4	NS	

* pairs significantly different at the .05 level (Tukey)

↑ increase from Admission to Discharge significant at the .05 level (t-test)

↓ decrease from Admission to Discharge significant at the .05 level (t-test)

Table 19

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ANOVA of Language Construction (Status and Focus) for the Three Post-hoc Affect Groups at Admission and Discharge

Language Status and Focus		Full/Flat N=8 Group 1	Flat/Flat N=7 Group 2	Flat/Full N=7 Group 3	F value	P value	Subsets*
1. Self status (% of clauses)	Admission	54.5 ↑	53.8	50.3	0.2	NS	
	Discharge	62.7	49.2	60.8	1.7	NS	
2. Object status (% of clauses)	Admission	45.6 ↓	47.4	49.6	0.1	NS	
	Discharge	38.2	51.0	39.4	1.6	NS	
3. Monadic focus (% of clauses)	Admission	48.7	50.7	59.3 ↓	2.8	(.09)	(1/3)
	Discharge	45.9	51.7	45.7	0.9	NS	
4. Dyadic focus (% of clauses)	Admission	51.4	50.4	40.5 ↑	3.2	(.06)	(1/3)
	Discharge	55.0	48.4	54.5	1.0	NS	
5. Self/Monadic (% of clauses)	Admission	26.4	24.7	27.0	0.1	NS	
	Discharge	25.9	21.4	23.9	0.4	NS	
6. Self/Dyadic (% of clauses)	Admission	28.1 ↑	29.1	23.3 ↑	0.8	NS	
	Discharge	36.8	27.8	36.9	1.8	NS	
7. Object/Monadic (% of clauses)	Admission	22.3	26.0	32.4	2.6	NS	
	Discharge	20.0	30.4	21.8	2.7	(.09)	(1/2)
8. Object/Dyadic (% of clauses)	Admission	23.3 ↓	21.4	17.2	0.6	NS	
	Discharge	18.2	20.6	17.5	0.2	NS	

*pairs significantly different at the .05 level (Tukey)

↑increase from Admission to Discharge significant at the .05 level (t-test)

↓decrease from Admission to Discharge significant at the .05 level (t-test)

the fragments at discharge as an unplanned-for measure of motivation. By the time their cognitive organization is recovering from the ravages of the acute psychosis (i.e., at discharge), the patients in the flat/flat group adopt a play-safe strategy. They do not attempt to do any more than they feel reasonably sure of being able to cope with; usually, they do less. The extremely low rate of fragmented language they exhibited at discharge is one of the payoffs of such a strategy. The full affect patients take more risks and, I would agree, the higher proportion of fragments in their language is a reflection of their attempts at communication. On the other hand, all aspects of functioning of the patients with affective flattening examined thus far suggest they function in such a way as to enhance the predictability of their environments and their selves.

To find no affect-related differences in syntactic complexity went counter to the hypotheses of this study; even more surprising was the absence of differences in syntactic complexity between admission and discharge. One possible explanation is that the effects of the psychosis are most related in the fragments, the failed attempts, while the remainder of the utterances, the successfully completed ones, reflect an individual's baseline cognitive style, which would not be affected by psychosis or affect.

The source of affect-related differences in language construction was in the more content oriented aspects of language focus and status. As they became less psychotic, the full affect patients responded by increasing the number of personal statements, reflecting their greater

sense of instrumentality (i.e., their experience of being the initiators of their actions, thoughts and feelings) and tended to make these statements in a relational framework (the greater prevalence of Self/Dyadic clauses). On the other hand, the patients in the flat/flat group responded to their diminishing psychosis with increasing their already higher preference for making isolated statements cast in an isolated framework (the greater prevalence of Object/Monadic clauses). It was as though every aspect of their psychological response was aimed at diminishing involvement and reducing the stimulation they had to process. They became less, rather than more, related as they got less psychotic. It is as though the psychosis they are recompensating from imposed on them levels of stimulation much higher than they are used to cope with, levels of stimulation they were eager to divest themselves of. As soon as they could, they did their best to resume a more quiescent stance.

What is evident is that measures dealing with the content, relational and interpersonal aspects of language construction would be more useful than focusing on syntax in future systematic investigations of the many ways in which the language of individuals in the flat affect state differs from the language of individuals in the full affect state.

Section V - Affect and Kinesic Activity during Talking

VA. Hypothesis Testing: The Full Affect Group vs. The Flat Affect Group

VA.1. Admission. As predicted, there were no differences between

the two groups in self-stimulation (body-focused movements) at Time 1. It had also been hypothesized that there would be no differences in communicative gestures (object-focused movements). However, in that area, the differences between the affect groups were dramatic: in every category of object-focused movements, the full affect group significantly surpassed the flat affect group (Table 20). The total rate of object-focused movements of the full affect group was almost ten times higher than that of the flat affect group.

VA.2. Admission vs. Discharge. It had been predicted that there would be an overall decrease in self-stimulation, especially in finger-to-hand activity, as the patient cohort recompensated from acute psychosis. There were significant changes observed for the entire cohort; however, counter to prediction, these changes were in the direction of significant heightening of self-stimulation, particularly finger-to-hand activity. from admission to discharge. There were no trends noted in the communicative gestures of the entire cohort (see Table 21).

VA.3. Discharge. At Time 2, the full affect group continued to exhibit a significantly higher rate of total object-focused movements as well as of speech-primacy movements in particular, than the flat affect group. However, the differences between the two groups, though in the same direction, were no longer statistically significant for motor-primacy movements. There were still no differences between the two affect groups in self-stimulation; thus, the hypothesis that flat affect on admission would predict a greater prevalence of finger-to-hand activity at discharge was not confirmed (Table 20).

VB. Post-hoc Analysis of the Three Groups

VB.1. Admission. As the ANOVA results in Table 22 show, at Time 1, the full affect group showed a significantly higher rate of total object-focused movements than either Group 2, the flat/flat group, or Group 3, the flat/full group: this was true for speech-primacy movements and motor-primacy movements. In comparing Group 2 and Group 3 at admission, only one category differentiated their kinesic performance. Group 2 had a significantly higher rate of punctuating movements (a sub-category of speech-primacy movements) than did Group 2 ($t=1.9$; $p=.05$).

VB.2. Admission vs. Discharge. All three groups exhibited significant increases in self-stimulation. The full affect group evidenced a significant decrease in motor-primacy movements. Group 3, the flat/full group, showed significant increases in speech-primacy movements as well as in the total rate of object-focused movements (see arrows in Table 22).

VB.3. Discharge. There continued to be no differences in self-stimulation. Differences in object-focused movements were present as trends: those whose affect was full at discharge, that is, the members of Groups 1 and 3, tended to use more communicative gestures, especially, speech-primacy movements, than those whose affect was flat, that is, Group 2 members (Table 22).

