The Immediate Hypothesis of Schizophrenia

BY KURT SALZINGER

The author of this chapter attempts to set forth a basic hypothesis which defines schizophrenia as temporally constructed. He shows that the various controversies over schizophrenic pathology have been unproductive, primarily because of the general clinical manner in which schizophrenics are studied. These controversies produced a wide range of contradictory hypotheses. On one hand, it is argued that schizophrenics are too abstract in their thinking, and, on the other hand, that they are too concrete. By the same token, one can argue for process schizophrenia or one can argue for reactive schizophrenia, simply by using a circular set of predefined dispositions and definitions which are prognostic. In the end these prognostic terms only indicate that the individual has been sick for a long time or a short time. If he has been sick for a long time he is likely to remain so. Moreover, efforts to measure schizophrenic behavior by a variety of experimental instruments such as flicker fusion, size constancy, etc., have proven to be extremely difficult because of the extreme degree of sophistication required for objective measurements for all times and places. All the above deficiencies suggest, says Dr. Salzinger, that what we must seek is a definition of schizophrenia in terms of some standard measurement of behavior which can have the same meaning at the same time and place. Accordingly, he defines schizophrenic behavior as being controlled by a stimulus which is immediate in the environment, and 1 to an immediacy-in-time. From here behavior paradigms apply, and how arise in which the schizophrenic beha immediate reaction to environmental st time. This is done largely by measuring a variety of standardized linguistic in ratios or verb frequency analysis, etc., approaching schizophrenia through la possible, because it does not require or instrumental procedures frequent types of evaluation measurement. To spell out the nature of time in distur the role of behavior therapy in a which is called schizophrenia.

1. Introduction

The history of the concept of schizophrenia is traced back to a series of early descriptions, based on armchair speculation. A period of investigation followed during which eschewed or kept to a minimum in facts and only in certain cases. During this theory which was promulgated was research investigation. Finally, in recent years, the learning theory of investigators who were collecting the data upon themselves the task of writing the data in more economical ways. It is this task to present one such theory, perhaps accurately described as an hypothesis, to explain, by one underlying principle, the basis of many different ideas and re
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immediate in the environment, and by immediate he refers to an *immediacy-in-time*. From here the author shows how behavior paradigms apply, and how a variety of situations arise in which the schizophrenic behaves as the result of his immediate reaction to environmental stimuli which are close in time. This is done largely by measurements of speech with a variety of standardized linguistic methods, viz., type-token ratios or verb frequency analysis, etc. Certainly the mode of approaching schizophrenia through language analysis is now possible, because it does not require the kind of instructional or instrumental procedures frequently demanded in other types of evaluation measurement. Thus the chapter tries to spell out the nature of time in disturbed behavior and spells out the problems of the effect of *stimulus* control as well as the role of behavior therapy in a production of behavior which is called schizophrenic.

1. Introduction

The history of the concept of schizophrenia began with early dogmatic descriptions, based on clinical investigation and armchair speculation. A period of crass empirical investigation followed, during which time theorizing was eschewed or kept to a minimum in an attempt to get at the facts and only the facts. During this time the only type of theory which was promulgated was largely independent of research investigation. Finally, in recent years, beginning with Mednick's (1958) learning theory of schizophrenia, those investigators who were collecting the data on schizophrenia took upon themselves the task of writing theories to summarize the data in more economical ways. It is the intention of this paper to present one such theory, perhaps more modestly and accurately described as an hypothesis, which will enable us to explain, by one underlying principle, data collected on the basis of many different ideas and research approaches.
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2. Theory Construction

It should be stated at the outset that theory, in the sense in which it is presented here, will not now attempt to describe the ultimate cause (if such a concept is still useful in today’s science) of schizophrenia. Rather, theory, as used in this paper, will consist of extrapolating from an underlying principle, which we shall assume describes an essential aspect of the behavior of the schizophrenic, to the kind of behavior which one might expect from an organism governed by such a principle. The extrapolations will make use of the well-known and well-substantiated principles of behavior theory to show how the underlying governing principle of schizophrenic behavior interacts with the principles of behavior theory. A large part of the burden of explanation of schizophrenic behavior must therefore be borne, not by the underlying principle of schizophrenia alone, but by its effect on the organism-environment interaction. The importance of social factors in determining the stimuli which impinge on individuals, has, of course, been much recognized of late. No theory which fails to take these data into account can be expected to be given serious consideration.

