Conceptual performance in schizophrenics under approval and neutral conditions.

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CONCEPTUAL PERFORMANCE IN SCHIZOPHRENICS UNDER APPROVAL AND NEUTRAL CONDITIONS

HELLMAN - 1962
Conceptual Performance in Schizophrenics
Under Approval and Neutral Conditions

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Thesis Submitted in Partial Fulfillment of
the Requirements for the Degree of
Doctor of Philosophy

University of Massachusetts

Amherst

July, 1962
Acknowledgements

The author wishes to convey his appreciation to the members of his thesis committee, Drs. S. L. Kates, C. C. Neet and C. F. Oliver, for their cooperation and guidance in the preparation and completion of this manuscript.

A particular expression of thanks is extended to Dr. S. L. Kates, who served as thesis advisor. It was through his constant advice and encouragement that this study was developed and conducted.

The author also wishes to express his appreciation to his wife, fellow students, and friends whose participation and suggestions expedited the completion of this experiment. Thanks is also due to Dr. I. W. Scherer of the Northampton V. A. Hospital, Northampton, Massachusetts, and to Dr. M. Aronson of the Albany V. A. Hospital, Albany, New York, for their cooperation in providing time and facilities to work with subjects involved in the investigation. The participation of staff psychologists, ward aides and social service workers at the Northampton V. A. Hospital is also acknowledged with appreciation.
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Conceptual Performance in Schizophrenics Under Approval and Neutral Conditions

Introduction

Purpose

The purpose of this investigation is to determine the adequacy of conceptual performance in schizophrenics with different pre-psychotic adjustment backgrounds when they are exposed to verbal approval and neutral conditions.

Conceptual Performance in the Absence of Stress

There is some evidence to suggest that in neutral or relatively non-stressful situations, conceptual performance in schizophrenics is facilitated and/or is comparable to that of normals. The recent research program of Rodnick and Garmezy (1957, p. 116) demonstrated that "schizophrenic patients can and do respond adaptively in tasks of considerable complexity and difficulty... This adaptability, however, is a tenuous one which can be disturbed by the introduction of minimal censure into an experiment." This research pointed to behavioral deficit in schizophrenic performance as a function of task cues which are relevant to earlier experiences with censure. In addition, it was noted that a lack of sustained motivation to participate in experimental tasks accounts for increased decrements in performance by schizophrenic subjects. However, when such factors as sustained motivation is ensured, or cues suggestive of censure are not present, the performance of schizophrenics approaches or equals that of normals.
Wegrocki (1940) notes that "there are some patients usually utilizing the 'concrete' approach, who, with proper rapport and persuasiveness can for a brief time utilize their latent generalizing capacity and operate with abstract concepts." Heath (1956) provides data which suggest that less response disorganization on abstract intellectual tasks occurs under non-anxiety conditions. Webb (1955) reports that control (no censure) schizophrenics improved in an abstraction task upon retest, while experimental schizophrenics showed no improvement on retest. Hellman and Kates (1961) found that in a relatively neutral situation schizophrenics with a history of severe sexual and social withdrawal were able to participate in an abstraction task. These patients were not so adaptive under stress, where rejection of test materials and refusal to participate were exhibited.

Premorbid Withdrawal and Performance

Garmezy and Rodnick (1959) point out that schizophrenic populations are heterogeneous in that within a given group there are patients with different backgrounds in terms of the extent of their premorbid withdrawal. A schizophrenic population can, at minimum, be divided into two groups, one characterized by relatively adequate premorbid adjustment (good premorbid), and the other by relatively inadequate premorbid adjustment (poor premorbid). Further, these typical premorbid social adjustments are reflected in the character of conceptual processes. The poor premorbids, due to their greater social disarticulation, have not made their conceptual processes and behavior as logical, formal or public as those with relatively greater social articulation.
The Phillips (1953) scale provides a method for evaluating premorbid social adjustment, thus allowing for a test of the assumption that greater premorbid withdrawal is associated with greater deviancy in conceptual processes and behavior. It provides for ratings in five areas of pre-psychotic life: 1) recent sexual adjustment; 2) the social aspects of sexual life during and immediately beyond adolescence; 3) the social aspects of the recent sexual life; 4) the past history of social relations; 5) recent adjustment in social relations. The subscale is thus a quantitative evaluation of the social and sexual history of the patient during the premorbid period. A crucial feature of the scale is that it equates adequacy of premorbid adjustment with the ability to form close and lasting human relationships. Consequently, it serves as an index of the degree and nature of personal withdrawal from social living.

Goldstein and Scheerer (1941, p. 4) have noted that "loss of the ability to deal adequately with a large number of life situations results in an inability to discover the essence of a situation. There are characteristic changes in memory and attention which interfere with voluntary assumptions of mental sets, the ability to shift from one aspect of a situation to another, the holding in mind of various aspects of a situation simultaneously, the formation of hierarchic concepts, the capacity for planning ahead ideationally or the ability to think and perform symbolically." This loss of ability to deal with life situations is what is evaluated through the use of the Phillips (Phillips, 1953) subscale, in that it evaluates the capacity to form and maintain deep heterosexual and personal relationships.
Using the Phillips scale, Moriarty and Kates (1962) found that normals, good premorbids and poor premorbids differ significantly in their concept attainment when problems are embedded in interpersonal stimuli. Further, poor premorbids showed significantly poorer performance than did good premorbids or normals in a sequence of scenes suggestive of approval. In addition, normals and good premorbids did not differ significantly on this measure. Buck (1960) used stimuli suggestive of intimacy and found no difference between normals and good premorbids in their capacity to accept the implications of such stimuli. That is, the implication of intimacy was not avoided by either group. Poor premorbids were not included in this study, however. Later, Buck (1962) employed the additional poor premorbid group in an expanded study, and again found that normals and good premorbids were not different in their capacities to deal with intimacy. However, poor premorbids were less able to accept the implications of "simulated love." In a discrimination experiment, Dunn (1954) found that schizophrenic and normal subjects responded almost identically on scenes depicting such mother-son relationships as whipping or feeding. However, performance was significantly lower for schizophrenics when dealing with a scene depicting scolding. In a subsequent reanalysis of the data by the Rodnick and Garmezy (1957) group, it was found that almost all of the variance in the schizophrenic group was contributed by those subjects who could be classified as having poor premorbid adjustment.

These investigations point to deficit in poor premorbid schizophrenics when they are required to deal with positive
and/or negative affective stimuli. Further, there appears to be a relationship between adequacy of conceptual processes and the extent of premorbid withdrawal.

**Conceptualization as a Function of Withdrawal**

Several theoretical formulations have been offered which describe a functional connection between thinking processes and childhood experiences. Sullivan (1954a) states that in the course of these early interpersonal contacts with significant adults, a self-system (charged with the maintenance of personal security) is evolved. However, so fragile is the schizophrenics sense of security in current social relationships, that the self-system is not sufficiently capable of fending off the threats arising from others. In dealing with the potential threat of every interpersonal relationship, the overwhelmed self-system cannot prevent vague, autistic revery processes from invading awareness. In the testing of abstraction abilities, where the schizophrenic is required to convey a more or less public conceptual experience, he may characteristically fail.

Cameron (1949; 1954) provides a notion called "social disarticulation" which postulates a basic withdrawal tendency in the schizophrenic which is manifested in disarticulated speech and thought. As in Sullivan's scheme, the disarticulation is manifested by a lack of congruence between the schizophrenic's personal thought patterns, and more public modes of communication. The patient has fallen into these personal patterns, this asocial dialect, in the course of growing more and more isolated from others. As social communication is
gradually lessened, a progressive loss of organized thinking results, and the patient does not produce thoughts which are public and communicative.

Goldstein (1959) proposes that the infant organism attempts to create a unity between itself and the world to replace the infant-mother unity which is disrupted by birth. If this new unity does not occur, anxiety becomes so intense as to result in withdrawal. Since the abstract attitude has not yet developed (in infancy), withdrawal becomes the only available protective mechanism. According to Goldstein (1959), "persons who later become schizophrenic retain the habit of reacting to dangerous situations with abnormal concreteness." Thus, concreteness is viewed as a defense against anxiety. Prior to this formulation, the notion of concreteness was dealt with in detail by Goldstein (1954). This level of functioning is viewed as a giving over and boundedness to the immediate experience of the given situation or thing in its particular uniqueness. Thinking and acting are directed by the immediate claims made by one particular aspect of the object or situation in the environment. The abstract level of functioning, on the other hand, refers to the case in which one transgresses the immediately given specific aspect or sense impression. Action is oriented about a more conceptual viewpoint, be it a category, a class or a general meaning under which the particular object before us falls. Goldstein (1954) concludes that the abstract attitude is basic for the ability: 1) to assume a mental set voluntarily; 2) to shift voluntarily from one aspect of the situation to another;
3) to keep in mind simultaneously various aspects; 4) to generalize, to abstract properties, to plan ahead ideationally, to assume an attitude toward the "mere possible," and to think or perform symbolically; 5) to grasp the essential of a given whole, or to break up a given whole into its parts and to isolate them voluntarily. Thus, when in the face of stress the schizophrenic reacts with "concreteness," he manifests a whole complex of disorganized thought. Further, since such concreteness has its origins in interpersonal withdrawal, the productions of the schizophrenic are idiosyncratic and asocial as well.

Fromm-Reichmann (1950) stresses the Sullivanian point of view, but with more emphasis on the sensitivity of the schizophrenic to cues of affection in others. Each social interaction is a repetition of the original traumatic rebuffs of infancy. In order to prevent further anticipated rebukes, the schizophrenic withdraws from interpersonal interactions. Along with this withdrawal comes the more personal thought and speech patterns which are inimical to the production of public conceptual notions. This cognitive impairment is associated with severe anxiety in childhood.

Thus, the observation of less efficient conceptual attainment by poor premorbid schizophrenics in the context of interpersonal cues (Moriarty and Kates, 1962), as well as the poor capacity of the poor premorbid to deal with cues of intimacy (Buck, 1962), are entirely consistent with theoretical formulations concerning the relation between conceptualization and withdrawal.
Schizophrenic Language Behavior

In addition to deviances in thought processes of the kind noted by Goldstein (1954), deviances in language behavior have been noted in the theoretical and empirical literature as well. Sullivan (1954a) points out that in the course of learning language one is dependent upon a process of "consensual validation." This is the agreement between two persons, or among a group, about the nature of common experience. It is in this consensual validation that the schizophrenic fails, and from its absence he comes to manifest pathognomonic language symptoms. Further, in speaking, there is a monitoring process in the person that attempts to prod him into making reasonable communicative sense. In the schizophrenic the monitoring process is not effective. In addition, this postulated monitoring of speech is as immature, and shows the same poor integration, that is characteristic of the personal relationships of the schizophrenic. The monitoring processes passes, as adequate, expressions which are neologistic, but can only "review them with chagrin and fear," nevertheless allowing them to pass.

In essence, Sullivan (1954a) believes that the schizophrenic does not feel that speech will help him to gain interpersonal satisfactions, because he is "quite sure there are none." He uses speech exclusively for counteracting his feelings of insecurity among people. The schizophrenic's speech shows characteristic peculiarities because of the recurrent severe disturbances in his relationships with other people, and the result is a confusion of the critical faculties concerning the structure of language.
Goldstein (1954) similarly notes that it is characteristic of impairment of the abstract attitude that the schizophrenic is unable to give himself an account of what he is doing. In schizophrenic language, there is an absence of generic words which signify categories or classes. We can grasp the meaning of an individual word only if we know the concrete situation in which it belongs for the speaker. In schizophrenia it is difficult to determine the situation to which the word belongs, since many of the experiences of the schizophrenic differ so widely from those of a normal individual.

Cameron (1954) uses the terms "metonyms and personal idiom" to describe the asocial or highly personalized language of the schizophrenic. These are unprecise approximations in which substitute terms or phrases are given in place of the more exact one that a normal might use. In addition the schizophrenic exhibits "interpenetration of themes," i.e., asocial fantasy themes which intrude upon external events and make them subordinate to the main stream of thought.

These theoretical views thus emphasize the lack of control which the schizophrenic exerts upon his language productions. He uses language as a means of further withdrawal from social living, rather than as a means of communicating to other individuals and gaining the normal satisfactions of his social environment. Through his language, the schizophrenic offers feelings, reactions, and descriptions which are based upon experiences alien to the main stream of his social environment. His language is inexact and dominated by intruding reverie processes.
While the experimental literature dealing with schizophrenic
language is not great, some representative research may be noted
at this point. Flavell (1956) reports that loss of the ability
to select a word related to a stimulus word in the most abstract
manner is correlated with a loss in social adequacy or effective-
ness as measured by ward personnel ratings. The implication here
is that social withdrawal and loss of the abstract attitude are
intimately related, as theoretical formulations would suggest.
In this connection, Senf, Houston and Cohen (1955) have found
that on a test of reasoning, the administration of drugs (amytal)
improved scores by decreasing the influence of personal reference.
Thus, when the characteristic defenses of the schizophrenic are
somewhat relaxed, less of what has been called asocial dialect
intrudes upon performance. Heath (1956) used dissected sentences
where component words were scrambled, and the subject must "grasp
the essential of a given whole, break it into parts, isolate and
synthesize them." Threat was built into the content of some
sentences. The difference between threat and non-threat scores
for each subject was obtained. The correlation between this
difference score and the Object Sorting Test was -.40 (p.<.05)
for 24 subjects. It was concluded that high conceptual (Object
Sorting) ability is related to the ability to deal with abstract
language materials in a context of stress. White (1949) found
that schizophrenics avoid interpersonal themes in their language
behavior. Matched schizophrenics and normals were required to
identify slurred words, to group words in several ways and to
form sentences with each of 15 words. A total of 28 signs
differentiated the groups. In general schizophrenic language
was more impersonal, involved and complex. Rigidity was indicated by the inability of the schizophrenics to shift word groupings, and by the repetitious nature of their sentences.