Comments on Affect and Kinesic Activity During Talking

A powerful and consistent relationship was found to exist between flat affect and a minimal use of communicative movements, as well

Table 20

Kinesic Activity of the Full vs. Flat Affect Groups at Admission and Discharge

Kinesic Activity		Full Affect N=8		Flat Affect N=14		<u>t</u> value	<u>p</u> [*] value
		Mean	S.D.	Mean	S.D.		
Body-focused Movements (in seconds)							
1. Finger-to-hand movements	Admission	2.1	1.1	3.2	3.3	1.1	NS
	Discharge	4.9	3.4	5.0	4.0	0.1	NS
2. Continuous body touching	Admission	4.1	2.2	3.3	2.3	0.8	NS
	Discharge	5.0	4.5	4.1	2.2	0.6	NS
3. Total body-focused movements	Admission	4.6	2.3	4.7	3.8	0.1	NS
	Discharge	7.6	4.6	7.1	3.3	0.3	NS
Object-focused Movements (rate per 100 words)							
1. Speech primacy movements	Admission	7.9	3.3	0.7	0.7	6.2	<.001
	Discharge	5.3	5.2	2.0	2.9	1.9	.04
2. Motor primacy movements	Admission	2.4	1.4	0.6	0.8	4.1	<.001
	Discharge	1.1	0.8	0.9	1.3	0.3	NS
3. Total object- focused move- ments	Admission	10.3	4.1	1.2	1.1	6.1	<.001
	Discharge	6.4	5.7	2.9	4.1	1.7	.05

*1-tailed p values

Table 21

Admission vs. Discharge Kinesic Activity of the Entire Cohort (N=22)

Kinesic Activity	Admission		Discharge		$\frac{t}{\text{value}}$	$\frac{p^*}{\text{value}}$
	Mean	S.D.	Mean	S.D.		
Body-focused Movements (in seconds)						
1. Finger-to-hand movements	2.8	2.7	4.9	3.8	3.5	<.001
2. Continuous body-touching	3.6	2.2	3.8	2.3	0.6	NS
3. Total body-focused movements	4.7	3.3	7.3	3.7	4.9	<.001
<u>Object-focused Movements</u> (rate per 100 words)						
1. Speech primacy movements	3.3	4.1	3.2	4.1	0.1	NS
2. Motor primacy movements	1.2	1.4	1.0	1.1	0.8	NS
3. Total object-focused movements	4.5	5.2	4.2	4.9	0.3	NS

*1-tailed p values

as between full affect and the employment of a substantial rate of such movements. This relationship comes into particularly sharp focus with speech-primacy movements.

As far as the other kind of kinesic activity present during talking, the body-focused movements, counter to hypotheses they appear unrelated to affect. There was a strong inverse relationship in this sample between level of psychosis and self-stimulation: as psychotic symptomology and formal thought disorder decreased, self-stimulation, especially finger-to-hand activity, increased. This finding is in line with recent findings reported by Barroso et al. (1980): conceptualizing self-stimulation as an attention-deployment device, they demonstrated a relationship between self-stimulation and more effective information-processing strategies. In this light, this kind of kinesic activity is clearly adaptive, and its heightening from Time 1 to Time 2 can be understood as a reflection of more effective information-processing activities.

In examining the process of recompensation as reflected through object-focused movements, a different pattern was manifested by each group. Group 1, the full affect group, was characterized by a trend toward reducing their rate of object-focused movements. Group 2, the flat/flat affect group, remained steadfast in their avoidance of such movements, even as they became less psychotic. Group 3, the flat/full group, concomittant with the brightening of their affect, showed increasing use of object-focused movements from admission to discharge.

There are two alternative explanations, by no means mutually exclusive, that come to mind regarding the pattern shown by Group 1:

Table 22

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ANOVA of the Kinesic Activity of the Three Post-hoc Affect Groups at Admission and Discharge

Kinesic Activity		Full N=8 Group 1 Mean	Flat/Flat N=7 Group 2 Mean	Flat/Full N=7 Group 3 Mean	F value	p value	Subsets*
Body-focused Movements (in seconds)							
1. Finger-to-hand movements	Admission	2.1	2.5	4.0	1.0	NS	
	Discharge	4.9	4.4	5.7	0.2	NS	
2. Continuous body-touching	Admission	4.1	3.2	3.4	0.3	NS	
	Discharge	5.0	3.9	4.2	0.2	NS	
3. Total body-focused movements	Admission	4.6	4.1	5.3	0.2	NS	
	Discharge	7.6	6.1	8.1	0.5	NS	
Object-focused Movements (rate per 100 words)							
1. Speech primacy movements	Admission	7.9	0.5	0.8	32.3	<.001	1/2;1/3
	Discharge	5.3	0.6	3.5	3.0	(.07)	(1/2)
2. Motor primacy movements	Admission	2.4	0.3	0.8	8.3	.01	1/2;1/3
	Discharge	1.1	0.4	1.4	1.3	NS	
3. Total object-focused movements	Admission	10.3	0.8	1.6	30.4	<.001	1/2;1/3
	Discharge	6.4	1.0	4.9	2.7	(.09)	(1/2)

* pairs significantly different at the .05 level (Tukey)

↑ increase from Admission to Discharge significant at the .05 level (T-test)

↓ decrease from Admission to Discharge significant at the .05 level (T-test)

(1) On admission, the communicative effectiveness of their spoken message was compromised by thought disorder and disorganization. Their greater reliance on communicative gestures at that time could be an attempt to compensation. By discharge, their speech had become more clear and more coherent; consequently, there was less of a need for the hands to compensate for what the verbal message was lacking. This interpretation receives some support from the fact that the sharper reduction occurred in motor-primacy movements: unlike the speech-primacy movements which aid primarily in emphasis and color, the motor-primacy movements actually carry some of the meaning of the communication. That they decreased could be due to the heightened adequacy of the verbal channel. (2) If it is the case that in acute psychosis stimulation has reached levels that are too high to be mastered, then there would be a concerted effort for patients not only to improve their modes of coping with stimulation, but also to reduce its level to more tolerable proportions. The drop in the rate of communicative gestures exhibited by Group 1 could be the result of a general tendency, operative in all realms of psychological functioning, to reduce the level of self-generated stimulation, which would include that produced by communicative gestures.

These results support and amplify the notion of affect as a meaningful and indispensable construct in the understanding of communication and interpersonal relations. Within such a context, the flat affect state can be understood as a strategy aimed at reducing the extremely taxing and complex stimulation and information that stems

from interpersonal contact. The patients in the flat/flat group used their hands for self-stimulation, not communication.

CHAPTER VII

DISCUSSION

The Psychological Correlates of Flat vs. Full Affect States

Before going on to a summary and discussion of the findings, it may be useful to re-iterate what by now must surely be obvious, though it was far from being so when this project began: affect, a phenomenon whose clinical importance has never been doubted, can be reliably measured. It was possible to do so in this study, as it was in the three other studies where a serious attempt to do so was made (Abrams and Taylor, 1978; Andreasen, 1979a; Andreasen, Alpert & Martz, 1981). In this endeavor, the importance of using clinicians experienced in working with the population under study, the operationalization of the categories of affect in an observational language devoid of theory, and an adequate training period in the use of the instrument are all conditions that must be met before satisfactory measures of reliability can be expected.

It seems reasonable to suggest that, in addition to reliability, some claims can be made about validity: the coherence of the results that ensued upon the division of the patient population according to affective ratings suggest that affect is quite a robust phenomenon, as well as a helpful construct. Affect acts like a magnet: independent of the state of the psychosis, it attracts a host of previously unrelated psychological variables into a cluster. In general, full affect is associated with high productivity, effective

communication and interpersonal relatedness. People whose affect is full tend to talk more, speak in better modulated voices, make more use of their hands while they are talking, and show an inclination toward language that is more personal and more relational. Flat affect, on the other hand, is associated with negative symptoms, all of which contribute to an impression of psychic paucity. People in this state have relatively little to say, talk in a monotone, make little use of their hands and bodies when they speak, and prefer language which - while syntactically comparable to that of people in the full affect state - is more impersonal and less related.

Throughout the study, in every sphere of psychological functioning examined, we encounter the expression of the quantitative dimension of affect, a factor referred to in this study as productivity. Whether we look at thought disorder or kinesic activity, invariably this dimension emerges as salient: people with full affect are more productive, more fluent, higher in energy than people with flat affect.