3. On Data for Testing the Theory

One additional introductory comment is necessary before explaining the immediacy hypothesis and that concerns the kind of data that are required for the validation of a theory of schizophrenia. It must be remembered that schizophrenia attacks adults or near-adults, and that, therefore, a schizophrenic individual has already been interacting with his environment for many years. His behavior has been modified by learning, by aging, and by other changes which have expressed themselves in his biology. These various factors have influenced the person, not only directly, but also in interaction

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with each other. It therefore becomes important to determine the effect of his behavior (as in the simple case of the individual himself or the people around him) to whom behavior is a product of his biology. Thus, an individual views the world in terms of physical parameters of the stimuli presented to him, but also by his past experiences, which influence particular instructions which the environment provides.

4. The Immediacy Hypothesis

The hypothesis (Talzinger, 1966) that immediate response to stimuli in the environment is paramount. The major observation is that stimuli which are close to the person and have a higher probability of being noticed and responded to more rapidly than stimuli which are distant. It suggests that the passage of time weakens response strength in a schizophrenic, as compared to a normal person. This hypothesis predicts that schizophrenia patients will condition at a slower rate on critical stimuli, e.g., reinforcements. It is also suggested that schizophrenia have a lower threshold for the sound properties of words, particularly if they have not received explicit training in respect to their semantic properties (e.g., portunity to extinguish). In size
the outset that theory, in the sense conceived, will not now attempt to describe a concept is still useful in today's. Rather, theory, as used in this paper, is an underlying principle of behavior which describes an essential aspect of the organism, the kind of behavior which is governed by such a principle. Behavior theory to show how principle of schizophrenic behavior is made up of the well-known principles of behavior theory. A large amount of data on the importance of social factors in determining behavior is needed to be given by the theory of social learning. The behavior of individuals, has, of course, been modified by other changes which have occurred. These various factors have directly, but also in interaction with each other. It therefore becomes very difficult to assign priority to any one factor. The person's biochemistry, as we have found out at great cost, in at least as much a product of his behavior (as in the simple example of diet, which an individual himself or the people around him can control) as behavior is a product of his biochemistry. The way in which an individual views the world is influenced not only by the physical parameters of the stimulus presented to the subject, but also by his past reinforcement history and by the particular instructions which the experimenter presents to the subject.

4. The Immediacy Hypothesis

The hypothesis (Salzinger, 1966) is that schizophrenic behavior is primarily controlled by stimuli which are immediate in the environment. The major referent for the word “immediate” is time. It means that given two conflicting stimuli, the one which appears closer in time to the occasion for the response to be emitted, will control that response. It also means that stimuli which are closer in space will have a higher probability of controlling responses than stimuli more distant. It suggests that the passage of time will more quickly weaken response strength in a schizophrenic patient than in a normal person. This hypothesis predicts that a schizophrenic patient will condition at the same rate as normals (when the critical stimuli, e.g., reinforcements, are immediate) but will extinguish more rapidly than normals. Given the assumption that meaning is acquired through a conditioning process, it predicts that schizophrenics have a tendency to respond to the sound properties of words, rather than their meanings, particularly if they have not recently been reinforced with respect to their semantic properties (having had the opportunity to extinguish). In size constancy experiments, it
implies that schizophrenic patients will have a tendency to follow the size determination resulting from the retinal image rather than that determined by object constancy, unless object constancy has just recently been reinforced through the use of immediate stimuli. It must be noted that within any one experiment, the particular technique employed may yield results at variance with these predictions, because the particular technique involves other responses controlled by other immediate stimuli. An example of this would be the case in which the subject’s object constancy is determined by the method of limits, where the major determinant might well be the particular comparison stimulus size which is first exposed (and therefore most immediate), rather than the size of the standard. The hypothesis predicts a slower reaction time to specific stimuli because of the fact that other stimuli intervene between the READY signal and the GO signal, and between the relevant and the irrelevant stimuli. These stimuli may capture the schizophrenic’s attention simply because they are more immediate than the signal the experimenter presents.