These experimental findings thus emphasize the relation between impaired language behavior and withdrawal (Flavell, 1956), the way in which asocial dialect functions in the normal state of the schizophrenic (Senf, Houston and Cohen, 1955), the way in which the abstract attitude functions to aid in dealing with language materials in a context of stress (Heath, 1956), and the complicated, impersonal and rigid language usage of the schizophrenic (White, 1949). These features of language are consistent with those described, and theoretically accounted for, by Goldstein (1954), Sullivan (1954a) and Cameron (1954).

Object Sorting as a Conceptual Tool

Goldstein and Scheerer (1941, p. 109) concluded that the Object Sorting Test was "suitable for determining impairment of the abstract attitude in cases of mental deficiency due to abnormal development, brain lesions and schizophrenia."

McGaughran and Moran (1956) using the Object Sorting Test, demonstrated that a schizophrenic group showed a loss of social communication, without evident impairment of abstract ability. Such a conclusion was considered crucial in the light of the organic-functional issue as to the basic nature of the conceptualization deficit in schizophrenia. The conclusion was an inference based on the extent to which schizophrenic subjects used public concepts as the basis for sortings made. The results
of the study were supported further in a later investigation (McGaughran and Moran, 1957), where it was concluded that schizophrenics are impaired in their social communication.

Rapaport (1945) has provided data which quantitatively describes the performance of normal and psychiatric groups in the Object Sorting Test. In summary, (Rapaport, 1945, pp.420-450), it may be noted that inadequacy of categorization, loosening or narrowing of concept span, concrete conceptual level and pathological content are all factors which differentiate the performance of normals and schizophrenics on this test. Recently, however, Lothrop (1960) has concluded that "... abnormal concreteness (in the Object Sorting Test) is not characteristic of all schizophrenics." The author notes that one third of sixty-four schizophrenic subjects demonstrated little or no deficit by Rapaport's (1945) norms. This phenomenon of individual differences in conceptualization capacity within the allegedly homogeneous group called "schizophrenics" has been noted earlier by Goldstein and Scheerer (1941, p.108), who stated that some types of schizophrenics could not give the basis of similarity between objects placed together by the examiner. However, these authors tended to minimize individual differences as a concept in schizophrenic groups, and preferred to state, for example "... a normal subject is well capable of grasping sorting principles of a higher conceptual order..." This is "... in contra-distinction to the patient, who is unable to use the abstract attitude."

Recently, Hellman and Kates (1961) used the Object Sorting Test, and found over-all differences, in terms of rank order,
between the performance levels of normals, good premorbid and poor premorbid. This suggested that within schizophrenic groups, the premorbidity status was a relevant variable in terms of the greater homogeneity of sub-groups it creates. These sub-groups are capable of different levels of functioning. It is possible, for example, that the one third of sixty-four schizophrenics who demonstrated "little or no conceptual deficit" in the study by Lothrop (1960) were of a good premorbid status. It has been the experience of the Rodnick and Garmezy (1957) researchers that good premorbid produce performances quite similar to those of normals, while poor premorbid function in a significantly poorer manner.

Thus, the conceptual capacities of schizophrenics have long been noted as lower level, as compared with normals (Goldstein and Scheerer, 1941; McGaughran and Moran, 1956; McGaughran and Moran, 1957; Rapaport, 1945). In addition, it has been noted that it may be inaccurate to consider conceptual performance in "schizophrenics" (in a heterogeneous sense) as always lower in level than that of normals. Lothrop (1960) emphasizes individual differences within heterogeneous groups, and Hellman and Kates (1961) provide evidence that poor premorbid perform differently during the testing of abstraction abilities when compared with good premorbid schizophrenics.

In discussing the massive withdrawal behavior in the schizophrenic, Rodnick and Garmezy (1957) note the likelihood that such withdrawal is a highly generalized response which dominates the patients behavior in many social situations. Further, they suggest that the schizophrenic consequently manifests a relative
Inability to make differential responses to different stimuli under conditions of threat. This was essentially the notion tested and supported by Garmezy (1952). Since the Object Sorting Test involves making differentiated responses to specific objects, where the "similarity to" and "dissimilarity from" become the criteria for such responses, under a threatening condition a decreased capacity for sorting performance might be expected. Further, in a situation where the same experimental operation (e.g., verbal approval) is perceived differently, in terms of its threat value, by different kinds of schizophrenic subjects, the more threatened group should show the greatest lack of facilitation in performance. In the case of the poor premorbid, as compared with the good premorbid or the normal, approval occurring in an interpersonal situation would presumably be highly threatening.

The Efficacy of Approval in Poor Premorbidity

At this point, then, the task is to develop further the notion that verbal approval constitutes a threatening situation for the poor premorbid. In essence, the content (approval) is ignored, and the context (interpersonal) becomes salient.

The theoretical views of Sullivan (1953, 1954a, 1954b, 1956), Cameron (1949; 1954), Goldstein (1959), Arieti (1960) and Fromm-Reichmann (1950) suggest that the anxiety surrounding early interpersonal relationships has resulted in the characteristic social and conceptual withdrawal of the schizophrenic patient. Cameron (1951) has pointed out that there is a readiness to
react selectively to different aspects of the environment. In the schizophrenic, his inadequacies dominate his perception and lead to the selection of cues of approval and censure which are less apparent to others. This heightened sensitivity to cues of hostility and approval raises anxiety, and withdrawal occurs as a protective mechanism in that it reduces or prevents recognition of the anxiety-laden cues. The poor premorbid, then, with his history of withdrawal from anxiety provoking social involvements, might represent an extreme along a continuum of readiness to respond in a protective manner to signs of approval. Sullivan (1953) has noted that any interpersonal situation involves a threat to self-esteem for the schizophrenic. This provides difficulty in dealing with both friendly and unfriendly social interactions. In a later paper, Sullivan (1956) stated that this difficulty of the schizophrenic is based upon the extreme importance of knowing whether people are expressing like or dislike. Thus, both signs of intimacy and anger give rise to difficulties in interpersonal relations for the schizophrenic. In Sullivan's system, anxiety is equated with a lowering of self-esteem. The schizophrenic uses "security operations" to avoid anxiety, and these operations are sensitized to signs of approval and disapproval.

Recently, Burnham (1961) has stated that "the disorder of relationships (of the schizophrenic) is characterized largely by isolation and withdrawal, based upon such a powerful linkage of intimacy and anxiety that the schizophrenic person deeply fears and distrusts relationships with others." Will (1961) also expresses this point of view concerning a relationship
between intimacy and approval, and a state of anxiety: "The relationship with the schizophrenic person... is marked by recurrent approach and withdrawal... Having experienced much anxiety with humans, he is wary of relationship and tends to withdraw from it, the mounting anxiety disturbing communication." Thus, the author points out here the relation which exists between withdrawal and communication. Further, he emphasizes the link between approval and anxiety in the case of the schizophrenic.

Further, research by Moriarty and Kates (1962) and Buck (1960; 1962) strongly suggests that the poor premorbid schizophrenics are less able to deal efficiently with materials associated with implications of intimacy or other forms of positive social interaction such as approval. Arieti (1960) has most recently summarized the relationship between conceptual performance by the schizophrenic and his early experiences in interpersonal situations. He states that: "... The important difference from the normal is that his (the schizophrenic) organizations of symbols into higher constructs are not stable, are ready to be fragmented and rejected. They have never been fully accepted or assimilated, because they carried with them the anxiety of the early interpersonal relationship (p.12)." Thus, there is ". . . a vulnerability or fragility of the organization of social symbols... which is due to the emotional conditions under which early assimilations and organizations of the symbols took place (p. 12)."

Thus, the difficulty of the poor premorbid in dealing with implications of approval or intimacy (Buck, 1962) in an experimental situation has been noted. Further, theoretical
approaches (Cameron, 1949; 1951; 1954; Sullivan, 1953; 1954a; 1956; Arieti, 1960; Fromm-Reichmann, 1950) emphasize the sensitivity to cues of approval in what appear to be, in particular, poor premorbid schizophrenics. Additional reports of conclusions drawn from experience in psychotherapy with schizophrenics (Burnham, 1961; Will, 1961) also note the difficulty of the schizophrenic in dealing with approval and intimacy.

However, while there is some suggestive experimental evidence, as well as theory and observation, as to the effects of approval on schizophrenics, no experimental evidence exists as to the effects of reward, praise or approval, given to schizophrenic subjects in an interpersonal context, upon subsequent conceptual performance. Studies dealing with the effects of verbal approval or reward in patient populations have been concerned with performances other than those occurring in the conceptual realm. Further, results have been decidedly equivocal as to the effects of verbal approval or reward.

In the non-conceptual areas such as reaction-time or paired associates learning, there is evidence suggesting that verbal rewards may or may not improve the performance of schizophrenics. Cavanaugh, Cohen and Lang (1960), using verbal approval in a reaction-time study, found the reward condition had little effect upon performance of schizophrenics. Stotsky (1957), using "supportive urging" in a similar study, found no significant enhancement in the performance of schizophrenics. Atkinson and Robinson (1961) found that verbal reward in a paired-associates learning task did not function as a positive reinforcement, in the sense of increasing the probability of
the occurrence of the correct response.

Olson (1958), Lair (1954) and Goodstein, Guertin and Blackwell (1961), however, all offer results suggesting that verbal reward does enhance performance in such areas as simple psychomotor tasks, verbal learning and retention, and reaction-time, respectively. Olson (1958) reports that in a simple digit-symbol task, schizophrenics show more improvement following praise than they do following censure. Lair (1954), in a verbal learning and retention task, found that schizophrenics improve in performance when praised, as compared with when given reproof or given no information at all. Goodstein, Guertin and Blackwell (1961) used a choice reaction-time situation, and found that performance by schizophrenics was improved by verbally presented praise and positive feedback.

**Toward Some Hypotheses**

The highly equivocal results obtained with non-conceptual performances as a function of verbal reward appear in part to be attributable to the use of highly heterogeneous groups of schizophrenic subjects. The possibility remains that the response to reward varies as a function of more specific conditions than the presence of characteristics commonly subsumed under the nosological entity of "schizophrenia." That is, the response to reward may vary as a function of premorbid experience. In some cases the effect of reward would then be enhancing or at least non-detrimental, while in other cases it would produce decrements in performance.
This notion of at least two subgroups within the schizophrenic classification has been given quantitative implementation by the Phillips (1953) scale of premorbid adjustment. An examination of the specific content of the scale shows that the poor premorbid schizophrenic is characterized by impoverished heterosexual and/or homosexual relationships, on both a social and a sexual level, as evidenced by recent as well as early functioning. Further, both early and recent personal relations are characteristically casual and uninvolved, with the patient having always maintained an aloof, seclusive or even antisocial existence. On the other hand, the good premorbid has experienced a relatively stable relationship with another person, has shown interest in others, and has been socially inclined. The importance of such experiences has been stressed in the case where verbal reward has failed to enhance various kinds of performances by schizophrenics in experimental tasks. Robinson (1958), for example, argues that "studies of the parent-child antecedents of schizophrenics indicates that, for these patients, the childhood period was one of sustained trauma, resulting in an orientation to avoiding threats, harm and rejection. Further, the inconsistent, shifting overprotection and rejection by the parents makes rewards of specific responses confusing and unreliable guides to adaptive behavior." Consequently, for the schizophrenic "...reward has little or debilitating effect."

It must be pointed out, however, that such a rationale is based upon a concept of schizophrenia as a unitary process, and so avoids the notion of a premorbid dichotomy. Thus, the
lack of enhancement through the operation of reward is a phenomenon which may be characteristic of poor premorbid schizophrenics, rather than of "schizophrenics" in a more heterogeneous sense, as Robinson (1958) suggests.

In summary, it has been noted that poor premorbid differs from good premorbid in their sensitivity to experimental cues (Garvey and Rodnick, 1959). Along with their severe degree of withdrawal from social living comes a greater loss of the ability to deal with abstract and symbolic tasks (Goldstein and Scheerer, 1941). Poor premorbid differ from good premorbid and normals in their concept attainment when problems are embedded in interpersonal stimuli (Moriarty and Kates, 1962); this suggests the connection between social experience and cognitive conceptual performance. It has also been noted that poor premorbid are less able to accept the implications of interpersonal intimacy (Buck, 1962). The relationship between adequacy of conceptual processes and the extent of premorbid withdrawal, has been elucidated by several theorists (Sullivan, 1954a; Cameron, 1949, 1954; Goldstein, 1959; Fromm-Reichmann, 1950; Arieti, 1960). These authors point out that interpersonal relationships constitute a threat for the schizophrenic. The patient consequently defends himself by withdrawal; presumably, this has been the method of choice for the poor premorbid schizophrenic. In the face of stress, the schizophrenic manifests a whole complex of disorganized thought and language. The disrupted thought processes lead to further withdrawal from the public social community, while the disrupted language behavior reflects intruding reverie processes or asocial dialects which the
overwhelmed individual is unable to audit and suppress. Much experimental evidence points to the relationship between disordered thought and language processes and social withdrawal (Flavell, 1956; Heath, 1956; White, 1949; McGaughran and Moran, 1956, 1957; Lothrop, 1960; Hellman and Kates, 1961; Moriarty and Kates, 1962). In addition to withdrawal on a conceptual or verbal level as a function of stress, it has also been observed that a refusal to participate is a further aspect of the complex of defenses the schizophrenic manifests (Hellman and Kates, 1961; Wilensky, 1952; Whiteman, 1956).