In the domain of psychotic symptomatology, a strong correlation was found between a cluster of symptoms called anergia and flat affect (rated on a different scale). In addition to blunted affect (the BPRS term for flat affect), the other members of this cluster are emotional withdrawal, motor retardation and disorientation. Though the latter two were not major aspects of the differential clinical picture in this study, they are worth noting as related phenomena to the phenomenon under consideration here (especially in

the presence of acute psychosis). Thus, in the realm of symptoms, flat affect goes with a "low-energy" cluster of symptoms¹, while full affect does not have a characteristic cluster of symptoms associated with it.

When we examine subtypes of thought disorder, we find a strong association between flat affect and the two types of negative thought disorder, poverty of speech and poverty of content of speech. It seemed likely subtypes of negative thought disorder would occur against a background of flattened affect, but previously this had not been empirically shown. Here also, the study did not reveal a subtype or subtypes of thought disorder which invariantly accompanied full affect: what variance was not explained by flat affect, was explained by the psychotic state shared by all of the patients. As with flat affect, it had been suggested that negative thought disorder was either the result of chronicity, or if not that, certainly a reflection of it. Both because of the selection criteria applied (which excluded patients with long prior psychiatric histories) and because dramatic changes occurred in a short period of time in patients who at one time exhibited both flat affect and negative thought disorder, it can

1. Though it was not an aim of this study to distinguish between flat affect and depression, it is a crucial problem that needs conceptual, clinical and empirical attention. Both flat affect and depression are "low-energy" phenomena. Moreover, it is not clear whether flat affect and certain kinds of depressive moods can be observationally distinguished with currently available clinical rating scales. It would be particularly useful to study the relationship of these two phenomena with respect to the post-psychotic depression, a clinical entity whose very existence is a current source of controversy.

be concluded that these phenomena are not the exclusive monopoly of chronic states (inasmuch as they also occur in non-psychotic individuals). It is quite likely, nevertheless, that in the chronic psychotic states, they are more deeply entrenched in the person's repertoire and thus less likely to shift.

Unlike the world of symptoms and thought disorder, where only flat affect was accompanied by a characteristic pattern, in the areas of language construction and kinesic activity accompanying talk, we see not only patterns characteristic of the flat affect state, but also patterns characteristic of the full affect state. In the language construction measures, there was further evidence of the relationship between affect and the productivity dimension: inasmuch as, at the most basic level, talking is talking to somebody - and thus, the more one talks the more one interacts (at this level of analysis, anyway) - we find that people whose affect is flat speak less and interact less than those whose affect is full. The other dimensions of affect have to do with communicative efficacy and social relatedness. Little about affect appears to affect cognitive phenomena directly, unless they have substantial loadings on the dimensions just mentioned. Language code is a case in point: there were no differences in syntactic complexity between the affect states. There were differences in language status and focus. Patients with flat affect more frequently made impersonal statements presented in an isolated framework (the higher prevalence of the Object/Monadic clauses). This preference may be seen as going along with all else that described the

functioning of the flat affect patients: their efforts seem solely aimed at reducing the level and intensity of interactions with others. Their wish for control is paramount: if they can help it, they never bite off more than they can chew; usually less. On the other hand, patients in the full affect state seem quite interested in communication. Their utterances asserted their greater sense of instrumentality and were more relationally complex (the higher prevalence of Self/Dyadic clauses). The more frequent occurrence of fragmentation in their talk may be taken as an index of striving, of psychic activity, of desire and ambition. It was certainly my impression that the content of their verbalization samples were more laden with emotion and matters of personal import than was the case in the samples of flat affect patients, who stayed with safer topics and more distant modes of expression.

From Darwin to William James and Kraepelin, movement has long been associated with feelings, emotions and the will; this study found the kind of hand movements that are the kinesic accompaniment of speech to be another powerful correlate of affect. These kinds of movements, particularly the speech-primacy movements, give words more color and accentuate the meaning they are intended to have. Very simply, people whose affect is full rely on their hands to enhance that which they are saying with words; people whose affect is flat, do not. The relative stillness of their hands (with the exception of their use in self-stimulation) and inflexibility of their bodies goes a long way toward conveying to us a sense of what the experience

of flat affect must be like. At the other extreme, one's own internal experience in working with patients with severely flattened affect is to feel them to be unmovable, unshakeable, unaffected by anything one says or does. (With the possible exception of Searles (1960), who does not use words like "flat affect", to my knowledge there are no discussions in the literature of flat affect in terms of its impact upon the other person and the implications stemming thereof. Later in the discussion, a first step will be made in that direction).

Thus, affect manifests itself in all areas where expressiveness can be expected to make a difference: in all those channels, in all those modes, in all those activities, patients whose affect is judged to be flat are less variable, less expressive and less self-revealing than those whose affect is judged to be fuller. People with flat affect have immovable faces, monotonic voices and talk little; when they do talk, in Helmuth Kaiser's words (1965), they are not "behind" their words.

The Two Open-Linked Systems: What Affect Does and Does Not Explain

The previous section reviewed the dependent variables which emerged as highly correlated with affect states: it also mentioned some of the dependent variables which were expected to differentially relate to affect, but which turned out not to do so. This was especially surprising in the case of syntactic complexity and body-focused movements.

In an attempt to understand why those hypotheses were not

supported by the data, I backtracked in order to review the reasoning that informed those hypotheses. I realized that I held some assumptions which now must be revised in light of these findings.

I had hypothesized that the flat affect patients would have less complex syntax and greater amounts of self-stimulation than the full affect patients. This was based on the investigations of Grand, Freedman and Steingart with socially isolated vs. belligerent groups of schizophrenics. I reasoned that, since the isolated group was the group with the poorest prognosis (i.e., most hospital-prone), and since affect is so strongly associated with prognosis, then: (1) those isolated patients probably had flat affect; and more to the point (2) conversely, the flat affect patients in this study would behave like they did.

The other guiding assumptions were that affect was a primary organizing principle of the personality, that the personality organization was a unitary construct, and that furthermore, flat affect was the hallmark of an undifferentiated, primitive personality organization (e.g., schizotypal personality organization) which would be most vulnerable to disruptions. Hence, the assumption that (flat) affect would be a predictor of (poor) performance in all areas of psychological functioning.

At this point, it is helpful to recall the notions introduced by Strauss and Carpenter (1974). Outcome, they maintain, is not bimodally distributed into good vs. bad outcome; rather, it occurs on a continuum. Outcome should not be viewed as a unitary construct;

rather it is best viewed as a multi-faceted construct, composed of many "open-linked" systems, each system with its own separate line of development and set of influencing factors. And while Strauss and Carpenter proposed their 4 candidates for open-linked systems (symptom status, hospitalizations, work, and quality of social relations), the implication is that there are other ways of dividing the outcome pie. I propose to adduce a similar model here.

There was a great degree of variance in psychotic symptomatology, thought disorder, syntax and self-stimulation that remained unexplained by affect. Despite the fact that affect, and flat affect in particular, is a powerful predictor of prognosis, it does not follow that because affect is not related to the vicissitudes observed in these variables, these variables then play no role in outcome and prognosis. They have all already been shown to be prominently involved in the functioning of psychotics in important areas such as tension regulation (Grand et al., 1973), body boundary maintenance (Grand, in press) and attention deployment (Barroso et al., 1980), all vital psychological processes, and all vulnerable in psychotic patients.

I would like to suggest that in the present data we are dealing with two "open-linked systems". Let us call one system the affect system and the other the information-processing system. Linked to the affect system are variables related to the processes involved in communication and interpersonal relatedness. Subsumed under the information-processing system are variables having to do with attention-regulation and cognitive organization, and perhaps, also with the

thought disorder and psychotic symptomatology that persist in some patients past the acute phase of the psychosis. The affect system does not directly, or in the short term predict to the information-processing system, or vice versa. However, I believe that the two are interrelated in a way that will begin to be spelled out in greater detail in the next section on the adaptive function of flat affect.