The hypothesis would predict problems in concept formation, because the schizophrenic would tend to be distracted by extraneous stimuli merely because of their greater immediacy, and would lead one to expect difficulty in the sphere of communication, because, in language, one of the major aspects to making sense consists of responding to both remote and to immediate stimuli. This includes, of course, having to remember the beginning of a sentence in order to be able to complete it sensibly. It also includes being able to stay on one topic and to recognize the different meanings of words as a function of the context (consisting of remote stimuli) in which the word is uttered. Thus delusions would be served well by a person’s predisposition to respond to words out of context, and the peculiar responses

which the schizophrenic is then led to round out his delusion, would also be words he places in juxtaposition with short-range contexts.

Given the assumption that schizophrenia is a disorder of immediate stimuli, the question of why and how some become very confused is raised. The tentative explanation lies in the idea that these groups of patients. Since typically of higher intelligence, or at least verbal associations given the material in the past, some are also obviously take note, in the case of different schizophrenics, of exactly what was reinforced in the past, and then the obvious kind of behavior which can be immediate stimuli. Analysis of this interaction would make clear the sources. Hallucinations have in the past been identified with some sort of subvocal activity. Here the immediate stimulus means that the patient is thinking and the so-called remote stimuli is himself generating the voices. This might also account for the patient’s content of his own thought, or contiguity.

5. The Role of Behavior Theory

We said at the outset that an agreement would have to include in it some of the interaction of the basic pro
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which the schizophrenic is then likely to put together, to round out his delusion, would also be unusual in that the words he places in juxtaposition would depend primarily on short-range contexts.

Given the assumption that schizophrenics are controlled by immediate stimuli, the question of why some become paranoids and some become very confused in their thinking must be raised. The tentative explanation lies in other characteristics of these groups of patients. Since paranoid patients are also typically of higher intelligence, one can assume that their short-range verbal associations give rise to more integrated material (even though still bizarre) than do the short-range verbal associations of less intelligent individuals. One must also obviously take note, in considering the various symptoms of different schizophrenics, of exactly the kind of behavior that was reinforced in the past, so as to determine those kinds of behaviors which can be classed as responses to immediate stimuli. Analysis of the person’s reinforcement history would make clear the source for a particular delusion.

Hallucinations have in the past been found to be associated with some sort of subvocal activity on the part of patients. Here the immediate stimulus may be the content of what the patient is thinking and the source, namely himself, may constitute too remote a stimulus for him to recognize that it is himself generating the voices. The principle of immediacy might also account for the patient’s attributing to a noise the content of his own thought, simply because of temporal contiguity.

5. The Role of Behavior Theory

We said at the outset that any theory on schizophrenia would have to include in it some statements about the role of the interaction of the basic problem with which the patient
is struggling and the response of his environment to him. The role of the environment means, at least in human beings, the role of behavior theory variables, and thus we must now turn our attention to the way an individual’s behavior will be controlled, assuming that most of the significant stimuli must be immediate in his environment. Behavior theory deals with two major types of stimuli, the discriminative stimulus and the reinforcing stimulus. The former is the one in the presence of which a response member of a given response class is reinforced positively or negatively, according to some schedule of reinforcement. Discriminative stimuli are critical since much of our behavior is controlled by them in a very effective way. They also derive their importance from the fact that, through their association with reinforcement, they themselves become reinforcing, in the same way as the reinforcements with which they have been associated: hence the term conditioned reinforcement. The second important stimulus is the reinforcement itself, which controls the behavior of individuals merely because it follows, in time, the responses made by the particular person. What can we expect on the basis of the interaction between the predilection of schizophrenics to respond primarily to immediate stimuli, and various behavior theory paradigms? Let us consider some paradigms which were recently suggested as possible models for the acquisition of various abnormal behaviors (Salzinger, 1968).