Further, it has been pointed out (Rodnick and Garmezy, 1957) that in the case of massive premorbid withdrawal, a mode of response develops in which the individual is unable to make differential responses to different stimuli under conditions of threat. This kind of response, however, is precisely what is required in Object Sorting (Rapaport, 1945) behavior. In addition, cues of approval would appear to constitute a condition of threat for the schizophrenic (Cameron, 1949, 1951, 1954; Sullivan, 1953, 1954a, 1956; Arieti, 1960; Fromm-Reichmann, 1950), and such threat from the perception of approval may be even more characteristic of the poor premorbid patient. This heightened sensitivity in the poor premorbid is a function of the greater degree of isolation and withdrawal he has experienced. The strong link between the lack of intimate personal experiences and current distrustful and avoidant reactions to approval has also been noted in the literature (Will, 1960; Burnham, 1960).
Thus, if approval constitutes a condition of stress to the poor premorbid, as compared with the good premorbid or the normal, disturbances in thought and language processes should be more prominent in this subgroup. The use of the Phillips (1953) scale in selecting poor premorbids insures that these subjects are more sensitive to affective interpersonal cues than are goods or normals. A test of hypotheses related to the notion that verbal approval may have a more detrimental effect upon sorting, verbalization, or participation behaviors, as a function of its threat value, has not been reported in the literature.

The problem in the present investigation is to determine whether normals, good premorbid and poor premorbid are differentiated in their conceptual behavior (both object sorting and language describing sortings) under neutral and under verbal approval conditions, respectively. These groups are to be compared as to their capacity to deal with the active (subject sorts and verbalizes basis for sorting) and compliant (experimenter sorts and subject verbalizes basis for sorting) phases of the Object Sorting Test. The first three hypotheses below relate to the overall effects of adjustment level (normals, good premorbid, poor premorbid). The remaining four hypotheses deal with the interaction effects of approval and premorbid adjustment level. The hypotheses are phrased in the terminology describing various aspects of Object Sorting behavior. This terminology is discussed in detail under "Apparatus and Scoring Procedures."
Hypotheses

1. Normals will have significantly more adequate sortings and verbalizations on the Object Sorting Test (combined active and compliant phases) than will good premorbids, who in turn will have significantly more adequate sortings and verbalizations than poor premorbids.

2. Normals will have significantly more adequate sortings than good premorbids or poor premorbids.

3. Normals will have significantly more adequate verbalizations and more formal verbalizations than good premorbids or poor premorbids.

4. Under the verbal approval condition, normals and good premorbids will demonstrate significantly less impairment in overall adequacy of combined sortings and verbalizations than the poor premorbids, when contrasted with their corresponding control groups.

5. Under the verbal approval condition, normals and good premorbids will demonstrate significantly less impairment in adequacy of sorting than the poor premorbids, when contrasted with their corresponding control groups.

6. Under the verbal approval condition, the normals and good premorbids will demonstrate significantly less impairment in adequate verbalizations and formal verbalizations, and fewer idiosyncratic verbalizations and adequate sortings accompanied by inadequate verbalizations, than the poor premorbids, when contrasted with their corresponding control groups.
7. Under the verbal approval condition, the normals and good premorbid will demonstrate significantly fewer failures than the poor premorbid, when contrasted with their corresponding control groups.

Method

Subjects

At each of three levels of adjustment (normal, good premorbid, poor premorbid), two groups were formed. One of these two groups received the neutral control condition, the other received the experimental treatment of verbal approval. Thus, a total of six groups were formed, composed of normals under approval and neutral conditions, good premorbid schizophrenics under approval and neutral conditions, and poor premorbid schizophrenics under approval and neutral conditions. In each of the six groups there were ten subjects (Ss), making a total of 60 Ss.

The three major groups were matched on the following criteria: a) age, b) intelligence, as measured by the Wechsler Vocabulary Subtest (Wechsler, 1955), c) educational level, d) absence of neurological or organic components, and e) reasonable capacity for cooperation and rapport. The experimental and control subgroups were matched on conceptual performance by Wechsler Similarities Subtest (Wechsler, 1955).

Subjects for the schizophrenic groups were obtained from the Northampton V. A. Hospital, Northampton, Massachusetts. Normal Ss (non-psychiatric) were medical patients at the Albany
V.A. General Medical and Surgical Hospital, Albany, New York, who had been hospitalized solely for medical treatment, of a non-psychosomatic character, and were near the completion of their hospital stay.

Apparatus

A. The Rapaport (1945) modification of the Goldstein-Gelb-Weigl Object Sorting Test was used. This test is composed of 33 common objects, and is administered individually to each S. The first phase of the technique consists of six tasks, and requires the S to group with a sample object presented by the experimenter (E) those objects remaining in the materials which "belong with it." The sample object presented by E is representative of a class of possible objects which could be grouped together, and the S's task is termed "active phase." Prior to the beginning of this phase, the S is asked to select his own sample item, and then to proceed with a grouping. This is termed the free sort of the active phase; following this, the six sample items are administered by E, as indicated. The second phase of the technique consists of 12 tasks, and requires the S to identify the basis for the grouping of a number of objects arranged by E. This is termed the "compliant phase."

The Phillips (1953) subscale of premorbid adjustment was used to assess premorbid status. The sum of weighted scores which describe various levels of adjustment to social and sexual aspects of the patient's life constitute the S's position on the scale. Good and poor premorbids are obtained by a split at the median of the distribution of total scores. Previous
experience with the Subscale (Hellman and Kates, 1961) indicates extremely high inter-rater agreement using this scale. The items in the scale are shown in Appendix B.

B. Performance on the Object Sorting Test was scored according to "A Scoring Manual for the Goldstein-Scheerer Object Sorting Test" (Kates, Kates, and Michael, 1960). Using this technique, it is possible to determine sorting adequacy independently of verbalization adequacy. The manual provides detailed examples of scoring conventions. The scoring system will be presented here in detail, as it applies to active phase items, and those items in the passive or compliant phase. There are four major criteria by which performance is evaluated: adequacy of sorting (applicable only to the active phase), adequacy of verbalization, type of verbalization, and failures.

1. **Adequacy of sorting**

   1) **Adequate**

   1. All the objects included are relevant to each other and no irrelevant objects are included or relevant objects excluded. The adequacy of sorting is to be determined as independently as possible, without taking into account the nature of the verbalization.

   2) **Inadequate**

   1. All objects are relevant with the exception of one object which does not belong.

   2. All objects included are relevant, but one relevant object is not included.

   3. The objects are predominately irrelevant to each other or more than one object has been excluded that is relevant or more than one object has been included that is irrelevant, or any combination of the above.

2. **Adequacy of verbalization**

   1) **Adequate**

   1. An adequate verbalization is one which covers correctly and completely the objects sorted.

   2) **Inadequate**

   1. A verbalization is inadequate if it is too inclusive. That is, it is inadequate because
it covers correctly the objects sorted in that particular grouping, but refers as well to other objects not included in the grouping but present in the overall sample of objects. It includes more objects than are present in the sorting.

2. A verbalization is inadequate when it covers most of the objects in the sorting but fails to cover some or one of the objects included in the sorting. The verbalization is exclusive, it excludes one or more of the grouped objects.

3. A verbalization is inadequate when it is false. Saying that all objects are green when they are all red is an example of a false verbalization.

4. Any verbalization of the syncretistic, chain, fabulatory, symbolic or split narrow variety (to be described below) is automatically classified as inadequate, as these verbalizations fail to carry out or utilize the conjunctive rule of ordering of objects.

5. A verbalization is inadequate if it is both inclusive and exclusive.

3. Type of verbalization

1) Formal verbalization

1. The criteria for membership in these categories or the defining attributes are properties inherent in the objects themselves. There are several types of formal categories, but the type we are concerned with is predominately the formal conjunctive category. A conjunctive category is defined by the joint presence of the appropriate value of one or several attributes. "All these objects are red" is an example of a formal conjunctive category. Formal categories can be broken down into the following three types based on the degree of closeness to the specific properties of the objects concerned.

a. Formal specific - These categories are defined by highly specific concepts, pertaining to shared attributes of a very specific and low order nature. A further characteristic is that the concept is closed, it will admit of few other members even from new samples of the world. Examples: "All these things have four legs and flat sides." "All these objects have small bits of wood, a bit of steel, and sharp edges."

b. Formal primary - These categories deal with a higher level of conceptualization that depends on the qualities of shape, size, form, texture, smell, color, etc. for the defining attributes. Examples: "They are all rectangular." "They are all red."

c. Formal generic - These categories deal with a still higher level of categorization.
Defining attributes here depend upon the sharing of a complex set of attributes, usually several of the "formal primary" type. A further characteristic of this category type is its extreme openness. New things can be admitted. Examples: "They are all tools." "They are all silverware." "They are all metal."

2) Others

1. **Functional** - The members of a functional category are all grouped together because they share common functions. Equivalence is based on external function. Example: "All these objects can dig holes." "All these objects are used for eating."

2. **Affective** - The verbalization groups together the objects because they elicit a common emotional response. This is the only case in which the adequacy of categorizing is not independent of the verbalization. If an affective verbalization is given, the categorization for which it is given is automatically judged inadequate. For an affective category there is no external criteria for judging the relevancy of the members of that category. Example: "I like those things." "They remind me of my childhood." "These are warm."

3. **Syncretistic** - "All are made of wood." "All are grown from plants." An appearing functional or formal category which is extremely vague and general and applies almost to the whole set of objects as well as the class for which it is used.

4. **Fabulated** - Start out with one attribute of an object and make stories which include all the objects in the group.

5. **Symbolic** - The meaning of the objects are changed. Reinterpret the meaning of the object and group the objects on the basis of this new symbolic sorting.

6. **Chain definitions** - Go from wooden object to object with wooden handles. Then from a different attribute of that object to another object which shares that different attribute and so forth. Objects are linked by a chain of concepts.

7. **Split-Narrow** - This categorization is marked by dividing the grouping into 2 or more sub-groupings and subsuming each group under a separate concept.

8. **Adequate sortings accompanied by inadequate verbalizations** - This phenomenon is self-explanatory.
4. **Failures**
   1) No response.
   2) The naming of the objects.
   3) Inability to group objects with preselected objects.
   4) Grouping of identical objects only.
   5) Conceptualizing one part of the group and not the other part of the group.

In terms of the hypotheses in this investigation, it will be noted that particular criteria suggest more efficient or less efficient thought and/or language processes. Thus, inadequate verbalization, formal specific verbalization, verbalizations in the "Others" category (i.e., functional, affective, syncretistic, etc.) and failures indicate a relatively less efficient process. Conversely, adequate sorting, adequate verbalization, and verbalizations of the formal generic and formal primary types suggest a relatively more efficient process. The form in which hypotheses are stated reflect these distinctions, in that various criteria are specified as they apply to normal and clinical groups.

**Procedure**

In the active phase, the items were arranged in order of difficulty, and presented to all Ss in this sequence. Rapaport (1945) reports that the sample objects of pipe, pliers, fork, red paper circle, ball and bell are of increasing difficulty, respectively, as determined by the percentage of Inadequate response by normal subjects. In the passive (compliant) phase, items were arranged according to the order of presentation suggested by Rapaport (1945). The Object Sorting Test began
with the active phase, and was followed by the passive phase, thus minimizing the effect of experience with what constitutes an acceptable grouping. Subjects were tested individually.

At the beginning of the test administration, the S was asked to pick any item he chooses from the pool of available items (the free sort of the active phase). He was then told: "Now pick out all the objects that belong with this, and tell me when you have finished." For Ss in the neutral groups, E simply observed the sorting and returned the items to the pool. For Ss in the approval groups, appropriate verbal comment was offered, upon which the items were returned to the pool. Following this initial experience with the test items, Ss received each of the 6 sample items of the active phase in turn. In the event of a scheduled sample item duplicating the sample item freely chosen by the S in the initial experience, a request was made for a different sorting. Following each of the six items, Ss in the approval groups received appropriate comment; other Ss simply continued the test.

In the scheduled items, E conducted an inquiry concerning the sorting, as follows: "Now tell me why they go together." Following Rapaport (1945), the sorting instructions were repeated if refusal to sort occurred. When a response is still not given, a failure has occurred. Further, Rapaport (1945) provides detailed and standardized procedures for further questioning during the inquiry period, in order to clarify unclear verbalizations.
When the 6 items of the active phase had been completed, the E said: "Now, I want you to watch me." The E then proceeded to group a set of items. He then said: "Now tell me why these all belong together." Thus, Ss response in this compliant phase was equivalent to his response during inquiry in the active phase. Approval groups received appropriate comment following the active phase and after each compliant item.

The statements presented to approval groups were constructed as follows. A printed sheet bearing the following instructions was presented to 8 clinical psychologists and 8 ward aides at the V.A. Hospital, Northampton, Massachusetts: "I'm interested in constructing a short series of statements (or a single statement) which can be verbally presented to both schizophrenic patients and normals, and which will be interpreted by them as approval. The statement is to be presented after the individual has completed an intellectual task. The hope is to make the individual "feel good," to make him feel worthy, appreciated, and to feel that he has truly accomplished something."