In a recent paper called "Evocation of Two Types of Hand Movements in Information Processing", Barroso et al (1978) advanced a similar point of view. They concluded: "Object-focused movements appear to be related to the process through which images, thoughts and ideas are converted into words. Body-focused movements seemed to be connected to the narrowing of attention by either reflecting or regulating states of arousal....Communication in spoken languages involves the ability to focus, to prevent internal and external distractions from interfering with the central theme we are trying to articulate. Communication also involves describing or representing in words, those private images, thoughts and feelings that we wish to share with the listener...." (emphases, mine).

It should be stressed at this point that, while both systems were in operation during the communicative attempts of the patients in this study, differences between affect groups were found in only one of the systems, the affect system. I believe that all of the patients shared the motivation to maintain the integrity of their information-processing system as best they could; thus, no differences were found in attempts to "focus" and to "prevent internal and

external distractions from interfering".

It would be a mistake to unequivocally conclude that there are no differences in the information processing abilities of the different affect groups. It is not possible to make any such inferences because no attempt to study that problem was made here. Though all patients were faced with the same procedure and the same interviewer in the same setting, they did not all have the same information-processing task to engage in, because different affect states generated extremely different interpersonal and communicative situations. The flat affect patients engaged in an extremely effective strategy which succeeded in lowering the load of stimulation/information they had to cope with. It might be possible to study differences in the information-processing abilities and styles in these groups of patients in an experimental setting if it were possible to construct an experiment where the flat affect and the full affect patients, by design, would have to process equal loads of information.

There is another set of motives that determine the very nature of the communicative act toward the listener, and it is here that flat affect patients behaved very differently from full affect patients. I would suggest that what "we are trying to articulate" and "those private images, thoughts and feelings that we wish to share with the listener" are exactly the crucial aspects in which people in different affect states drastically differ from one another. I believe that, in fact, for the flat affect patients, there was not much that they wished to share with the listener, especially not in

the anxiety producing realm of "private images, thoughts and feelings", and that in fact, they were trying to articulate as little as possible. This is in contradistinction of the full affect patients, who were motivated in the opposite way.

As they were all recovering from psychosis, all patients were interested in the optimal maintenance of the integrity of their mental apparatus, the function of the primarily intrapsychic information-processing system. The affect system contributed to the interpersonal aspects of the communicative act and here the full affect patients were observed to be very interested in interpersonal relatedness, and the flat affect people very interested in interpersonal distance and in maintaining much less involvement.

I would hypothesize that these two systems are linked and influence each other. However, it is important to state that all these processes are not part of one huge monadic system; but rather, they complement, influence and compensate for one another in a complex counterpoint. This study has striven to clarify the area of psychological activity where affect is central, as delineated from the areas where affect is but one of many factors in the equation. Below, the development of this model will be continued, through a consideration of the different arousal properties that may be attributed to the different affect states, and of how the stimulus properties of the various affect states help us understand the different functions they serve, i.e., the adaptive value of different affect states.

The Adaptive Value of Flat Affect to the Individual Vulnerable to
Psychotic Breakdown

This discussion will revolve around "the feeling of safety", a concept developed by Sandler (1960) and Sandler and Joffee (1969). It is a concept I regard as crucial to the understanding of the adaptational aspect of such a seemingly maladaptive phenomenon as flat affect.

Many therapists who have had extensive encounters with severely psychotic individuals - and I would count among them Sullivan, Fromm-Reichmann, Searles, R. D. Laing, Sechehaye, Will, to mention only the most prominent among this inspiring cohort - have written about the inadequacy of classical psychoanalytic terminology to capture the essence of the phenomena they were met with everyday. A common feature of their writings is the attempt to convey the qualitative difference of the experience of psychotic anxiety as well as the qualitative difference of the mechanisms employed by psychotic patients to deal with that anxiety (Pao, 1979). The classical constructs of conflict and defense assume a more or less functional - if not actually intact - "mental apparatus", as well as a more or less integrated "self"; phenomena encountered in clinical practice are explained as consequences of the conflict between the wish for pleasure and the fear of punitive consequences upon its gratification. In the conceptualizations of psychosis, to have inhibitions in the pursuit of pleasure because of conflicts about it is seen as a psychic achievement of no small proportions. More usual are the kind of difficulties

connected with fears about the dissolution of the "mental apparatus" itself, and the annihilation of the integrity of the "self". All the theoreticians of schizophrenia mentioned above have in one way or another written about these difficulties as reflecting pre-pleasure, pre-conflict (developmentally, that is) personality organizations of individuals whose paramount goal is to achieve an experience of security or safety. Whereas conflict resolution takes place in "intra-psychic space", inasmuch as that space is not well differentiated in psychotic individuals, the pursuit of safety take place in the "space" between the individual and the outside world. In other words, whereas defense mechanisms alter psychological reality, protection mechanisms (Resch, Grand and Meyerson, 1981) are aimed at controlling and altering the experience of external reality through the reduction of sensory stimulation, stimulus information, interpersonal contact, etc. These mechanisms are attempts to control the environment in order to reduce its potential for being overwhelming.

The experience of trauma, that is, of helplessness, is the same no matter what the source of the uncontrollable excitation may be, and in the course of development highly specialized methods are evolved whereby traumatic excitation, the threat of trauma implicit in the danger situation, and the correlated affect of anxiety may be avoided.....the successful act of integration is accompanied by a definite feeling of safety - a feeling so much a part of us that we take it for granted as a background to our everyday experience;.....we can further regard much of ordinary everyday behavior as a means of maintaining a minimum level of safety feeling; and that much normal behavior as well as many clinical phenomena (such as types of psychotic behaviors and the addictions) can be more fully understood in terms of the ego's attempts to preserve this feeling of safety. (Sandler, 1960, p. 354)

As feelings differentiate, one type of feeling comes to play a major role in the regulation of experience; indeed to such a degree that its maintenance above a certain level (when it falls or threatens to fall below that level) becomes the dominant criterion in determining the activity of the psychic apparatus. This is the feeling of safety which can be regarded as being generated by smooth and integrated functioning of the apparatus as a whole. The gaining of pleasure will, as the suffering of neurotic patients testifies, be sacrificed in the interests of maintaining and attaining a minimum level of safety feeling.

Any experience of anxiety or feeling of disorganization lowers the level of safety feeling and indeed we may see the development of types of activity that at first sight seem inappropriate and maladaptive, but which are in fact adaptive in that they are aimed at restoring the minimum level of safety feeling. Included in this are, for example, some of the stereotyped and bizarre forms of behavior shown by psychotics, who attempt in this way to control their activities in order to obtain a higher degree of what we may call perceptual security. They have to create a stable perceptual situation by hiding in a corner, clutching a doll, or repeating a ritual, and must avoid activity which would lead to disorganization or the experience of the loss of the safety feeling.

The need to maintain a feeling of safety...is of enormous importance in adaptation in general...An activity which leads to pleasure may be inhibited if it lowers the level of the safety feeling. (Sandler and Joffe, 1969, p. 84)

In moment-to-moment functioning the psychic apparatus can be regarded as adapting in the best possible way to all the demands being made on it. The best solution at any given time is based on experiential criteria - experiential regulatory principles. From this point of view, a neurotic or psychotic state can be considered to be the "best" solution which the apparatus can find in the given circumstances and with the resources at its disposal. Obviously developmental and current factors are involved. (Sandler and Joffe, 1969, p. 81; emphases, mine)

The phenomenon of flat affect and its attendant cluster of psychological correlates is a perfect example of a mechanism which, while appearing quite maladaptive, is nonetheless the "best solution" that can be found "in the given circumstances and with the resources" at the disposal of the individual. People with flat affect can be seen as desperately involved in the struggle to maintain at least a

minimum level of "safety feeling". Seen in this light, their isolation and distancing maneuvers no longer appear so futile. If the "best solution" is based on "experiential criteria", and if the experiential state that is being so strenuously sought is one characterized by a "feeling of safety", and if, indeed, the best solution is flat affect, then we can take an inferential leap and imagine the level of anxiety (or panic, or traumatic levels of arousal) these individuals experience when they do not behave in this way. If the feeling of safety is generated by a "smooth and integrated" functioning of the information-processing system; if anxiety or "the feeling of disorganization" lower the level of the safety feeling: if all this happens in people who are known to have difficulties in the processing and integration of stimulation and other types of information; then it is no wonder that all their strategies are aimed at limiting and lowering stimulation, both internal and external, both self-and other-generated.