Perhaps the most obvious candidate for such a conditioning paradigm is the conditioning of superstitions behavior. The basic procedure with animals is quite simple; reinforcement is forthcoming on a regular temporal basis, independent of the behavior of the organism. Yet the animal left alone under these conditions rather rapidly develops behavior which it emits at a high rate, the occurrence of which is coincident with the occurrence of the reinforcement. The analogue in human beings is rather obvious and no doubt relates to many real reinforcement contingencies, of handshaking or otherwise, which are in some appreciation of the reinforcer (presumably now being an acquired superstitious one) in the clarity as well, of some place the person was and the part of the room it was in. Not only because the parts of the room with the essential parts of the task cannot affect the delivery of our society produces reinforcers, i.e., a reinforcing and undesirable event, without being a response to our behavior. In what way is it affecting all people as it is required? To react most potently to it?

A person primarily concerned with the reinforcement properties of a person is accidentally hit by an event in the same way as if he had planned to experience it. The reinforcing stimulus is to other incidents of the person would eventually become a superstitious behavior. Viewed in this way, more intelligent schizophrenia...
of his environment to him. Humans, at least in human beings, are useful stimuli and thus we must now see how a given response class is re-exposed to the significant stimuli must not be ignored. Behavior theory deals with discriminative stimulus and the list of stimuli are critical since much of the learning is from the fact that, through reinforcement, they themselves become the term conditioned reinforcer. It is the reinforcement with which the behavior of individuals is associated and varies from the habits of various behavior theory paradigms which were models for the acquisition of schizophrenia (Kanfer, 1968).

A date for such a condition is quite simple; regular temporal basis, in any organism. Yet the animal rather rapidly develops high rate, the occurrence of occurrence of the reinforcement. is rather obvious and no doubt relates to many aspects of behavior not under any real reinforcement contingency. Aspects of gait, of writing, of talking, of handshaking, etc., are all, to some extent, controlled by superstitious conditioning. In other words, while portions of speech (presumably the content) and of writing (again probably the content, but it could conceivably include its clarity as well), of walking (presumably getting to the place the person was headed for), and of handshaking (presumably now being able to talk to the person whose acquaintance has been made) are under the control of contingent reinforcement, many other aspects are conditioned only because these parts of the behavior are reinforced along with the essential parts of the response. In fact, their emission cannot affect the delivery of the reinforcement. The complexity of our society produces a great number of non-contingent reinforcements, i.e., a number of desirable (positive reinforcements) and undesirable (negative reinforcements) events occur, without being under the control of any particular person's behavior. In what way might this kind of paradigm, affecting all people as it does, whether normal or not, interact with a tendency on the part of the abnormal individual to react prepotently to immediate stimuli?

A person primarily controlled by immediate stimuli is more likely to acquire conditioned positive or negative reinforcements. Thus a person controlled by immediate stimuli who is accidentally hit by another person, might respond to him in the same way as if he had been hit on purpose, because the immediate stimuli involved in both the accidental and planned aversive stimuli are the same. By responding regularly to other incidents of this kind in a similar manner, the person would eventually evoke planned aversive behavior from other people because of his aversive behavior toward them. Viewed in this way, the delusional system which the more intelligent schizophrenics then emit can be considered
to be a secondary effect of the original sensitivity to immediate stimuli, as they affect social behavior (including verbal behavior), rather than the result of a separate causal chain of events. A paranoid individual cannot be talked out of his delusion, because the verbal stimuli are not as immediate as the conditioned aversive stimuli which continue to amass as a result of the responses of others around him upon whom his own suspicious behavior has had an aversive effect. Suspicion of a formerly loved person would indicate that a relatively long period of conditioning had taken place, i.e., association of the formerly loved person with aversive stimuli.