"The statement(s) should be 'down to earth', believable, and capable of being presented in a conversational and natural way. In this connection, you may perhaps best draw upon the kinds of things you have often said to yourself to individuals in whom you may have wanted to create the kind of inner feeling noted above. Also, you may recall statements by others which created this effect in you. Your experience in dealing with schizophrenic patients will no doubt aid you in constructing
a statement(s) which will cause this effect in both normals and schizophrenics alike."

The response to this request was examined for common and recurrent ideas, and on this basis a statement of approval was constructed. The content, classification and method of implementation of these approval statements appears in Appendix A. The implementation of the statements can be summarized as follows: 1) After the free sort of the active phase: "O.K., that's very good!" 2) After each sort of the active phase: "Good!" alternated with "Fine!" 3) At the completion of the active phase: "You did a very good job with this, Mr._______. Not many people get it right. Keep up the good work!" 4) After each response in the compliant phase: "Fine!" alternated with "That's good!".

In addition to these statements, an attempt was made to make the test administration in the approval groups more subject-centered than test-centered. While in neutral groups the E showed a degree of interest in the subject and did not ignore him as an individual, the mechanics of the test and its administration were given more emphasis. In approval groups, the statements were delivered in the context of a generally approving atmosphere, punctuated not only by the statements but by the smiles and more friendly and personal attitude of the E.

**Scoring**

A. Sortings and verbalizations were recorded exactly by E. Sortings of the active phase were scored for adequacy, and
the verbalizations for this phase were evaluated for adequacy and type. Similarly, verbalizations for the compliant phase were scored for adequacy and type. Failures were scored, where appropriate, for both active and compliant phases. Depending upon the hypothesis being tested, the number of relevant scores for an individual subject appeared as his contribution to a particular cell of the analysis. The number of responses for each scoring criterion for each subject appears in Appendix C below.

B. In order to determine the reliability of scoring, 1/3 of the total N, or 3 Ss from each subgroup, were selected at random and their protocols scored by a judge. Since one S gives a total of 18 responses (6 active items, 12 compliant items), 3 Ss from each subgroup (6 subgroups) then provides 18 Ss, each giving 18 responses. 18^2 is thus the total number of responses used to determine reliability, and 18^2, or 324 responses, equals 1/3 of the total number of responses for all Ss (60Ss x 18 responses/S = 1,080 total number of responses).

Using the sample of 324 responses, there was agreement on 302 responses, between the E and one judge who did not know the purpose of the experiment. Further, when E scored this sample, as well as all other responses, he did not know into which adjustment group or condition the subject being scored fell. Scoring consistency between E and the judge, in terms of percent of agreement, was thus 93% (302/324).

Results

Adjustment groups were matched on several criteria, including capacity for rapport and absence of neurological
components. The former was determined at the time of administration, and all subjects selected were used. The latter criterion was satisfied by examination of hospital records. The quantitative criteria for matching adjustment groups were age, education, and vocabulary score on Wechsler's Vocabulary subtest (Wechsler, 1955). Table 1 presents the means and standard deviations for these data. F ratios were computed across all six subgroups, and show that there is no significant difference between any specific pairs of means across the entire set. Across adjustment groups there is little apparent difference in the spread of scores as well. In terms of averages, it may be noted that each subgroup shows a mean educational level of approximately 11 years, and a mean vocabulary score of 10, equivalent to a pro-rated I.Q. score of approximately 100.

In addition to matching across adjustment groups, subgroups at each level of adjustment were further matched on Wechsler's Similarities subtest (Wechsler, 1955). The means and standard deviations for these data, as well as the mean Phillips score of premorbid adjustment for psychiatric groups, are presented in Table 2. F ratios were computed between subgroups at each adjustment level, and show that there is no significant difference in either the Similarities score or the Phillips score received by various pairs of subgroups. In addition, the spread of scores between any pair of subgroups is quite similar.

On the basis of the data in Tables 1 and 2, it may be concluded that groups were adequately matched on the relevant variables selected. Consequently, any differences between
Table 1
Means and Standard Deviations in the
Matching of Experimental and Control
Subjects Across Adjustment Groups
(For Each Subgroup N = 10)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Normals Approval</th>
<th>Neutral</th>
<th>Good Premorbid Approval</th>
<th>Neutral</th>
<th>Poor Premorbid Approval</th>
<th>Neutral</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age</td>
<td>35.8</td>
<td>36.8</td>
<td>35.2</td>
<td>35.0</td>
<td>34.8</td>
<td>35.2</td>
<td>1.865</td>
</tr>
<tr>
<td>S. D.</td>
<td>5.351</td>
<td>8.286</td>
<td>4.269</td>
<td>4.620</td>
<td>5.032</td>
<td>3.427</td>
<td></td>
</tr>
<tr>
<td>Mean Education</td>
<td>10.7</td>
<td>10.9</td>
<td>10.9</td>
<td>11.1</td>
<td>11.0</td>
<td>11.5</td>
<td>.265</td>
</tr>
<tr>
<td>S. D.</td>
<td>2.054</td>
<td>2.080</td>
<td>1.732</td>
<td>1.667</td>
<td>1.643</td>
<td>1.054</td>
<td></td>
</tr>
<tr>
<td>Mean Vocabulary</td>
<td>10.2</td>
<td>10.6</td>
<td>10.5</td>
<td>10.0</td>
<td>9.9</td>
<td>9.7</td>
<td>.362</td>
</tr>
<tr>
<td>S. D.</td>
<td>1.562</td>
<td>1.764</td>
<td>1.153</td>
<td>1.700</td>
<td>2.081</td>
<td>1.490</td>
<td></td>
</tr>
</tbody>
</table>
Table 2
Means and Standard Deviations in the Matching of Experimental and Control Subjects at Each Level of Adjustment
(For Each Subgroup N = 10)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Normals</th>
<th>Good Premorbids</th>
<th>Poor Premorbids</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Approval</td>
<td>Neutral</td>
<td>F</td>
</tr>
<tr>
<td>Mean Similarities</td>
<td>10.1</td>
<td>10.7</td>
<td>.546</td>
</tr>
<tr>
<td>S.D.</td>
<td>1.732</td>
<td>1.764</td>
<td>1.103</td>
</tr>
<tr>
<td>Mean Phillips</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S.D.</td>
<td>1.825</td>
<td>2.980</td>
<td>1.700</td>
</tr>
</tbody>
</table>
groups may be attributed to the effects of the approval and/or neutral conditions, or the level of premorbid adjustment.

The data for hypothesis 1 are presented in Tables 3 and 4. The means shown in Table 3 represent the combined scores of approval and neutral groups at each of the three adjustment levels. The analysis of variance calculation in Table 4 that concerns the first hypothesis is the F ratio for Adjustment. The value of 96.81 is highly significant (p < .001), and is the result of small score spread at each adjustment level and relatively little overlap of scores between groups, giving a very small error term. These factors indicate that performance across adjustment groups is distinctly different, and the means given in Table 3 indicate that differences are in accord with hypothesis 1.

The Duncan Multiple Range Test (Federer, 1950) shows that all differences between pairs of means are significant at the .01 level. Thus, the difference between normals and poors of 12.75 is greater than the value of 2.55 necessary for significance at this level. Similarly, the differences in means of 7.30 between normals and goods, and of 5.45 between goods and poors, are also larger than their required value of 2.44. Hypothesis 1 is thus supported. Normals have significantly more adequate sortings and verbalizations on the Object Sorting Test than do good premorbid, who in turn have significantly more adequate sortings and verbalizations than poor premorbids.
Table 3
Means and Standard Deviations for Number of Adequate Sortings and Verbalizations Across Adjustment Groups
(For Each Group N = 20)

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normals</td>
<td>19.25</td>
<td>2.848</td>
</tr>
<tr>
<td>Good Premorbids</td>
<td>11.95</td>
<td>3.456</td>
</tr>
<tr>
<td>Poor Premorbids</td>
<td>6.50</td>
<td>3.589</td>
</tr>
<tr>
<td>Total</td>
<td>12.57</td>
<td>6.193</td>
</tr>
</tbody>
</table>
Table 4
Analysis of Variance of Number of Adequate Sortings and Verbalizations

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>1637.00</td>
<td>819.00</td>
<td>96.81 ***</td>
</tr>
<tr>
<td>Approval</td>
<td>1</td>
<td>7.00</td>
<td>7.00</td>
<td>.827</td>
</tr>
<tr>
<td>Adjustment x Approval</td>
<td>2</td>
<td>162.00</td>
<td>81.00</td>
<td>9.57 ***</td>
</tr>
<tr>
<td>Error</td>
<td>54</td>
<td>457.00</td>
<td>8.46</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>2263.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
Table 5 presents the data for hypothesis 2. The means represent the combined scores of approval and neutral groups at each of the three adjustment levels. The analysis of variance calculation for this hypothesis appears in Table 6, as the F ratio for adjustment. While the value of 30.45 is highly significant (p < .001), the Duncan Multiple Range test shows that significant differences exist only between one of the two pairs of means relevant to the hypothesis. Thus, the difference of 2.85 between the means of the normals and poors is larger than the value of 2.44 required for significance at the .05 level, while the difference of 1.40 between the means of the normals and goods fails to exceed the required value of 2.31. Thus, while the means shown in Table 5 indicate that results are in the appropriate direction, as specified in Hypothesis 2, the hypothesis is only partially supported. While normals have significantly more adequate sortings than poors, they do not have more adequate sortings than goods as well. The remaining comparison of goods and poors, while not required by the hypothesis, is 1.45 and less than the required 2.31.

Table 7 presents the data for hypothesis 3, in the Total column alone. The data are presented in this manner since the means and standard deviations for approval and neutral groups separately are not presented elsewhere as is the case for Tables 3 and 5. This is due to the fact that the data for hypothesis 3 are not used for any other hypotheses, while the data for hypothesis 1 (Table 3) and hypothesis 2 (Table 5) are also used in connection with hypotheses 4 and 5,
Table 5
Means and Standard Deviations for Number of Adequate Sortings Across Adjustment Groups
(For Each Group N = 20)

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normals</td>
<td>4.75</td>
<td>1.075</td>
</tr>
<tr>
<td>Good Premorbid</td>
<td>3.35</td>
<td>1.319</td>
</tr>
<tr>
<td>Poor Premorbid</td>
<td>1.90</td>
<td>1.212</td>
</tr>
<tr>
<td>Total</td>
<td>3.33</td>
<td>1.661</td>
</tr>
</tbody>
</table>
Table 6
Analysis of Variance of Number of Adequate Sortings

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>81.00</td>
<td>40.50</td>
<td>30.45***</td>
</tr>
<tr>
<td>Approval</td>
<td>1</td>
<td>4.00</td>
<td>4.00</td>
<td>3.01</td>
</tr>
<tr>
<td>Adjustment x Approval</td>
<td>2</td>
<td>6.00</td>
<td>3.00</td>
<td>2.25</td>
</tr>
<tr>
<td>Error</td>
<td>54</td>
<td>72.00</td>
<td>1.33</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>163.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
Table 7
Means and Standard Deviations for Number of Adequate Verbalizations and Formal Verbalizations Across Adjustment Groups
(For Each Subgroup N = 10)

<table>
<thead>
<tr>
<th>Group</th>
<th>Approval Mean</th>
<th>Approval S.D.</th>
<th>Neutral Mean</th>
<th>Neutral S.D.</th>
<th>Total Mean</th>
<th>Total S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normals</td>
<td>29.10</td>
<td>3.110</td>
<td>28.90</td>
<td>4.435</td>
<td>29.00</td>
<td>3.727</td>
</tr>
<tr>
<td>Good Premorbid</td>
<td>20.70</td>
<td>4.643</td>
<td>15.80</td>
<td>4.807</td>
<td>18.25</td>
<td>5.241</td>
</tr>
<tr>
<td>Poor Premorbid</td>
<td>6.30</td>
<td>5.185</td>
<td>13.40</td>
<td>4.163</td>
<td>9.85</td>
<td>5.583</td>
</tr>
<tr>
<td>Total</td>
<td>18.70</td>
<td>10.475</td>
<td>19.37</td>
<td>8.206</td>
<td>19.03</td>
<td>9.317</td>
</tr>
</tbody>
</table>

** Since the means and standard deviations for Approval and Neutral groups alone are not presented elsewhere, as is the case in Tables 3 and 5, they are included here. In terms of the hypothesis involved, relevant data appears in the column for Total.
respectively, which involve differences between approval and neutral groups. The analysis of variance for the Total column data in Table 7 is presented in Table 8, as the F ratio for adjustment. The F ratio of 73.72 is highly significant (p < .001). Further, the Duncan Multiple Range test shows that the difference in means of 19.15 between normals and poors is greater than the value of 4.39 required for significance at the .01 level. Similarly, the difference of 10.75 between normals and goods is greater than a required 4.21 and is also significant at the .01 level. Normals thus have significantly more adequate verbalizations and formal verbalizations than goods or poors, and hypothesis 3 is supported. It may also be noted that the remaining comparison of goods and poors, while not required by the hypothesis, is also significant at the .01 level. This difference is 8.40, and exceeds the value of 4.21 required for significance.