Flat affect is the psychological equivalent of behavioral withdrawal. Behavioral withdrawal and social isolation have been shown to be highly correlated with high levels of arousal in schizophrenics (Venables & Wing, 1962). Then it becomes possible to see that the anhedonia that some schizophrenics exhibit, as discussed by Meehl (1961, 1975), Rado (1956) and Chapman et al (1976), not only as a deficiency in their "hedonic joy juice" (Meehl, 1975), but also as more evidence of efforts to cut down on potentially disorganizing stimulation-generating situations.

I have already mentioned the view that schizophrenics are people who have particular trouble managing a particular kind of stimulation, i.e., that which is specifically human in nature. That may have something to do with the fact that stimulation originating from talking flesh and blood sources is infinitely more complex and less predictable than that arising from other sources. Moreover, social relations have an uncanny potential for eliciting states of high inner stimulation, of the kind that in plain English are called emotions, thus making social relations all the more dangerous for people with flat affect. For them, flat affect is the last resource: they attempt to express as little as possible of what they feel to others; they also attempt to minimize the probability of their partners surprising them with much expression of emotion, or any other equally unsettling device, which would elicit anything but a feeling of safety. This is yet another aspect of flat affect: its effect upon the other. Anyone who has interviewed a patient with flat affect knows that flat affect can be contagious: one very quickly runs out of ideas, questions, etc. One's wish to gracefully exit from the situation rises rapidly. Thus, flat affect also works to minimize the other person's state of inner stimulation, to make him or her harmless and less likely to get original ideas. As a communication strategy, the flat affect state is unequalled in its ability to ensure one's being left alone while supposedly interacting with another.

I have tried to speak primarily of a particular affect state or of people in a particular affect state, and not of flat affect

people. Group 3, the flat-full affect group, attests to the fallacy of that notion. Thus, before going on to consider the implications of affect for outcome, the performances of each of the 3 affect groups will be briefly reviewed.

The Performance of the Three Affect Groups

Group 1, the full affect group, was comprised of the eight patients whose affect was rated to be full (i.e., within normal limits) on both admission and discharge interviews. They tended to be verbally productive, to use their bodies when they talked and to allow their feelings to suffuse the stories they were telling. Symptomatically, nothing significantly distinguished them on admission from the other groups in the realm of either positive symptoms or subtypes of positive thought disorder. By discharge, they tended to be more anxious and depressed in mood. It should be noted that, in moving from Time 1 to Time 2, there was some reduction in the rate of their object-focused movements as well as some mild but significant increase in their ratings of affective flattening.

While their psychosis was just as severe at Time 1 as that of the other 2 groups, they nevertheless managed to maintain a full range of affect. I consider this a highly positive prognostic indicator for the following reasons: faced with stress overwhelming enough to trigger an acute psychotic episode, all patients in the sample break down in their ability to maintain their usual level of perceptual and cognitive functioning, i.e., they experience a

breakdown in their information-processing abilities, the very definition of acute psychosis. Yet, at this time, only Group 1 continues to sustain a relatively high level of affective functioning, whereas the other groups exhibit flat affect. Even under such stress, the patients in Group 1 do not have to affectively "shut down". They are able to experience some feeling of safety while retaining the complexity of inner and outer experience which characterizes full affect. This is a clear indication of greater resources and/or better coping strategies than is available to the others members of the cohort.

In addition to inner resources in the domain of the information-processing system and inasmuch as full affect is an interpersonally engaging strategy, these are the patients likely to have significant others who are involved with them, and who would enhance the likelihood of a good outcome in all areas (e.g., assist with occupational functioning, help in obtaining treatment when necessary, and in general, act as resources of whatever type of help might be necessary). This is not a factor to be underestimated when long term outcome is being considered.

Group 2, the flat/flat affect group. The members of this group (N=7) responded to the impending psychosis by shutting down affectively. Even when they exhibited pressured speech and when they discussed delusional material, their manner was expressionless. As they got less psychotic, their affect became even more flat. It was as though the few signs of psychic activity they allowed at Time 1 were the unavoidable consequence of the high-arousal properties of the acute

psychotic state, as though those signs were primarily discharge-like phenomena. As soon as they were able to resume more control, they became even less productive, even more impersonal and in every way, even more interpersonally distant than they had been at Time 1. The only increase they showed was in self-stimulation.

If, from an adaptational point of view, flat affect is considered to be the interpersonal stimulation-reducing strategy I have argued for, then it is as though the less psychotic these patients became, the more they were in control and the more effectively they were able to exercise this strategy.

Group 2 is also the group who, at Time 1, showed more suspiciousness, illogicality, and unusual thought content than the other groups. These findings suggest a connection between flat affect and a paranoid style. Flat affect as well as paranoid distrust and suspiciousness result in an increase of interpersonal distance and isolation and a decrease in emotional involvement with others. As a matter of fact, they have been shown to be functionally equivalent in a study conducted by Venables and Wing (1962). In patients without paranoid tendencies, extensive withdrawal and high levels of arousal were highly correlated; in paranoid patients (i.e., with coherent delusions) withdrawal was not found to be the strategy associated with high arousal. It was as if paranoia and withdrawal were alternate strategies. The co-existence of flat affect and paranoid tendencies observed in the flat/flat group might be a function of the difference between the two cohorts with respect to chronicity.

Flat affect and paranoia both can be understood as adaptational responses which, despite a maladaptive appearance, are extremely useful for such patients against otherwise intolerable amounts of interpersonally-generated information and stimulation. They both also lead to a generalized, impersonal, abstract stance, similar to the stance revealed by the language of Group 2. It is easy to see how the phenomena of flat affect and paranoia could result in a reliance on intellectualization, isolation and other such cognitive defensive styles, as a compensation for interpersonal and emotional inadequacies. (Incidentally, here might be another factor in why syntactic complexity did not differentiate the affect groups). The "flatter" affect of Group 2 at Time 2 can be interpreted as consistent with a paranoid style: functioning from within a context of distrust, these patients hold themselves back, carefully regulate the interpersonal distance and do not allow themselves to be thrown into the relative hustle-and-bustle of full affect interactions.

Group 3, the flat/full affect group. It can be inferred from this group's reaction of also "shutting down" in reaction to the onslaught of stress bringing about the psychotic break, that like Group 2, they needed to drastically reduce the level of arousal they were experiencing. However, there were some differences which distinguished Group 3 from Group 2 even on admission. Though Group 3 obtained higher ratings of affective flattening than Group 2, and though they spoke even more sparsely and impersonally than Group 2, they did not exhibit the illogicality, suspiciousness, unusual thought content

triad shown by Group 2. More than paranoid, they appeared to be overwhelmed, at a loss and extremely withdrawn.

By Time 2, not only had they surpassed Group 2 in most indices correlated with full affect, but on many measures, they had become indistinguishable from Group 1. They were productive, much more related, not at all depressed, and most interestingly, they were in the process of rapidly increasing the range and amount of stimulation that (1) they were allowing themselves to experience and (2) that they themselves were generating.