The conditioning model can be extended to a number of other fairly frequent symptoms of schizophrenia. Such paradigms have been spelled out for hallucinations, phobias, compulsive behavior, and bizarre behavior (Salzinger, 1968). There is not enough space to go into these in detail in this paper; the important point to remember is that the same paradigms can be expected to influence the behavior of all people—the only difference being postulated here is that the schizophrenic is more likely to be conditioned by stimuli which are immediate in his environment. In normal individuals stimuli other than immediate ones are allowed to enter into association relationships and many unrealistic conclusions are avoided.

6. Data in Support of the Immediacy Hypothesis

Enough data have been collected on the functioning of schizophrenics so that it would require a book to present all that is relevant. Since that is clearly impossible the interested reader should consult a review of the behavioral literature just completed (Salzinger, 1971). In this paper we will merely sample from that literature.

Since we are talking about control, it is only appropriate that data first. An experiment (Sal: constancy in the judgment of that schizophrenics are less able to elements as a result of introducing anchor weight than are norms replicated by Wurster (1965), there was less of an influence on whose effect was distributed o than through its immediate assosness of immediate anchors for sc is consistently found with other estimation of length of lines (P estimation of length of time into the judgment of size in a size et al., 1964), where the stimulus turned out to be the though size constancy experiment contradictory results (such as and underestimation in others have tried to resolve by the c of schizophrenia, it is possible to constancy, e.g., being controlle image rather than the actual si out that the rea image fun stimulus. It is of interest that demonstrated in experiments o owicz et al., 1968) as well as wiez, 1964).

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Since we are talking about a special type of stimulus control, it is only appropriate that we look at some perceptual data first. An experiment (Salzinger, 1957) on perceptual constancy in the judgment of heaviness of weights showed that schizophrenics are less able to resist shifting their judgments as a result of introducing the immediate stimulus of an anchor weight than are normals. This result was recently replicated by Wurster (1965), who found, in addition, that there was less of an influence on schizophrenics of an anchor whose effect was distributed over a period of time rather than through its immediate association. The greater effectiveness of immediate anchors for schizophrenics than for normals is consistently found with other dimensions, such as the estimation of length of lines (Boardman et al., 1962), the estimation of length of time intervals (Goldstone, 1968), and the judgment of size in a size constancy experiment (Harway and Salzman, 1964), where the initial size of the comparison stimulus turned out to be the critical anchor stimulus. Although size constancy experiments have given rise to some contradictory results (such as overestimation in some cases and underestimation in others), which some investigators have tried to resolve by the creation of new subcategories of schizophrenia, it is possible to explain the presence of underconstancy, e.g., being controlled by the size of the retinal image rather than the actual size of the object, by pointing out that the retinal image functions as the more immediate stimulus. It is of interest that underconstancy can also be demonstrated in experiments of distance perception (Weckowicz et al., 1968) as well as in shape perception (Weckowicz, 1964).

Experiments directed at determination of stimulus-seeking behavior in schizophrenics indicate that they have less of a tendency than normals to spend time on new stimuli (McReynolds, 1963), because they are more withdrawn, and
that they tend to try out new pathways less frequently than normals in a maze test (Sidle et al., 1963); both tasks suggest that schizophrenics do not discriminate between new and old stimuli. One would expect exactly that if the schizophrenic had a tendency to respond, he would respond primarily to immediate stimuli.