Table 9 presents the data for hypothesis 4. This, and the remaining hypotheses, are concerned with the interaction effects of approval and adjustment, rather than adjustment level alone. Data are thus presented for approval and neutral groups separately. The analysis of variance for these data is presented in Table 4, shown previously, and appears as the adjustment x approval interaction. The value for this factor is 9.57, and is highly significant (p < .001). Inspection of the means in Table 9 for the approval and neutral groups indicates that the major contribution to the significant interaction is the difference between the performance of poors in the approval and neutral condition. While the performance of normals and goods does not appear to differ as a function of approval, there is a decrease in the
Table 8
Analysis of Variance of Number of Adequate Verbalizations and Formal Verbalizations Across Adjustment Groups

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>3685.00</td>
<td>1843.00</td>
<td>73.72***</td>
</tr>
<tr>
<td>Error</td>
<td>57</td>
<td>1437.00</td>
<td>25.00</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>5122.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
Table 9
Means and Standard Deviations for
Number of Adequate Sortings and
Verbalizations
(For Each Subgroup N = 10)

<table>
<thead>
<tr>
<th>Group</th>
<th>Approval Mean</th>
<th>S.D.</th>
<th>Neutral Mean</th>
<th>S.D.</th>
<th>Total Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normals</td>
<td>19.60</td>
<td>2.081</td>
<td>18.90</td>
<td>3.544</td>
<td>19.25</td>
<td>2.848</td>
</tr>
<tr>
<td>Good Premorbids</td>
<td>13.20</td>
<td>2.789</td>
<td>10.70</td>
<td>3.756</td>
<td>11.95</td>
<td>3.456</td>
</tr>
<tr>
<td>Poor Premorbids</td>
<td>3.90</td>
<td>2.728</td>
<td>9.10</td>
<td>2.189</td>
<td>6.50</td>
<td>3.589</td>
</tr>
<tr>
<td>Total</td>
<td>12.23</td>
<td>7.000</td>
<td>12.90</td>
<td>5.366</td>
<td>12.57</td>
<td>6.193</td>
</tr>
</tbody>
</table>
adequacy of performance by poors under the approval condition. Following Lindquist (1956, p. 213-214), simple effects between approval and neutral conditions for each adjustment group were obtained, in order to determine more exactly which approval-neutral discrepancy contributes to the significant interaction obtained. For the normals, the $F$ between approval and neutral conditions is 0.355 and is not significant. Similarly, the $F$ between conditions for the goods is 3.664 and is not significant ($p = .10$), although a trend toward slight improvement under the approval condition is evidenced. Finally, the $F$ between conditions for the poors is 15.96 and is highly significant ($p < .001$). These tests show that it is the less adequate performance of the poors under approval, and the concomitant similar performance of the remaining groups regardless of conditions, that account for the significant interaction effect. Hypothesis 4 is thus supported. Under the verbal approval condition, normals and goods demonstrate significantly less impairment in adequacy of combined sortings and verbalizations than the poors, when contrasted with their corresponding control groups.

Table 10 presents the data for hypothesis 5. The analysis of variance for these data is presented in Table 6, shown previously, and appears as the adjustment x approval interaction. The $F$ ratio of 2.25 is not significant. While the means in Table 10 show that results are in the expected direction, with poors showing the greatest decrease in number of adequate sortings as a function of approval, the differences are not sufficiently great. It is possible that the smaller sample of behavior involved in using sortings alone (there are only 6
Table 10

Means and Standard Deviations for
Number of Adequate Sortings
(For Each Subgroup N=10)

<table>
<thead>
<tr>
<th>Group</th>
<th>Approval Mean</th>
<th>Approval S.D.</th>
<th>Neutral Mean</th>
<th>Neutral S.D.</th>
<th>Total Mean</th>
<th>Total S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normals</td>
<td>4.80</td>
<td>.943</td>
<td>4.70</td>
<td>1.249</td>
<td>4.75</td>
<td>1.075</td>
</tr>
<tr>
<td>Good Premorbids</td>
<td>3.20</td>
<td>1.250</td>
<td>3.50</td>
<td>1.414</td>
<td>3.35</td>
<td>1.319</td>
</tr>
<tr>
<td>Poor Premorbids</td>
<td>1.20</td>
<td>1.054</td>
<td>2.60</td>
<td>.943</td>
<td>1.90</td>
<td>1.212</td>
</tr>
<tr>
<td>Total</td>
<td>3.07</td>
<td>1.819</td>
<td>3.60</td>
<td>1.473</td>
<td>3.33</td>
<td>1.661</td>
</tr>
</tbody>
</table>
active items as compared with e.g., 12 opportunities for verbalization) is an important factor. At any rate, it was not shown that under approval normals and goods demonstrate significantly less impairment in adequacy of sorting than poors, when contrasted with their corresponding control groups.

Table 11 presents the data for hypothesis 6. The analysis of variance for these data appears in Table 12, as the adjustment x approval interaction. The F ratio of 7.94 is highly significant (p < .001). Inspection of the means in Table 11 for the approval and neutral groups indicates the major contributions to the significant interaction are the differences between the performance of the goods and poors in the approval and neutral conditions, respectively. While the normals show no apparent difference between conditions, the goods appear to become less deviant with approval while the poors appear to become more deviant. Again, following Lindquist, simple effects between approval and neutral conditions for each adjustment group were obtained. For the normals, the F between approval and neutral conditions is 1.920 and is not significant. However, the decrease in deviant responding by goods provides an F of 5.480 (p < .05) and the increase in deviant responding by poors provides an F of 10.40 (p < .01). Hypothesis 6 is thus supported. Under the verbal approval condition the normals and goods demonstrate less impairment in adequate verbalizations and formal verbalization, and less idiosyncratic verbalization and adequate sortings accompanied by inadequate verbalization, when contrasted with their corresponding control groups. In addition, the goods are shown to improve in performance with approval, rather than
Table 11
Means and Standard Deviations for Number of Inadequate Verbalizations, Idiosyncratic Verbalizations and Adequate Sortings Accompanied by Inadequate Verbalizations
(For Each Subgroup N=10)

<table>
<thead>
<tr>
<th>Group</th>
<th>Approval Mean</th>
<th>S.D.</th>
<th>Neutral Mean</th>
<th>S.D.</th>
<th>Total Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normals</td>
<td>7.00</td>
<td>3.127</td>
<td>8.40</td>
<td>5.982</td>
<td>7.70</td>
<td>4.702</td>
</tr>
<tr>
<td>Good Premorbid</td>
<td>17.80</td>
<td>5.517</td>
<td>24.60</td>
<td>7.333</td>
<td>21.20</td>
<td>7.215</td>
</tr>
<tr>
<td>Poor Premorbid</td>
<td>39.60</td>
<td>10.509</td>
<td>29.40</td>
<td>7.601</td>
<td>34.50</td>
<td>10.349</td>
</tr>
</tbody>
</table>
Table 12
Analysis of Variance of Number of Inadequate Verbalizations, Idiosyncratic Verbalizations and Adequate Sortings Accompanied by Inadequate Verbalizations

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>7183.00</td>
<td>3592.00</td>
<td>71.84***</td>
</tr>
<tr>
<td>Approval</td>
<td>1</td>
<td>7.00</td>
<td>7.00</td>
<td>.140</td>
</tr>
<tr>
<td>Adjustment x Approval</td>
<td>2</td>
<td>793.00</td>
<td>397.00</td>
<td>7.94 ***</td>
</tr>
<tr>
<td>Error</td>
<td>54</td>
<td>2644.00</td>
<td>50.00</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>10627.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
to simply continue functioning at approximately the same level (as do the normals). As an additional check, analyses of variance were performed using a more limited breakdown of criteria. One analysis was done using only adequate verbalization and formal verbalization, and a second using only idiosyncratic verbalization and adequate sortings accompanied by inadequate verbalization. In both cases the effect was almost identical to the over-all analysis which used all criteria combined.

Table 13 presents the data for hypothesis 7. The analysis of variance for these data appear in Table 14, as the adjustment x approval interaction. The F ratio of 3.99 is significant ($p < .05$). Inspection of the means shown in Table 13 for approval and neutral groups indicates the major contribution to the significant interaction is the difference in performance for the poors in the approval and neutral conditions. Following Lindquist, tests of the simple effects between conditions for each adjustment group reveals that the difference between approval and neutral conditions for the poors provides an F of 9.69 ($p < .01$). However, the differences for the goods and normals provide an F of .319 and 0.00, respectively. Hypothesis 7 is thus supported. Under the verbal approval condition, the normals and goods demonstrate significantly fewer failures than the poors, when contrasted with their corresponding control groups. It should be pointed out, however, that the significant interaction is to be cautiously interpreted due to the heterogeneity of variance shown in Table 13. This would be of particular importance because of the nominal significance
Table 13
Means and Standard Deviations for Number of Failures
(For Each Subgroup N = 10)

<table>
<thead>
<tr>
<th>Group</th>
<th>Approval Mean</th>
<th>S.D.</th>
<th>Neutral Mean</th>
<th>S.D.</th>
<th>Total Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normals</td>
<td>1.80</td>
<td>.943</td>
<td>1.80</td>
<td>1.334</td>
<td>1.80</td>
<td>1.100</td>
</tr>
<tr>
<td>Good Premorbid</td>
<td>4.10</td>
<td>2.027</td>
<td>4.60</td>
<td>1.944</td>
<td>4.35</td>
<td>1.960</td>
</tr>
<tr>
<td>Poor Premorbid</td>
<td>6.80</td>
<td>3.092</td>
<td>4.10</td>
<td>1.600</td>
<td>5.45</td>
<td>2.762</td>
</tr>
<tr>
<td>Total</td>
<td>4.23</td>
<td>2.965</td>
<td>3.50</td>
<td>2.007</td>
<td>3.87</td>
<td>2.542</td>
</tr>
</tbody>
</table>
Table 14
Analysis of Variance of
Number of Failures

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>140.00</td>
<td>70.00</td>
<td>18.62***</td>
</tr>
<tr>
<td>Approval</td>
<td>1</td>
<td>8.00</td>
<td>8.00</td>
<td>2.13</td>
</tr>
<tr>
<td>Adjustment x Approval</td>
<td>2</td>
<td>30.00</td>
<td>15.00</td>
<td>3.99*</td>
</tr>
<tr>
<td>Error</td>
<td>54</td>
<td>203.00</td>
<td>3.76</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>381.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
* Significant < .05
level of the F for interaction in this case. According to Lindquist (1956, p. 83), with "marked" heterogeneity the alpha level would have to be increased to compensate for the small but real effect heterogeneity of variance has on the F distribution. As a check of heterogeneity, the approximate test suggested by Edwards (1954, p. 328) was employed. This test is made by dividing each of the separate sums of squares within the several groups by the corresponding degrees of freedom. The resulting estimates are then employed in an F ratio of the largest to the smallest. In the case of Table 13 the extreme variances occur for normals and poors under the approval condition. These two extreme estimates produce an F of 10.75 which is significant beyond the .01 level, on 9 and 9 degrees of freedom. Thus, we can conclude that homogeneity of variance does not prevail, and the significant interaction effect occurs at something less than the .05 level of confidence. Obviously, if the alpha level were increased, there would be no "significance" at all. Evidence in support of hypothesis 7 must thus be cautiously interpreted. It might be noted here that where marked heterogeneity of variance is a possibility with regard to some other hypotheses in this investigation, the extremely robust F ratios obtained insure that any effect of heterogeneity in those case is not unduly influencing the interpretation of results.

At this point, an additional series of analyses which are not relevant to the hypotheses but are nevertheless of interest, will be reported. These analyses involve the simple effects of adjustment level in approval conditions and neutral conditions
separately. They thus provide information as to the rank order of groups, and these rank orders in the two conditions can then be compared. The first objective here would be to demonstrate that in the neutral condition, for each scoring criterion used, the normals show more positive performance than do goods or poors. This demonstrates the theoretically predictable superiority of normal individuals as opposed to schizophrenics (either goods or poors). A second objective would be to demonstrate that in the approval condition, for each scoring criterion used, the normals again show a better level of performance than do goods or poors. In addition, however, under the condition of approval, which is presumably stressful only to poors, this group should no longer be able to function as adequately as do the goods. The two notions behind these objectives would thus gain support if it were shown that 1) under the approval condition all comparisons of means between the three adjustment groups were significantly different, and 2) under the neutral condition all but the good-poor comparisons were significant.

The data used for hypotheses 1 and 4 (number of adequate sortings and verbalizations) appear in Table 9 for approval and neutral conditions separately. Table 15 presents the analysis of variance for the approval condition alone. The obtained F ratio of 96.14 is highly significant (p < .001). The normals-poors difference is 15.70, the goods-poors difference is 9.30, and the normals-goods difference is 6.40. All of these differences between means are greater than the Duncan Multiple Range test values of 3.27, 3.13 and 3.13 respectively, required at the .01 level. Table 16 presents the analysis of variance for the neutral
Table 15

Analysis of Variance of Number of Adequate Sortings and Verbalizations for the Approval Condition Alone

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>1246.00</td>
<td>623.00</td>
<td>96.14***</td>
</tr>
<tr>
<td>Error</td>
<td>27</td>
<td>175.00</td>
<td>6.48</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>1421.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant <.001
Table 16
Analysis of Variance of Number of Adequate Sortings and Verbalizations for the Neutral Condition Alone

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>553.00</td>
<td>276.50</td>
<td>26.48***</td>
</tr>
<tr>
<td>Error</td>
<td>27</td>
<td>282.00</td>
<td>10.44</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>835.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
condition alone. The obtained F ratio of 26.48 is highly significant (p < .001). The normals-poors difference is 9.80, and the normals-goods difference is 8.20. These differences between means are greater than the values of 4.14 and 3.97, respectively, required for significance at the .01 level. However, the difference between the means of the goods and poors is 1.60 and is less than the value 3.97 required for significance. Thus, while in the approval condition, all groups are significantly different from each other, in the neutral condition the good and poor schizophrenic groups are combined in opposition to the normal group. Apparently, then, the stress involved in approval creates different levels of functioning in what is essentially a homogeneous schizophrenic group under neutral conditions.