In summary, Group 1 had a tendency to get mildly constricted as they were recompensating; Group 2 became even more constricted and "flat"; whereas Group 3 showed a determined tendency to become more and more expansive as they got less psychotic.

Affect and Outcome and the Three Groups: Future Research

The findings obtained raise several questions the answers to which can only be speculative at this point; more conclusive answers will only be found with future empirical investigations. One of these questions concerns the long-term outcome of the three groups: what differential prognoses are to be expected? I would like to, very briefly, summarize an impressive set of studies conducted by a British group of investigators (Brown et al., 1972; Leff, 1976; Vaughn and Leff, 1976) which inform the speculations to be presented below.

Vaughn and Leff (1976) examined the influence of 3 variables upon the rate of relapse of newly discharged schizophrenics. The

variables were (1) the amount of expressed emotion (EE) characteristic of the families the patients were returning to; (2) the amount of face-to-face contact between the patients and the family members; and (3) drug compliance. The EE index was obtained from an interview with the patient's relatives: its two most important components were the number of critical remarks made about the patient and the relative's marked overinvolvement with the patient. The authors found that the EE index was a powerful predictor of a differential relapse rate in schizophrenic patients. During a nine-month period following discharge from the hospital, 51% of those returning to high EE homes relapsed, compared with only 13% of the low EE group, a highly significant finding. This association was independent of the patient's previous behavior disturbance, history or work impairment. The other two factors, drug compliance and fact-to-face contact were highly significant only for patients returning to high EE homes; patients from low EE families had low rates of relapse which were unaffected by drug compliance (!) or face-to-face contacts. Patients from high EE homes did best when they took their anti-psychotic medication and spent less time in face-to-face contact with their high EE relatives. Patients from high EE homes who did not take their medications and who had a great deal of face-to-face contact with their families had the worst outcome: 92% of them relapsed within nine months of discharge. The model adduced by the investigators to interpret their findings was similar to the model within which the findings of this study were discussed:

...social withdrawal can be a means of coping with a stressful situation, a protective mechanism which lessens the chances of relapse of schizophrenia. Investigations of this possibility revealed a significant association between low face-to-face contact and social withdrawal in high EE homes...This suggests a general coping style, and provides further support for the notion that the person suffering from schizophrenia does exercise some control over the course of his illness (Vaughn & Leff, 1976, p. 135)

Even though Brown et al, (1972) and Vaughn and Leff (1976) examined a number of patient variables (e.g., symptoms, history, etc.) and found them to be unrelated to relapse, they did not examine any patient characteristics which might make high or low EE interactions more probable in their families. Put another way, these investigators did not address the question of whether patients played an active part in generating either of the two interactional styles in their families. If the analysis offered earlier, namely that different qualities of affect are likely to elicit different responses, is correct, then the findings of this study can be taken as a modest complement to the British studies. Their combination would lead to the speculation that the patients in Group 3 of this study, the flat/full group, would be most at risk for relapse into acute psychosis.

Their recently acquired full affect and general expansiveness would be quite likely candidates for eliciting high EE responses from others. Furthermore, their enthusiasm for interpersonal relating would lead to large amounts of face-to-face contact; and their subjective feeling of well-being would make it more probable that they would not take their medications. Their flat affect on admission was taken as a reflection of their inability to cope with the high-

arousal situations I am assuming they have a tendency to generate. I would also hypothesize that their course would also be marked by attempts to function at levels higher than they are successfully able to cope with, both socially and occupationally. Symptomatically, I would expect them to show less paranoia than Group 2, but more grandiosity and denial.

From this vantage point, the strategies of Group 2 seem designed to elicit a low EE response and thus they look more effective in the staving off of relapses. However, while they would have fewer hospitalizations than Group 3, this group would have a course marked by limited attempts at interpersonal and occupational functioning, given their (hypothesized) low tolerance for high-arousal situations. They would also show most paranoid symptomatology.

Though Group 1 might also be likely to elicit high EE interactions after their discharge from the hospital, their full affect on admission shows them to be relatively more able to cope with the high-arousal situations they generate. It must also be remembered that at discharge interview, in comparison with the admission interview, they evidenced a tendency toward constriction. I would predict that they would have the best outcome of the three groups, marked by the fewest hospitalizations and least impairment in social and occupational functioning.

These hypotheses would have to be evaluated in a follow up study of the current cohort. In addition to enlarging the sample, it would be important to collect systematic information on a variety

of outcome indeces (relapse and hospitalizations, social and occupational functioning, type and quality of outpatient treatment, etc.), conduct family interviews in order to determine the EE index, and repeat the videotaped patient interviews with the 5 minute personal verbalization samples in order to be able to evaluate the interpretations of the data and of the implications proposed. It would also be desirable to construct an experimental setting where the hypotheses regarding the different information-processing properties associated with different affect states could be formally tested.

A last consideration of affect and its respective role in diagnosis and prognosis: its power as a prognostic factor is undeniable from the outcome studies reviewed earlier. Hopefully, this study begins to shed some light on why that is. Like Strauss and Carpenter (1974), I would argue that flat affect would have similar implications for prognosis in functional disorders other than schizophrenia. Regarding the role of flat affect in the differential diagnosis of schizophrenia, it seems to me that it is an issue that cannot yet be addressed. Flat affect, even in the presence of psychotic symptoms, cannot be taken as pathognomonic of schizophrenia until the relationship between flat affect and depression (the mood, not the syndrome) is clarified.

In conclusion, this study accomplished several things: there was further evidence provided that affect can be measured reliably; different affect states were shown to be characteristic of the same

person's communications at two points in time, separated by only few weeks; some of the psychological correlates of different affect states were specified, especially in verbal and non-verbal communication; based on clinical affect ratings on admission and discharge, 3 groups of psychotic patients were identified and their patterns of recompensation in the four areas studied were described.

An adaptional model of flat affect was proposed, where flat affect was understood as "the best possible solution" to the problem of the high-arousal, high-information properties of the interpersonal experience for individuals with low tolerance for coping with such situations. Flat affect was presented as a last resource in the attempt to maintain the experience of a safety feeling.

In addition to the communicational and interpersonal aspects of affect, another aspect was discussed, namely, the different arousal properties of different affect states as well as the implications for information-processing abilities of the respective affect states. The generation of likely responses from others played a major part in the conceptualization offered. A full affect communicator, given the average expectable interlocutor is much more likely to engage the interlocutor in an exchange, and a relatively more involving exchange, than a flat affect communicator.

Of the patients in the study who exhibited flat affect on admission, only half remained that way; the other half experienced a marked change in their affect. The studies of Vaughn and Leff (1976) and Brown et al. (1972) were adduced to increase the data base on which to make hypotheses for the outcome implications of this change.

It was hypothesized that the group whose affect changed from flat to full would be most at risk for relapse because of their tendency to generate high-arousal situations they are subsequently unable to cope with (witness their flat affect on admission). The principal hypothesis was that Group 1 would have a markedly better prognosis than either of the other two groups.

The advantage of flat affect over isolation is clear. No matter how vulnerable an individual, the need for emotional involvement (of some sort) with another person is always there. The pain of the loneliness that isolated schizophrenics experience is intense; it has been poignantly described by Searles (1960) and Will (1980). It is a serious quandary these people are in as they have to juggle the pain of isolation with the risk inherent in involvement.

The questions raised by this study can only be answered through further investigations. However, what seems clear is that as therapists of patients such as the ones in the present cohort, we should take very seriously the communication of extreme vulnerability that flat affect is; we should not be seduced away from caution by occasional bursts of full affect; and we should constantly seek to help our patients in the very difficult problem of balancing the need for constancy and predictability of stimulation in the environment (internal and external) with the need they - like everybody else - have for other human beings.