Experiments on concept formation have been used by psychologists for many years to reveal the thought disorder of schizophrenics (Payne, 1961). The inefficiency which the schizophrenic manifests in sorting designs or objects according to a principle has been explained in terms of his greater distractibility by irrelevant stimuli (Payne called this the tendency toward overinclusiveess, as did Cameron before him). This distractibility was experimentally shown in a study by Chapman (1956), who found that the increase in deliberately added irrelevant stimuli reduced the efficiency of the performance of the schizophrenic. Within the framework of the immediacy hypothesis this means that as conflicting immediate stimuli are added to a situation, the attention of the schizophrenic is as likely to be attracted by these stimuli as by the relevant stimuli, thereby resulting in a deterioration of his performance.

Another way of increasing the number of stimuli which might be active in stimulating the schizophrenic, whose attention is attracted by immediate stimuli, is to expose the relevant stimulus for a relatively long period of time, thus letting the salience, accruing from its onset, fade and be replaced by other stimuli, possibly even private response-produced stimuli, such as the patient's thoughts, which then become the new immediate stimuli that cause a deterioration in performance. Brengsmann (1958) demonstrated that schizophrenics' accuracy of reproduction of the location of a number of designs in space was significantly worse than

neurotics' when the stimuli were exposed for a longer period of time (the stimulus was exposed for the same length of time). In other words, when the stimulus was exposed for a period of one minute or less, the schizophrenics performed better than normals, but when it was exposed for a period of one minute or more, they did not. Therefore, it appears to make more sense to use for a period of one minute or less, the schizophrenics performed better than normals, but when it was exposed for a period of one minute or more, they did not. Therefore, it appears to make more sense to use the schizophrenics' performance in these experiments while in schizophrenia than in normals.

Both Franks (1961) and in schizophrenia, and more recently in schizophrenic perform learning. Some studies have shown a so-called learning by two factors: the use of weak (non-immediate) and strong (immediate) stimuli typically involve immediate stimuli (as, for example, when one would expect slo man, rather than because of the reinforcements; the. the form of a "pep talk" than being administered. Recent experimentation (
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The immediacy hypothesis when the stimulus was exposed to the subject for a longer period of time (thirty seconds), but not worse when the stimulus was exposed only for two seconds. Along the same lines, we find a result by Ludwig, Wood, and Downs (1962), who demonstrated that, although the absolute threshold for pure tones is not different for schizophrenics and normals, the schizophrenic's ability to retain the threshold for a period of one minute is inferior to the normal's. Time, therefore, appears to make available other immediate stimuli (perhaps private stimuli) which interfere with the performance of the schizophrenic. Although there are many other types of experiments which have revealed greater distractibility in schizophrenics than in normals, space prohibits our describing them here.

Both Franks (1961) and Jones (1961), who reviewed conditioning and more complex learning, respectively, concluded that only some studies were able to show a deficit in schizophrenic performance which could be ascribed to learning. Some studies actually showed faster conditioning among schizophrenics. The apparent discrepancies in results lend themselves to explanation in terms of the immediacy of the relevant stimuli. Thus the experiments which have shown a so-called learning deficit could all be characterized by two factors: the use of complex learning tasks and the use of weak (non-immediate) reinforcements. Complex learning tasks typically involve a large number of conflicting immediate stimuli (as, for example, in paired associate tasks) and one would expect slower learning as a function of these stimuli, rather than because of the learning rate per se. As to the reinforcements, there have often been administered in the form of a “pep talk” at the end of the session, rather than being administered systematically after each response. Recent experimentation (e.g., Atthowe and Krasner, 1968)

new pathways less frequently than others (et al., 1963); both tasks suggest that the schizophrenic tends to discriminate between new and familiar stimuli, so that if the schizophrenic's response, he would respond primarily to the familiar stimulus.
has shown that even the most chronic schizophrenics' behavior on a closed ward can be modified by the use of immediate reinforcements.