The data used for hypothesis 3 (number of adequate verbalizations and formal verbalizations) appear in Table 7 for approval and neutral conditions separately. Table 17 presents the analysis of variance for the approval condition alone. The obtained F ratio of 68.31 is highly significant (p < .001). The normals-poors difference of 22.80, the goods-poors difference of 14.40, and the normals-goods difference of 8.40 are all greater than the values of 5.68, 5.45 and 5.45, respectively, required for significance at the .01 level. Table 18 presents the analysis of variance for the neutral condition alone. The obtained F ratio of 34.73 is highly significant (p < .001). The normals-poors difference is 15.50, and the goods-normals difference is 13.10. These are greater than the values of 5.77 and 5.52, respectively, required for significance at the .01 level. However, the difference in means between goods and poors is 2.40, and is less than the required value of 5.52. A differential rank order, resulting from the
Table 17
Analysis of Variance of Number of Adequate Verbalizations and Formal Verbalizations for the Approval Condition Alone

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>2659.00</td>
<td>1330.00</td>
<td>68.31***</td>
</tr>
<tr>
<td>Error</td>
<td>27</td>
<td>523.00</td>
<td>19.47</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>3182.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
Table 18
Analysis of Variance of Number of Adequate Verbalizations and Formal Verbalizations for the Neutral Condition Alone

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>1392.00</td>
<td>696.00</td>
<td>34.73***</td>
</tr>
<tr>
<td>Error</td>
<td>27</td>
<td>541.00</td>
<td>20.04</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>1933.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
stress approval creates for poors (but not for goods), is again observed.

The data used for hypotheses 2 and 5 (number of adequate sortings) appear in Table 10 for approval and neutral conditions separately. Table 19 presents the analysis of variance for the approval condition alone. The obtained F ratio of 28.26 is highly significant \((p < .001)\). The value required for significance between normals and poors at the .05 level of the Duncan test is 1.03, and this is exceeded by the normals-poors difference of 3.60. The goods-poors difference of 2.00 and the normals-goods difference of 1.60 both exceed the required .980. Table 20 presents the analysis for the neutral condition alone. The F of 7.24 is highly significant \((p < .01)\). The value required for significance between normals and poors at the .05 level is 1.19. This value is exceeded by the normals-poors difference of 2.10. The normals-goods difference of 1.20 exceeds the required 1.13. However, the difference between goods and poors is .90 (less than required 1.13) and is not significant. The differential rank ordering can thus be demonstrated with this criterion too.

Thus far, the notion of differential rank ordering in approval, as compared with neutral conditions, according to adjustment groups has been verified for hypotheses 1-5. The remaining two hypotheses will be considered next. The data used for hypothesis 6 appears in Table 11 for approval and neutral groups separately. The analysis of variance for the approval condition appears in Table 21. The obtained F ratio of 54.91 is highly significant \((p < .001)\). The value required for
Table 19
Analysis of Variance of Number of Adequate Sortings for the Approval Condition Alone

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>65.00</td>
<td>32.50</td>
<td>28.26***</td>
</tr>
<tr>
<td>Error</td>
<td>27</td>
<td>31.00</td>
<td>1.15</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>96.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
Table 20
Analysis of Variance of Number of Adequate Sortings for the Neutral Condition Alone

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>22.00</td>
<td>11.00</td>
<td>7.24**</td>
</tr>
<tr>
<td>Error</td>
<td>27</td>
<td>41.00</td>
<td>1.52</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>63.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Significant < .01
Table 21

Analysis of Variance of Number of Inadequate Verbalizations, Idiosyncratic Verbalizations and Adequate Sortings Accompanied by Inadequate Verbalizations, for the Approval Condition Alone

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>5515.00</td>
<td>2757.50</td>
<td>54.91***</td>
</tr>
<tr>
<td>Error</td>
<td>27</td>
<td>1356.00</td>
<td>50.22</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>6871.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
significance between normals and poors at the .01 level is 9.09, and this is exceeded by the normals-poors difference of 32.60. The goods-poors difference of 21.80, and the normals-goods difference of 10.80 exceed the required 8.71. Table 22 presents the analysis of variance for the neutral condition alone. The obtained $F$ of 24.64 is highly significant ($p < .001$). The value of 9.01 required for significance between normals and poors at the .01 level is exceeded by the normals-poors difference of 21.00. The normals-goods difference of 16.20 also exceeds its required value of 8.64. However, the goods-poors difference of 4.80 is less than the required value of 8.64 and is not significant. Thus, the predictable rank ordering is again noted, here in terms of the number of inadequate verbalizations, idiosyncratic verbalizations, and adequate sortings accompanied by inadequate verbalizations.

Finally, the data for hypothesis 7 is presented in Table 13, for approval and neutral conditions. Table 23 presents the analysis of variance for the approval condition alone. The obtained $F$ ratio of 21.63 is highly significant ($p < .001$). The value of 1.83 required for significance between normals and poors at the .05 level is exceeded by the normals-poors difference of 5.00. The goods-poors difference of 2.70, and the normals-goods difference of 2.30 both exceed the required value of 1.74. Table 24 presents the analysis of variance for the neutral condition alone. The obtained $F$ ratio of 11.18 is highly significant ($p < .001$). The value of 1.48 required for significance between normals and goods at the .05 level is exceeded by the normals-goods difference of 2.80. The normals-poors
### Table 22

Analysis of Variance of Number of Inadequate Verbalizations, Idiosyncratic Verbalizations and Adequate Sortings Accompanied by Inadequate Verbalizations, for the Neutral Condition Alone

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>2422.00</td>
<td>1211.00</td>
<td>24.64***</td>
</tr>
<tr>
<td>Error</td>
<td>27</td>
<td>1327.00</td>
<td>49.15</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>3749.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
Table 23

Analysis of Variance of Number of Failures for the Approval Condition Alone

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>157.00</td>
<td>78.50</td>
<td>21.63***</td>
</tr>
<tr>
<td>Error</td>
<td>27</td>
<td>98.00</td>
<td>3.63</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>255.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
Table 24

Analysis of Variance of Number of Failures for the Neutral Condition Alone

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>2</td>
<td>53.00</td>
<td>26.50</td>
<td>11.18***</td>
</tr>
<tr>
<td>Error</td>
<td>27</td>
<td>64.00</td>
<td>2.37</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>117.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant < .001
difference of 2.30 exceeds the required 1.41. However, the goods-poor difference of .50 is less than the required value of 1.41. Thus, the rank ordering is again demonstrated, here in terms of number of failures.

These additional analyses of the simple effects of adjustment level in approval and in neutral conditions, using the data upon which each of the hypotheses in turn is based, thus satisfy the objectives for which they were intended. In all cases, regardless of the scoring criteria considered, a significant difference between all possible mean-comparisons was found for the approval condition. Further, in all cases, regardless of the scoring criteria considered, a significant difference between all but the good-poor comparison was found for the neutral condition.

Discussion

1. Effects of Premorbid Adjustment Level

The general notion to be verified here (hypotheses 1-3) is the existence of separate and relatively homogeneous levels of functioning which can be considered characteristic reflections of differing levels of premorbid social adequacy. Greater withdrawal should be associated with less adequate communication of public conceptual experience. Significant differences were predicted between all premorbid adjustment groups, regardless of the neutral or approval conditions, for hypothesis 1. Further, predictions were made in terms of both the sorting and verbalization aspects of conceptual performance. Hypotheses 2 and 3 consider sorting and verbalization separately, respectively, and make less strict requirements for their satisfaction.
in that differences between the clinical groups for the separate criteria alone are not suggested.

Hypothesis 1 received support in that normals were found to have significantly more adequate verbalizations and sortings than goods, who in turn had more adequate verbalizations and sortings than poors. Here a difference between goods and poors was predicted and found. Hypothesis 2 was only partially supported, in that normals had significantly more adequate sortings than poors, but not significantly more adequate sortings than goods. While a difference between goods and poors was not considered in the hypothesis, it may be noted that none was found. Hypothesis 3 received support in that normals had significantly more adequate verbalizations and formal verbalizations than did goods or poors. Again, a difference between goods and poors was not considered in the hypothesis, but in this case the difference was observed to be significant.

Implication of Results of Hypothesis 1

Findings indicate that, on an overall basis, a normal group surpasses the conceptual capacity of both good and poor premorbid schizophrenics. In addition, a difference between goods and poors, in favor of good premorbid, was predicted and found. Since both sorting adequacy and verbalization adequacy are involved, the finding can be considered in terms of the capacity of each group to deal with both the "creation of conceptual realms" (sorting), and the "definition of the content of those realms" (verbalization). This is essentially the formulation of the total process of conceptual behavior
presented by Rapaport (1945). The sorting and verbalization can be considered separately for hypotheses 2 and 3, and this will be done following a discussion of the implications of the two functions taken together.

Thus, when the total process of conceptual behavior is considered, results are obtained which are consistent with the major findings reported in the research summary by Garmezy and Rodnick (1959). That is, normals, goods and poors represent distinct and different levels of functioning. The notion that greater premorbid withdrawal is associated with greater deviance in conceptual processes is supported. This finding is also consistent with the observation of Goldstein and Scheerer (1941) that "loss of the ability to deal adequately with a large number of life situations results in an inability to discover the essence of a situation." In addition to this factor, is the loss of the "...ability to think and perform symbolically." By subdividing a psychiatric population into homogeneous groups according to the extent of loss of ability to deal with life situations, i.e., goods and poors, this observation is refined. According to the degree of loss of rapport with the environment as reflected by the Phillips (1953) scale, the loss of conceptualization abilities should increase in complimentary fashion. This refinement receives support in the present investigation. In addition, such refinement of the dimension of schizophrenia allows us to somewhat modify the earlier ways of thinking about the "schizophrenic" deficit.

For example, Hanfmann and Kasanin (1938) stated that "the schizophrenic" is an individual who is "not able to grasp certain
general principles and frequently develops other principles and other classifications than those which the average person adopts."

Other authors, e.g., Goldstein and Scheerer (1941) also tended to emphasize that schizophrenia was a homogeneous disorder. They preferred to state that "a normal subject is well capable of grasping sorting principles of a higher conceptual order...

This is "... in contradistinction to the patient, who is unable to use the abstract attitude." Thus, there was a tendency to minimize individual differences as a concept in schizophrenic groups. Yet, there appears to have been at least the beginnings of a point of view which would allow for individual differences. It requires only that the postulated factors which relate to less efficient conceptual behavior (e.g., "loss of the ability to deal with life situations) be considered in terms of degree rather than in terms of an absolute kind of status. Thus, goods and poors reflect different degrees of "loss," and so may be expected to function with different degrees of adequacy.

That conceptualization may vary as a function of premorbid withdrawal was a notion suggested more strongly by theoretical formulations developed out of direct work in the psychotherapy of schizophrenia (Sullivan, 1954a, 1954b, 1956; Cameron, 1949, 1954; Fromm-Reichmann, 1950, Will, 1961; Burnham, 1961). For example, Cameron (1949; 1954) postulated a basic withdrawal tendency in the schizophrenic which is manifested in disarticulated speech and thought. As in Sullivan's (1954a, 1954b, 1956) scheme, the disarticulation is manifested by a lack of congruence between the schizophrenic's personal thought patterns, and more public modes of communication. Further, the schizophrenic has fallen
into these personal patterns in the course of growing more and more isolated from others. As social communication is gradually lessened, a progressive loss of organized thought and verbalization results, and the schizophrenic does not produce performances that are public and communicative.

In these terms we have only to determine the extent to which the schizophrenic has "grown more and more isolated from others," to be able to make theoretically relevant predictions as to the extent of thought and verbalization deviance as a function of withdrawal. Thus, the earlier statements of the nature of the schizophrenic deficit may be modified to include a differential expectation of performance as a function of premorbid adjustment level. That these premorbid subgroups are capable of different levels of functioning has been recently demonstrated by Hellman and Kates (1961) and Moriarty and Kates (1962), in terms of conceptual performance. That this is the case has been suggested, though not specifically tested, by the work of Lothrop (1960). In that analysis it was found that 1/3 of a sample of 64 schizophrenics demonstrated little or no conceptual deficit. It appears that these cases may have been of good, rather than poor, premorbid background.

Implications of Results of Hypotheses 2 and 3

In hypothesis 2, normals and goods show essentially similar performance for non-verbal (sorting) behavior. In hypothesis 3, normals and goods show significantly different performance for verbal behavior. While it was expected that normals and goods would perform differently in both respects, the finding that
the difference between the performance of these groups is related to the criterion used is of significant interest.

Specifically, the finding suggests that a schizophrenic group with a less severe history of interpersonal withdrawal is able to function as well as normals in terms of the less verbal aspects of conceptual functioning. These aspects would include the ability to order and classify the data of their environment. However, this ordering or classification is only an initial step in the total process of conceptual behavior. This initial step, as noted before, involves the "creation of realms," but it remains to "define their content" (Rapaport, 1945). For the good pre-morbid group, then, there appears to be a disturbance in the comparison of the realm with the content.