APPENDIX A

THE AFFECT RATING SCALE (adapted from Andreasen, 1979a)1. Unchanging Facial Expression

Face appears wooden, mechanical, frozen. Does not change expression, less than normally expected, as the emotional content of discourse changes.

1. Not at all. Patient is normal or labile.
2. Mild. Some (but not a lot of) decrease in facial expressiveness.
3. Moderate. Facial expressiveness is significantly decreased.
4. Severe. No change in facial expression throughout the 5 minute verbalization sample.

2. Decreased Spontaneous Movement

Patient sits quietly throughout the interview and shows few or no spontaneous movements. Does not shift position, move legs, move hands, etc., or does so less than normally expected.

1. Not at all. Patient moves normally or is overactive.
2. Mild. Some (but not a lot of) decrease in spontaneous movements.
3. Moderate. Significant decrease in spontaneous movements.
4. Severe. Patient sits immobile throughout the 5 minute verbalization.

3. Paucity of Expressive Gestures

Patient does not use body as an aid in expressing his or her ideas, through such means as hand gestures, sitting forward in the chair when intent on a subject, leaning back when relaxed, etc. This may occur in addition to decreased spontaneous movement, as well as in its absence.

1. Not at all. Patient uses expressive gestures normally or excessively.
2. Mild. Some (but not a lot of) decrease in expressive gestures.
3. Moderate. Significant decrease in expressive gestures.
4. Severe. Patient never uses body as an aid in expression.

THE AFFECT RATING SCALE (cont'd)

4. Inappropriate Affect

Affect expressed is inappropriate or incongruous, not simply flat or blunted. Most typically, this manifestation of affective disturbance takes the form of smiling or assuming a silly facial expression while talking about a serious or sad subject. (Occasionally, patients may smile or laugh when talking about a serious subject which they find uncomfortable or embarrassing; although their smiling may seem inappropriate, it is due to anxiety and therefore should not be rated as inappropriate affect). Do not rate affective blunting or flattening as inappropriate.

1. Not at all. Affect is not inappropriate.
2. Mild. A single instance of inappropriate smiling or other inappropriate affect.
3. Moderate. Affect is inappropriate on at least two occasions.
4. Severe. More than two instances of inappropriate affect.

5. Lack of Vocal Inflection

While speaking, the patient fails to show normal vocal emphasis patterns. Speech has a monotonic quality, and important words are not emphasized through changes in pitch or volume. Patient may also fail to change volume with changes of subject, so that he or she does not drop voice when discussing private topics, or raise it as things which are exciting or for which louder speech might be appropriate are discussed.

1. Not at all. Normal vocal inflections.
2. Mild. Slight decrease in vocal inflection.
3. Moderate. Marked decrease in vocal inflections.
4. Severe. Nearly all speech is in a monotone.

6. Slowed Speech

Speech seems slowed, with longer pauses between words, phrases, or clauses than seems normal.

1. Not at all. Speech is at a normal rate.
2. Mild. Speech seems slightly slowed.
3. Moderate. Speech seems significantly slowed.
4. Severe. Speech is extremely slow, so that rater has difficulty in keeping attention on what is being said.

THE AFFECT RATING SCALE (cont'd)

7. Global Rating of Affective Flattening

Rate as a separate item. Attempts should not be made to deliberately summarize scores on previous items.

1. Not at all. Normal or excessive affect.
2. Mild. Slight blunting of affect.
3. Moderate. Significant flattening of affect.
4. Severe. Extreme flattening of affect.

APPENDIX B

THE BRIEF PSYCHIATRIC RATING SCALE (Overall and Gorham, 1962)

All items are rated on the following scale of severity:

1. Not present
2. Very mild
3. Mild
4. Moderate
5. Moderately severe
6. Severe
7. Extremely severe

1. Somatic Concern

Degree of concern over present bodily health. Rate the degree to which physical health is perceived as a problem by the patient, whether complaints have a realistic basis or not. The evaluation is of the degree to which the patient perceives or suspects physical ailments to play an important part in his or her total lack of well being.

2. Anxiety

Worry, fear, or overconcern for present or future. Rate solely on the basis of a verbal report of patient's own subjective experiences. Do not infer anxiety from physical signs or from neurotic defense mechanisms.

3. Emotional Withdrawal

Deficiency in relating to the interviewer and to the interview situation. Rate only the degree to which the patient gives the impression of failing to be in emotional contact with the people in the interview situation. This construct is defined solely in terms of the ability of the patient to relate in the interpersonal interview situation. Emotional withdrawal is represented by the feeling on the part of the rater that an invisible barrier exists between the patient and other persons in the interview situation. It is suspected that eyes, facial expression, voice quality and variability, and expressive movements all enter into the evaluation of this important, but nebulous, quality of patients.

THE BPRS (cont'd)4. Conceptual Disorganization

Degree to which the thought processes are confused, disconnected or disorganized. Rate on the basis of integration of verbal products of the patient; do not rate on the basis of patient's subjective impression of his or her own level of functioning. Conceptual disorganization is evidenced in confusion, irrelevance, inconsistency, disconnectedness, disjointedness, blocking, confabulation, autism, and unusual chains of associations. Ratings should be based upon the patient's spontaneous verbal products, especially longer, spontaneous response sequences.

5. Guilt Feelings

Overconcern or remorse for past behavior. Rate on the basis of patient's subjective experiences of guilt as evidenced by verbal report with appropriate affect. Do not infer guilt feelings from depression, anxiety or neurotic defenses.

6. Tension

Physical and motor manifestations of tension, "nervousness" and heightened activation level. Tension should be rated solely on the basis of physical signs and motor behavior (e.g., fidgeting, tremors, sweating, frequent changing of posture, hypertonicity of movement, heightened muscle tone) and not on the basis of subjective experiences of tension reported by the patient.

7. Mannerisms and Posturing

Unusual and unnatural motor behavior, the type of motor behavior which causes certain mental patients to stand out in a crowd of normal people. Rate only abnormality of movement here; do not rate simply heightened motor activity here. Odd, indirect, repetitive movements as well as strained, distorted, abnormal postures which are maintained for extended periods are rated here. Grimaces and unusual movements of the lips, tongues or eyes are considered here also. Tics and twitches are rated as signs of tension and are not considered manneristic behavior.

THE BPRS (cont'd)8. Grandiosity

Exaggerated self-opinion, conviction of unusual ability or powers. Rate only on the basis of patient's self-statements about self or self-in-relation-to-others, not on the basis of demeanor in the interview situation. The degree of pathology should be rated relative to the discrepancy between self-appraisal and reality. Care should be taken not to infer grandiosity from suspicions of persecution or other unfounded beliefs where no explicit reference to personal superiority as the basis for persecution has been elicited.

9. Depressive Mood

Despondency in mood, sadness. Rate only degree of despondency. Do not rate on the basis of inferences concerning depression based upon general retardation, guilt and somatic complaints.

10. Hospitality

Animosity, contempt, belligerence, disdain for other people outside interview situation. Rate solely on the basis of verbal report of feelings and actions of the patient toward others. Do not infer hostility from neurotic defenses, anxiety nor somatic complaints.

11. Suspiciousness

Belief (delusional or otherwise) that others have now, or have in the past, malicious or discriminatory intent toward the patient. On the basis of verbal report, rate only those suspicions which are currently held whether they concern past or present circumstances. The pathology in this symptom area may range from mild suspiciousness through delusions of persecution or ideas of reference.

12. Hallucinatory Behavior

Perceptions without normal external stimulus correspondance. Rate only those experiences which are reported to have occurred within the last week and which are described as distinctly different from the thought and imagery processes of normal people.