The hypothesis that schizophrenics are more susceptible to the influence of immediate stimuli suggests that while conditioning should remain unaffected (provided the reinforcements are immediate), extinction should proceed faster. Such an experimental result was in fact found in our laboratory (Salzinger and Pisoni, 1960). Schizophrenics, in an interview situation, conditioned at the same rate as a group of matched hospitalized (for physical reasons) normals, but extinguished significantly more rapidly than the normals. The reason for the faster extinction lies in the greater dependence of the schizophrenics upon the immediacy of the reinforcing stimuli, which were, of course, absent during extinction.

The immediacy hypothesis also implies that the memory of the schizophrenic should be shorter than that of the normal, because his memories, like his other responses, depend upon the immediate stimuli and are less controlled by remote (past) stimuli. An experiment by Glidis (1967) showed that, at one week after learning, schizophrenics recalled 33 per cent of the words while the normals recalled 53 per cent; and by four weeks, the schizophrenics recalled 16 per cent while the normals recalled 37.5 per cent of the words. Another memory experiment showed the specific effect of immediate stimuli in controlling the behavior of the schizophrenic. Nachmani and Cohen (in press) presented a list of words to subjects in a free-recall situation. When subjects had to recall the words, the schizophrenics were clearly inferior to the normals; when all the words of the original learning task plus a number of new words were presented to the subjects there was only a non-significant trend showing the schizophrenics to be inferior to the normals in recognizing the words they originally learned. In other

words, when the immediate performance of the schizophrenia immediate stimuli.

Word association data are schizophrenic: emit associating unusual (e.g., Johnson et a. These results are often expected under which schizophrenics have; however, the immediates in terms of the first schizophrenic responds. The emotions often found in schizophrenia (immediate) rather than the language of the situation, while normals do the recognition task. Furthermore, in the experiment by Moon, Meff ERCONER (1968) that schizophrenic stimulus word, rather than the suggestion that more so distractible his environment results in his responses he emits might the experimenter's word; in fact, the misheard word. This was misleading to consider the writing the hypothesis that schizophrenia disorder, since the schizophrenia is related to the stimulus asper the patients' reasoning ability disorder, as obtained from: second-order effect resulting
words, when the immediate stimuli are appropriate, then the performance of the schizophrenics improves as a function of these immediate stimuli.

Word association data are quite clear on the fact that schizophrenics emit associations which are idiosyncratic or unusual (e.g., Johnson et al., 1964; Storms et al., 1967). These results are often explained in terms of the higher drive level under which schizophrenics are supposed to behave; however, the immediacy hypothesis interprets the results in terms of the aspect of the stimulus to which the schizophrenic responds. The larger number of clang associations often found in schizophrenics are responses to the sound (immediate) rather than the meaning (remote). Peastral (1964), using a galvanic skin response measure, showed that schizophrenics generalize more to homonyms than to synonyms, while normals do the opposite in a stimulus generalization task. Furthermore, the fact brought out in a recent experiment by Moon, Mefferd, Wieland, Pokorny, and Falconer (1968) that schizophrenics often hear a sound-related stimulus word, rather than the one presented, would seem to suggest that here too the schizophrenic is most controlled by the immediate aspect of the stimulus, namely its sound. The fact that he is so distractible by other immediate stimuli in his environment results in his mishearing words. The peculiar responses he emits might thus be peculiar only for the experimenter's word; in fact, it might be a high-associate to the misheard word. This would seem to suggest that it is misleading to consider the word association data as supporting the hypothesis that schizophrenia is basically a thought disorder, since the schizophrenic's performance is primarily related to the stimulus aspect of the situation, rather than the patients' reasoning ability. Other evidence that the thought disorder, as obtained from sorting tests, is, in fact, only a second-order effect resulting from the schizophrenic's higher
susceptibility to immediate stimuli, stems from an experiment by Cavaugh (1958). He showed that the performance can be improved to the level of the normal by simply using a loud noise stimulus as an aversive stimulus from which the patient can escape only by making the correct response. The use of a powerful immediate stimulus improves the performance of the schizophrenic.