Success in the initial step of ordering and classifying the realm is followed by relative failure to adequately communicate the content, in the case of the good premorbid. On the other hand, the poor premorbid is significantly less able than the normals to deal with either the realm or the content, as evident from the results relating to hypotheses 2 and 3. We thus observe a similarity between normals and goods, but not between normals and poors, in the ability to at least deal with realms if not with the contents of those realms. This may be analogous to a clinical description of an individual who is aware of what should be done in interpersonal relationships, but is unable to act upon such knowledge. Put another way, ability to sort but not to verbalize about the sort, may be similar to an intellectual but not an emotional rapport with the environment. It is one thing to know what is appropriate in a social setting, and quite
another to act upon such knowledge. From this point of view, the normals both "know what is correct and can act accordingly," the goods also "know what is correct but are unable to act accordingly," and the poors "neither know nor can they act" on appropriate levels. Such an interpretation would suggest that good premorbid have a greater potential for returning to normal social interaction than do poor premorbid. Indeed, the Phillips (1953) scale was originally used for evaluating prognosis in schizophrenics, and was quite successful in this respect. Further, later evidence by Farina and Webb (1954) and a follow-up analysis of subjects used by Bleke (1955) has confirmed the scale's predictive value in terms of length of hospitalization. Thus, it has been shown that the good premorbid makes a more rapid, and more longstanding, return to the social community than does the poor premorbid.

In this connection, the concept of "thing withdrawal" versus "interpersonal withdrawal" used by King (1956) is perhaps relevant. King suggests that these are two independent factors in schizophrenic withdrawal. Following this notion, we may say that good premorbid exhibit "interpersonal withdrawal" but not "thing withdrawal," while the poor premorbid exhibit both factors. That is, ability to deal with the sorting aspects of conceptual behavior may be analogous to a capacity to approach "things," while inability to deal with the verbalization aspects may be analogous to difficulty in approaching on the interpersonal level. Language is a highly social kind of behavior (Sullivan, 1954), requiring association with others in order to learn what constitutes common experience.
Organization and classification of environmental data can perhaps be accomplished with less interpersonal contact. While King suggests that the two withdrawal factors are independent, it is possible that this is true for good premorbids, but not for poor premorbids.

In concluding a discussion of the implications of findings with regard to hypotheses 2 and 3, it should be stressed that the interpretations depend heavily on the observed similarity between normals and goods in connection with the non-verbal (sorting) behavior dealt with in hypothesis 2. It is possible, however, that the lack of a significant difference between normals and goods on the sorting measure is due to the relatively small sample of behavior involved. While there are only six opportunities for sorting in the Object Sorting Test, there are eighteen opportunities for verbalization. With more active sorting items, perhaps a difference in sorting as well as in verbalization could be demonstrated between normals and good premorbids.

2. Interaction Effects of Premorbid Adjustment and Approval

The general notion to be verified here (hypotheses 4-7) is the assumption that verbal approval constitutes a threatening situation only for the poor premorbid schizophrenic. Presumably the greater withdrawal exhibited by the poor premorbid reflects a heightened sensitivity to interpersonal cues. Further, there is a diminished capacity for interpreting and/or tolerating cues of approval given in a relatively intimate interpersonal context. On the other hand, the good premorbid and normal are presumably
better able to tolerate such cues, and their presence should not cause a further withdrawal. The strong link between the lack of intimate personal experiences and current distrustful and avoidant reactions to approval would then exist only for the poor premorbid. Finally, this further withdrawal as a function of approval is measured in terms of the adequacy of communication of public conceptual experience or the ability to continue participation in the interpersonal setting in the presence of such cues.

Hypothesis 4 received support in that, under approval, normals and goods demonstrated significantly less impairment in adequacy of combined sortings and verbalizations than the poors, when contrasted with their corresponding control groups. Indeed, performance is essentially similar for normals in both conditions, while there is a large decrease in adequacy of performance for poors in the approval, as compared with the neutral, condition. In addition, there is a strong, but non-significant, trend toward goods improving with approval.

Hypothesis 5 was not supported by the results. Under approval, normals, goods and poors demonstrate essentially similar adequacy of sorting, when contrasted with their corresponding control groups. It will be recalled that a previous hypothesis dealing with the variable of adequacy of sorting alone (hypothesis 2) also provided data which only partially fulfilled expectations. The data for both hypotheses 2 and 5 are in the expected direction, and a larger number of items requiring active sorting might tend to accentuate these trends.

Hypothesis 6 received support in that under approval, normals and goods demonstrate less impairment in adequate and formal
verbalizations, and less idiosyncratic verbalization and adequate sortings accompanied by inadequate verbalization than do poors, when contrasted with their corresponding control groups. Further, while the difference in performance for normals between the two conditions is not significant, it was found that in addition to a decrease in adequacy of performance for poors under approval, there was a significant increase in adequate performance for goods under that condition. This is a more reliable indication that goods improve with approval than that found in connection with hypothesis 4, where strong but non-significant trends were observed.

Finally, hypothesis 7 was only tentatively supported, due to a nominal significance level and marked heterogeneity of variance. With a relatively low degree of reliability, it would appear that the normals and goods under approval demonstrate fewer failures than the poors, when contrasted with their corresponding control groups.

Implications of Results of Hypotheses 4, 5 and 6

In general, the findings indicate that poor premorbid are less able to tolerate cues of approval given in an interpersonal context than are goods or normals. According to the results of hypothesis 4, this reaction to approval is evidenced by a disturbance in both the organization and the definition of conceptual realms. However, results of hypothesis 5 show that the disorganization evidenced by the poors is due more to a disorder of realm definition (verbalization) than of realm organization (sorting). Thus, all groups perform equally well in both approval and neutral conditions, in terms of adequacy of sorting
alone, as shown in connection with hypothesis 5. However, when adequacy of sorting is combined with adequacy of verbalization, as in hypothesis 4, it is clear that only the poor premorbid show a more deviant kind of performance as a function of approval. Further, in hypothesis 6, which deals primarily with type and adequacy of verbalization, it is evident that not only do poors show a striking decrease in verbalization adequacy with approval, but goods show a striking increase. Thus, it appears that the greatest effect of approval upon the performance of poor premorbid is in terms of the type and adequacy of verbalization. Further, it is partly the occurrence of idiosyncratic verbalization which provides a situation for observing the respective increase and decrease in efficiency of performance for goods and poors. Verbalizations of the idiosyncratic type (affective, symbolic etc.) provide the greatest opportunity for a withdrawn mode of communication. They are the least communicative and reflect the greatest degree of personal and private perceptions and resultant communications.

On this basis, it appears that the good premorbid can make positive use of intimate interpersonal signs of approval. More explicitly, he may use them as motivating stimuli which press toward more social communication. This kind of interpretation would be consistent with the findings of Moriarty and Kates (1962), where good premorbid did as well as normals in conceptual performance when problems were imbedded in approving interpersonal stimuli. However, there was a significant tendency for poor premorbid to perform with less adequacy. More impressive, is the relationship between the present findings and those of Buck (1960), who used stimuli suggestive of intimacy. Here
it was found that no difference existed between the capacity of normals and good premorbid to accept the implications of such stimuli. This result was repeated in a subsequent study (Buck, 1962), with the additional finding that poor premorbid were less able than normals or goods to accept the implications of "simulated love."

Schizophrenic Communication

Will (1954) notes Sullivan's (1953) observation that person-to-person involvement affects schizophrenic communication. Will proposes that, having experienced considerable anxiety in interpersonal relationships, the schizophrenic attempts to withdraw from them, either physically or by talking in a way that "puzzles and irritates the listener." This is a good description of idiosyncratic verbalization, the kind of verbalization shown to be more frequent for poors and less frequent for goods, in the approval as compared with the neutral condition. Sullivan (1954a) has remarked that the schizophrenic does not feel that speech will help him to gain interpersonal satisfactions because he is "quite sure there are none." He thus uses speech exclusively for counteracting his feelings of insecurity among people. Results of the present investigation would suggest that this is true primarily for the poor, rather than the good, premorbid schizophrenic.

Sullivan (1954b) has also pointed out that the schizophrenic does not constantly employ early, unvalidated, referential processes. These processes arise in situations where interpersonal
security is at stake and anxiety is aroused. When anxiety is intense, the self-system of the schizophrenic, which normally excludes the early referential processes, functions inefficiently. the referential processes are thus allowed to invade consciousness. Sullivan (1956, p.25) has described the referential process as a failure in "... the restriction of awareness of one's mental processes to those which are more or less clearly valid in communication." Cameron (1954) notes the approximations in speech used by the schizophrenic, i.e., the personal and asocial language. He describes these as attempts to withdraw from stress. Goldstein (1959) describes concrete language as a personal kind of behavior having only personal significance and representing a defense against anxiety in interpersonal situations. All of these views emphasize the lack of control which the schizophrenic exerts upon his language productions. He uses language as a means of further withdrawal from social living, rather than as a means of communicating to other individuals. Results of the present investigation support this view primarily with regard to the poor premorbid schizophrenic. The good premorbid was seen to somehow utilize approval to make his communications more public than they are in the absence of specific motivating factors.

The Concept of Reaction Sensitivity

At this point, we may make the general conclusion that the differential performance observed in the schizophrenic groups appears related to the operation of differential ways of perceiving the stimulus pattern of approval. Further, one important set of conditions involved in determining the nature of the perception is the interaction of premorbid adjustment level with
interpersonal cues of approval.

The notion of reaction-sensitivity as a "selective readiness-to-react to certain components of a stimulating situation but not to others (Cameron, 1947, p. 66), " appears to be a good way of describing one important differentiating concomitant of good or poor premorbidity. With regard to the use of this concept in schizophrenia, Cameron (1947, p. 489) notes "it is sometimes possible to demonstrate in (schizophrenic) patients that the degree of disorganization and desocialization varies roughly in accordance to the degree to which environmental stimulation arouses personal problems to which the individual is pathologically reaction-sensitive." This notion is demonstrated in terms of the performance of good and poor premorbid schizophrenics in the present investigation. Verbal approval was shown to produce differential degrees of disorganization in accordance with inferences made from the backgrounds of these schizophrenic groups. That is, the nature of reaction sensitivity to verbal approval in the two groups is quite different. While goods show more communicative verbalizations with approval, poors show a decrease in communicative verbalizations.

Thus, the general hypothesis that poor premorbid appear to perceive approval as threatening and show a concomitant withdrawal was supported. This withdrawal was measured in terms of private, rather than public, verbalizations. While the same may be true for sorting behavior, there are trends rather than statistical significance in support of this. In summary, Cameron (1951) has noted that the inadequacies of the schizophrenic lead him to select cues of approval which are less apparent to other. This heightened sensitivity to such cues
raises anxiety, and the anxiety is reduced by withdrawal from the anxiety-laden cues. Sullivan (1956) suggests that the schizophrenic employs "security operations" in the face of cues of approval because of his great difficulty in interpreting such information. Since he remains unsure as to whether or not he is really "being liked," he withdraws to avoid the anxiety involved in trying to make this judgment about his status with other people. Will (1961) and Burnham (1961) suggest that the schizophrenic has experienced much anxiety in his past human contacts. Consequently, he withdraws to reduce this anxiety in his current human contacts. All of these views refer to "schizophrenics," in a heterogeneous sense. Results of the present investigation indicate they are primarily applicable to the homogeneous subgroup of poor, rather than good, premorbid schizophrenics.

It may be noted at this point that prior to the present study there was no experimental evidence concerning the effect of verbal approval upon the conceptual performance of a dichotomized group of schizophrenic subjects. The dependent variable used in studies dealing with approval has typically been non-conceptual in nature (e.g., reaction time). Further, evidence showing enhancement of performance with approval (Olson, 1958; Lair, 1954; Goodstein, Guertin and Blackwell, 1961) is reported as frequently as evidence showing lack of enhancement of performance (Cohen and Lang, 1960; Stotsky, 1957; Atkinson and Robinson, 1961). The use of conceptual behavior as a dependent variable provides a theoretically relevant basis for predicting a differential response to approval. This is especially true when premorbid adjustment
level is considered, since the differential response to approval, as well as characteristically differential degrees of conceptual adequacy, can be inferred from the extent of premorbid withdrawal. The present investigation indicates that verbal approval has a differential effect upon performance, depending upon the type of subjects employed. In turn, these different types of subjects manifest different degrees of reaction sensitivity, and concomitant withdrawal, to verbal approval.

IImplications of Results of Hypothesis 7

It has been noted that, with a low degree of reliability, we may say that normals and goods under approval demonstrate fewer failures than do poors, when contrasted with their corresponding control groups. The occurrence of failures, as defined in this investigation, suggest an unwillingness and/or an inability to participate in the task as defined by the experimenter for the subject. The subject either makes no response at all, or makes only a partial response. Behaviors similar to these have been noted by Wilensky (1952), who reports that "after encountering frustration, the schizophrenics manifested a greater tendency to abandon the tasks by refusing to respond." Whiteman (1956) reports that normals and schizophrenics differed significantly in regard to the frequency of rejection, i.e., "the ability to decide upon a sorting" of the cards used as instances of social concepts. Also, Hellman and Kates (1961) found that good and poor premorbidis were highly differentiated under a condition of verbal censure only when item rejection was considered and weighted. Such behavior was interpreted as
one aspect of the total complex of mechanisms employed by the schizophrenic as protective mechanisms against perceived threat. According to the definition of rejections in the present investigation, there is a tendency toward observing a phenomenon similar to that reported by Whiteman (1956), for poors under approval, as compared with neutral, conditions. He notes that in addition to "withdrawal from the situation entirely by rejecting the problem," more "... failure to communicate conceptions or communications which are inappropriate" appear under stress as well.