13. Motor Retardation

Reduction in energy level evidenced in slowed movements. Rate on the

THE BPRS (cont'd)

basis of observed behavior of the patient only. Do not rate on basis of patient's subjective impression of his or her own energy level. Symptomatology in this area is represented by behavior which might be attributed to the loss of energy and vigor necessary to perform voluntary acts in a normal manner. Voluntary acts which are especially affected by reduced energy level include those related to speech as well as gross muscular behavior. With increased "motor retardation", speech is slowed, weakened in volume and less frequent.

14. Uncooperativeness

Evidence of resistance, unfriendliness, resentment and lack of readiness to cooperate with the interviewer. Rate only on the basis of the patient's attitude and the interview situation. Do not rate on the basis of reported resentment or uncooperativeness outside interview situation.

15. Unusual Thought Content

Unusual, odd, strange or bizarre thought content. Rate here the degree of unusualness, not the degree of disorganization of thought processes.

16. Blunted Affect

Reduced emotional tone, apparent lack of normal feeling or involvement. Emotional expressions are apt to be absent or marked by indifference and apathy. Attempted expressions of feeling appear to be mimetic and without sincerity or conviction.

17. Excitement

Heightened emotional tone, agitation, increased reactivity.

18. Disorientation

Confusion or lack of proper association for person, place or time.

APPENDIX C

THOUGHT, LANGUAGE AND COMMUNICATION SCALE (adapted from Andreasen (1979b))

All items are rated on the following scale of severity:

0. Not present
1. Mild
2. Moderate
3. Severe
4. Extremely severe

1. Poverty of Speech

Restriction in the amount of spontaneous speech. Personal verbalization samples tend to be brief, concrete and unelaborated. The patient tends to run out of things to say if unprompted. Prompts produce brief responses, if at all. Patients tend to frequently state that they have "nothing to say".

2. Poverty of Content of Speech

Although personal verbalization samples are long enough that speech is adequate in amount, they contain little information. Language tends to be vague, often overabstract or overconcrete, repetitive and stereotyped. The rater may recognize this finding by observing that the patient has spoken at some length but has not conveyed much about their experience; alternatively, the patient may provide enough information, but require many words to do so, so that a lengthy speech can be summarized in a sentence or two. Sometimes, the interviewer may characterize the product as "empty philosophizing".

3. Pressure of Speech

An increase in the amount of spontaneous speech as well as in its rate. Some sentences may be left uncompleted because of eagerness to get on to a new idea. Even when interrupted (e.g., "the 5 minutes are up now. You may stop"), the speaker continues to talk. Speech tends to be loud. The patient does not run out of things to say.

THE TLC SCALE (cont'd)

4. Distractible Speech.

During the course of the verbalization sample, the patient repeatedly stops talking in the middle of a sentence or idea and changes the subject in response to a nearby stimulus, such as an object in the room, the interviewer's clothing or shift in posture, etc.

5. Derailment

A pattern of spontaneous speech in which the ideas slip off the track onto another one which is clearly but obliquely related, or onto one which is completely unrelated (as far as can be discerned). Things lacking in a meaningful relationship may be said in juxtaposition, or the patient may shift idiosyncratically from one frame of reference to another. At times, there may be a vague connection between ideas, at others, none will be apparent. Perhaps the commonest manifestation of this disorder is a slow, steady slippage, with no single derailment being particularly severe, so that gets farther and farther off the track with each derailment, without showing any awareness that what they are now talking about no longer has any connection with the topic they had initially started to develop.

6. Incoherence

A pattern of speech which is essentially incomprehensible at times. The incoherence is due to several different mechanisms, which may sometimes all occur simultaneously. Sometimes the rules of syntax are ignored, and a series of words or phrases seem to be joined together arbitrarily and at random. Sometimes, portions of coherent sentences may be observed in the midst of a sentence which is incoherent as a whole. Sometimes the disturbance appears at the semantic level, so that words are substituted in a phrase in such a way that meaning seems to be distorted or destroyed; the word choice may seem totally random. Sometimes "cementing words" (e.g., conjunctions, prepositions) are deleted. Incoherence differs from derailment in that it occurs at the level of the sentence (within it) whereas derailment involves disordered connections between larger units, such as sentences or ideas. It is rarely encountered, and then usually, only in its severe form.

7. Illogicality

A pattern of speech in which conclusions are reached do not follow logically. This may take the form of non-sequitors, in which the patient makes a logical inference between two clauses which is

THE TLC SCALE (cont'd)

unwarranted or illogical. It may also take the form of reaching conclusions based on faulty premises.

8. Clanging

A pattern of speech in which sounds rather than meaningful relationships appear to govern word choice, so that the intelligibility of the speech is impaired and redundant words are introduced. In addition to rhyming relationships, this pattern of speech may also include punning associations so that a word similar in sound brings in a new thought.

9. Neologisms

New word formations. It is defined here as a completely new word or phrase whose derivations cannot be understood. Neologisms are quite uncommon.

10. Word Approximations

Old words which are used in a new and unconventional way, or new words which are developed by conventional rules of word formation. Often the meaning will be evident, even though the usage seems peculiar or bizarre.

11. Circumstantiality

A pattern of speech which is very indirect and delayed in reaching its goal idea. In the process of explaining something, the speaker brings in many tedious details and sometimes makes many parenthetical remarks. When not called circumstantial, these people are often referred to as "long-winded". It differs from poverty of content of speech in that it contains excessive amplifying or illustrative detail.

12. Loss of Goal

Failure to follow a chain of thought through to its natural conclusion. This is usually manifested in speech which begins with a particular subject, wanders away from the subject, and never returns to it. The patient may or may not be aware that he has lost his or

THE TLC SCALE (cont'd)

her goal.

13. Perservation

Persistent repetition of words, ideas or subjects so that, once a patient begins a particular subject or uses a particular word, he or she continually returns to it in the process of speaking.

14. Blocking

Interruption of a train of speech before a thought or idea has been completed. After a period of silence which may last from a few seconds to a few minutes, the person indicates that he or she cannot recall what he or she had been saying or meant to say. Blocking should only be judged to be present either if a person voluntarily describes losing his or her thoughts or if upon questioning from the interview the person indicates that as his or her reason for pausing.

15. Stilted Speech

Speech which has an excessively stilted or formal quality. It may seem rather quaint or outdated, or it may appear pompous, distant, or overpolite. This quality is usually achieved through the use of particular word choices, extremely polite phraseology and/or stiff and formal syntax.

16. Global Rating of Thought Disorder

Global assessment of overall severity of thought disorder. This global rating should reflect the recognition that some TLC disorders (i.e., poverty of speech, poverty of content of speech, pressure of speech, distractible speech, derailment, incoherence, illogicality, clanging, neologisms, word approximations) are more pathological than others (i.e., circumstantiality, loss of goal, perservation, blocking and stilted speech. The severity rating scale for this item is:

0. No TLC disorder present. Occasional instances of the less pathological forms and no instances of the more pathological forms of TLC disorder during the 5 minute personal verbalization sample.
1. Mild TLC disorder. Occasional instances of TLC disorder which, in context, are felt to be mild, yet clinically significant. Only one instance of the more pathological forms of TLC disorder.

THE TLC SCALE (cont'd)

2. Moderate TLC disorder. Significant and unquestionable impaired verbal output which leads to a moderate disturbance in communication.
3. Severe TLC disorder. Disorder significant enough to impair communication of a substantial part of the personal verbalization sample. Many instances of the more pathological forms of the TLC.
4. Extreme TLC disorder. TLC disorder so severe that communication is difficult or impossible most of the time. Most if not all of the 5 minutes of the personal verbalization sample are marked by severe TLC disorder.

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