3. Effects for Approval and Neutral Conditions Alone

Results up to this point have confirmed the general notions that a) greater withdrawal is associated with greater conceptual deviance, and b) greater withdrawal is associated with a greater tendency to show conceptual deviancy under interpersonal cues of approval. It remains to consider the data for approval and neutral conditions alone, for each of the scoring criterion used as bases for hypotheses 1-7.

The objectives here are to demonstrate that in a neutral condition the normals show more positive performance than do goods or poors, and that in an approval condition an additional difference is to be found between goods and poors, which does not occur in the neutral condition. This additional difference would presumably be due to the greater reaction-sensitivity, and consequent conceptual withdrawal, of the poors under approval. These expectations were confirmed using each of the various criteria, or combinations of criteria, involved in the hypotheses of this investigation.
Thus, in the neutral condition, there was in no instance a significant difference between goods and poors, and both groups were shown to be significantly different from normals. In connection with findings in the neutral condition, it is of interest to consider one observation of Rodnick and Garmezy (1957, p.169-170) made in reviewing their research program. They note that "... it was solely in the one experimental situation in which patients were required to respond verbally ... that our schizophrenic Ss failed to reach levels of performance equivalent to normal Ss under nonstress conditions. It would appear that the requirement of verbal responsiveness on the part of the schizophrenic subject frequently tends to accentuate and exaggerate behavioral deficits. Verbalization implies social interaction and communication—an area of acute disturbance for schizophrenic patients, and consequently one which mobilizes his defenses." Of course, Rodnick and Garmezy preferred motor, rather than verbal, responses in order to study optimal performance in schizophrenic patients. In the present experiment there was interest in evaluating decrements between groups according to the rank orders suggested by premorbid adequacy.

Following Rodnick and Garmezy's reasoning, it appears that the superior performance of normals, as compared with the similar performance of both goods and poors in the neutral condition, is in part related to the requirement of verbalization. Rodnick and Garmezy tend to find a similarity between normals and goods, with both groups different from poors, when a motor response in a neutral condition is required.
Thus, in the neutral condition of this investigation, goods and poors may function at a lower and similar level partly because of the requirement of verbalization. It was expected that these groups would give equivalent performances, and performances that were different from normals, on the basis of simply "being schizophrenic" and thus manifesting lower level cognitive processes, in the neutral condition. Of course, when performance in both conditions was combined, the goods and poors were seen to function differently; this was apparently due to the differences existing in the approval, not the neutral, condition. However, simply in terms of the neutral condition, we may follow Rodnick and Garmezy's observation, and say that "being schizophrenic" implies a lower level of cognitive functioning, particularly when verbal responding and social interaction are involved.

It is essential to point out, however, that while approval has a positive effect on the conceptual verbalizations of good premorbid in this investigation, such an external stimulus is required if more social communication is to be obtained. In the neutral condition, where such a positive motivating force is not present, the performance of goods and poors is essentially similar. Further, we may say that in the neutral condition, where the experimenter gives no particular sign of approval or disapproval, both goods and poors alike operate in a fashion characteristic of "schizophrenic" in general, i.e., they function at a lower level than do normals. Nevertheless, it is significant that good premorbid, if not poors, can be prompted to make their verbalizations more public and communicative. Sullivan (1954b)
has remarked that when the schizophrenic is not under great pressure he "... is in much the same mental state as we, and the implicit processes that he notices are more or less capable of communication." This is as opposed to the invasion into consciousness of reverie processes as a reaction to stress. Apparently, in the neutral condition, the schizophrenic is under a certain degree of "pressure." This pressure may be the result simply of the requirement of social interaction and/or of a verbal response. Further, however, the pressure is increased for poors and decreased for goods by the occurrence of signs of approval.

Summary

The present investigation was designed to determine the adequacy of conceptual performance in schizophrenics with different pre-psychotic adjustment backgrounds when they are exposed to verbal approval and neutral conditions.

At each of three levels of adjustment (normals, good premorbids, poor premorbids), two groups were formed. One received the neutral condition, the other the treatment of verbal approval. Adjustment groups were matched on age, intelligence, education, capacity for rapport, and absence of neurological or organic components. Subgroups at each level of adjustment were further matched on a test of verbal concept formation. Groups were compared along the dimensions of sorting and verbalization behaviors on the Object Sorting Test, with respect to the number of various kinds of responses produced in each group. The four major criteria by which performance was evaluated were adequacy of sorting, adequacy of verbalization, type of
verbalization and failures. Non-psychiatric subjects were medical patients in a general hospital who gave no evidence of chronic or psychosomatic disorders. The clinical groups were formed using a scale of adequacy of premorbid adjustment, in which the degree of social and sexual withdrawal behavior serves as a measure of premorbid status.

Seven hypotheses were advanced. Hypotheses 1-3 were concerned with the overall effects of premorbid adjustment level; hypotheses 4-7 dealt with the interaction effects of verbal approval and premorbid adjustment level.

Hypothesis 1 was supported, hypothesis 2 was partially supported, and hypothesis 3 was fully supported. The general notion involved in the first three hypotheses was the existence of separate and relatively homogeneous levels of functioning which can be considered characteristic reflections of differing levels of premorbid social adequacy. Greater withdrawal was found to be associated with less adequate communication of public conceptual experience, when both sorting and verbalization were combined. The effect was similar for verbalization alone, but only partially significant for sorting alone.

Hypothesis 4 was supported, hypothesis 5 was not supported, hypothesis 6 was supported, and hypothesis 7 received tentative support. The general notion involved in the last four hypotheses was the assumption that verbal approval constitutes a threatening situation only for the poor premorbid schizophrenic. Normals and good premorbids were found to be better able to tolerate such cues, and their presence did not cause further withdrawal as it did with poor premorbids. This effect was
found when both sorting and verbalization were combined. The effect was similar for verbalization alone, but not significant for sorting alone. In terms of failures (no response or partial response) there were trends indicating that poors show more such behaviors than either goods or normals, in the approval as compared with the neutral condition. In addition, it was noted that rather than simply being unaffected by verbal approval, good premorbids (but not normals) actually utilized these cues to make their performances more social then they were in the neutral condition.

The results led to the following conclusions:

1. Adequacy of combined sorting and verbalization behavior on the Object Sorting Test is a sensitive reflector of the level of premorbid adjustment. Greater premorbid withdrawal is associated with less adequate communication of public conceptual experience.

2. Verbal approval constitutes a threatening condition only for poor premorbids, as evidenced by the greater degree of asocial conceptual communication it creates in this group. Normals show little change in conceptual behavior with approval. Good premorbids are able both to tolerate approval cues and to use them as stimuli which mobilize conceptual processes in the service of more social communication.

3. While verbal approval has a positive effect on conceptual verbalizations of good premorbids, such an external stimulus is required if more social communication is to be obtained. In neutral conditions, where no special controlled motivating force is present, the good and poor premorbids are practically indistinguishable in performance.
4. The differential performance of good and poor premorbid premorbid was discussed in terms of the operation of differential ways of perceiving the stimulus pattern of approval. One set of conditions involved in determining the nature of the perception is the interaction of premorbid adjustment level with the interpersonal cues of approval.
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Appendix A

Statements of Approval Suggested by Psychologists and Ward Aides

I Content

a) Psychologists
1. Good, very good.
2. O.K., that's very good.
3. Well, you do pretty well on...; You don't seem to have much trouble on...
4. Not many people get this right.
5. Nice job, that was a difficult task, but you did very well.
6. You did a real good job with this Mr._____ . Very good!
7. Not bad, at all; You really did a fine job there; A-OK; I bet you didn't know you had it in you; excellent work, a remarkable performance.
8. Good!; Well done!; Fine!; Thanks, this has been of great help.

b) Ward Aides
1. Good; Very good
2. Very good - you did a fine job.
3. You do wonderful work, very good.
4. That's good thinking.
5. Keep up the good work.
6. Do the best you can, no one expects more than that.
7. That's excellent.
8. That's a very good job.

II Classification

A) Exclamations
1. Good, very good.
2. O.K., that's very good.
3. Nice job.
4. Very good!
5. Not bad, at all.
6. A-OK
7. Good!
8. Well done!
9. Fine!
10. Good
11. Very good.
12. Very good.
13. Very good.
15. That's a very good job.
16. That's good thinking.

b) Encouragement
1. Not many people get this right.
2. I bet you didn't know you had it in you.
3. You do wonderful work.
4. Keep up the good work.
5. Do the best you can, no one expects more than that.

 c) Positive Value Judgments
1. You did a real good job with this, Mr._____.
2. You do pretty well on...
3. You don't seem to have much trouble on...
4. Not many people get this right.
5. That was a difficult task, but you did very well.
6. Thanks, this has been of great help.
7. You do wonderful work.
III Implementation

1. After free sort of active phase: "O.K.. that's very good!"
2. After each sort of active phase: "Good!" alternated with "Fine!"
3. At completion of active phase: "You did a very good job with this, Mr. _____ Not many people get it right. Keep up the good work!"
4. After each response in compliant phase: Alternation between "Fine!" and "That's good!"
Appendix B

Items in the Phillips Subscale of Premorbid Adjustment

A. RECENT SEXUAL ADJUSTMENT

1. Stable heterosexual relation and marriage. ........... 0
2. Continued heterosexual relation and marriage but unable to establish home. ......... 1
3. Continued heterosexual relation and marriage broken by permanent separation. ......... 2
4. (a) Continued heterosexual relation and marriage but with low sex drive. .......... 3
     (b) Continued heterosexual relation with deep emotional meaning but emotionally unable to develop it into marriage. .......... 3
5. (a) Casual but continued heterosexual relations, i.e., "affairs," but nothing more. ...... 4
     (b) Homosexual contacts with lack of or chronic failure in heterosexual experiences. ........ 4
6. (a) Occasional casual heterosexual or homosexual experience with no deep emotional bond. .... 5
     (b) Solitary masturbation with no active attempt at homosexual or heterosexual experiences. .... 5
7. No sexual interest in either men or women. .......... 6

B. SOCIAL ASPECTS OF SEXUAL LIFE DURING ADOLESCENCE AND IMMEDIATELY BEYOND

1. Always showed a healthy interest in girls with a steady girlfriend during adolescence. ... 0
2. Started taking girls out regularly in adolescence. ......... 1
3. Always mixed closely with boys and girls. .......... 2
4. Consistent deep interest in male attachments with restricted or no interest in girls. ......... 3
5. (a) Casual male attachments with inadequate attempts at adjustment to going out with girls. .... 4
     (b) Casual contacts with boys and girls. .......... 4
6. (a) Casual contacts with boys and with lack of interest in girls ......... 5
     (b) Occasional contacts with girls. .......... 5
7. No desire to be with boys and girls; never went out with girls. .......... 6

C. SOCIAL ASPECTS OF RECENT SEXUAL LIFE: 30 YEARS OF AGE AND ABOVE

1. Married and has children, living as a family unit. ......... 0
2. Married and has children but unable to establish or maintain a family home. ......... 1
3. Has been married and had children but permanently separated. ......... 2
4. (a) Married but considerable marital discord ......... 3
     (b) Single, but has had engagement or deep heterosexual relationship but emotionally unable to carry it through to marriage. ......... 3
5. Single, with short engagements or relationships with women which do not appear to have had much emotional depth for both partners, i.e., "affairs". ......... 4
6. (a) Single, has gone out with a few girls but without other indications of a continuous interest in women. .......................... 5
   (b) Single, consistent deep interest in male attachments, no interest in women. .......................... 5
7. (a) Single, occasional male contacts, no interest in women. .......................... 6
   (b) Single, interested in neither men nor women .......................... 6

D. SOCIAL ASPECTS OF RECENT SEXUAL LIFE:
BELOW 30 YEARS OF AGE
1. Married living as family unit, with or without children. ......................... 0
2. (a) Married, with or without children, but unable to establish or maintain a family home. ......................... 1
   (b) Single but engaged or in a deep heterosexual relationship (presumably leading toward marriage). ......................... 1
3. Single, has had engagement or deep heterosexual relationship but has been emotionally unable to carry it through to marriage. .......................... 2
4. Single, consistent deep interest in male attachments, with restricted or lack of interest in women. ......................... 3
5. Single, casual male relationships with restricted or lack of interest in women. .......................... 4
6. Single, has gone out with a few girls casually but without other indications of a continuous interest in women. .......................... 5
7. (a) Single, never interested in or never associated with either men or women. .......................... 6
   (b) Antisocial. .......................... 6

E. PERSONAL RELATIONS: HISTORY
1. Always has had a number of close friends but did not habitually play a leading role. ......................... 1
2. From adolescence on had a few close friends .......................... 3
3. From adolescence on had a few casual friends .......................... 3
4. From adolescence on stopped having friends. ......................... 4
5. (a) No intimate friends after childhood. .......................... 5
   (b) Casual but never any deep intimate mutual friendships .......................... 5
6. Never worried about boys or girls; no desire to be with boys and girls .......................... 6

F. RECENT PREMORBID ADJUSTMENT
IN PERSONAL RELATIONS
1. Habitually mixed with others, but not a leader. .......................... 1
2. Mixed only with a close friend or groups of friends. .......................... 3
3. No close friends; very few friends; had friends but never quite accepted by them .......................... 4
4. Quiet; aloof; seclusive; preferred to be by self. .......................... 5
5. Antisocial. .......................... 6
Appendix C

Number of Responses for each Scoring Criterion for each Subject

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APPROVED:

Claude T. Fort

Solush Kales

Date: July 16, 1952