Another traditional source of seemingly irrefutable data is the reaction time experiment in which the schizophrenic patient is found to have a slower reaction time than the normal. Notwithstanding the ubiquity of this finding, it has also been shown that the performance of the schizophrenic can be improved by means of high-intensity stimuli. Both King (1962) and Crider, Maher, and Grispoon (1965) have shown that under these conditions there is a reduction in the reaction time of both normals and schizophrenics, with a relatively greater reduction in the schizophrenics. Apparently, the higher intensity makes up for the distractibility of other conflicting immediate stimuli. Describing a study on the ability of schizophrenics vs. normals to shift their attention as they make the same response to an auditory or a visual response, Sutton, Haferem, Zubin, and Portnoy (1961) concluded that the schizophrenic patient is more influenced by the immediately preceding trial than the normal. (His reaction time after a stimulus in a different sense modality from the one he just responded to is longer than his reaction time to a stimulus in the same modality as the one he has just responded to.) Finally, with respect to reaction time, we have the important contributions of Shakow and his colleagues. To take but one of the many experiments from that laboratory, let us look at the effect of the length of the preparatory interval (time period between the warning signal and the stimulus to which the subject had to respond). Zahn, Rosenthal, and Shakow (1963) presented a series of

The different irregularly ordered ophrenics and normals and for reaction time could be explained by the interval to which they were more prepotent than among the normal preparatory interval. Thus, a normal, the immediately preceding a disproportionately larger errors than normals.

The last set of data concerning the immediacy hypothesis and, more specifically, to its contraries, and Felson (1964; 1965) to the speech of matched subjects found that the normals' speech was more comprehensible than the speech of schizophrenics who were more often unable to express their thoughts. These findings were interpreted by immediate stimulation of small numbers which are necessary for cogential nature of schizophrenic showing that his comprehension was in the absence of cues patient's words depended on the interviewer's supply of distorted speech and appearing less comprehensible.

Another study in our lab (1964) also revealed the s
stimuli, stems from an experiment showed the performance can of the normal by simply using an aversive stimulus from which the making the correct response. The stimulus improves the performance of seemingly irrefutable data is in which the schizophrenic has a slower reaction time than the ubiquity of this finding, it has performance of the schizophrenic's of high-intensity stimuli. Both Pol et al. and Grinspoon (1965) have editions there is a reduction in the normals and schizophrenics, with a the schizophrenics. Apparently, for the distractibility of other thi. Describing a study on the normals to shift their attention to an auditory or a visual topic, and Portnoy (1961) contin: patient is more influenced by auditory than the normal. (His re: a different sense modality from to is longer than his reaction the modality as the one he has with respect to reaction time, contributior: of Shakow and his of the many experiments from the effect of the length of period between the warning the subject had to respond). (1963) presented a series of different irregularly ordered preparatory intervals to schizophrenics and normals and found that schizophrenics' slower reaction time could be explained in terms of the preparatory interval to which they were responding and, even more important than among the normals, in terms of the preceding preparatory interval. Thus, as in the Sutton et al. experiment, the immediately preceding stimulus appears to exert a disproportionately larger effect on schizophrenics than on normals.

The last set of data we will look at for evidence concerning the immediacy hypothesis relates to verbal behavior and, more specifically, to its communicability. Salzinger, Portnoy, and Feldman (1964; 1966) applied the Cloze procedure to the speech of matched schizophrenics and normals and found that the normals' speech was more easily understood than the speech of schizophrenics. Furthermore, schizophrenics who were more comprehensible had a better short-term outcome of illness than schizophrenics whose speech was less comprehensible at the time of hospitalization. These findings were interpreted to suggest that since schizophrenic speech, like the rest of the patient's behavior, is governed by immediate stimuli, it therefore contains a disproportionately small number of those long-range associations which are necessary for comprehensible speech. The tangential nature of schizophrenic speech was also illustrated by showing that his comprehensibility decreased the longer he spoke in the absence of questions. In other words, when the patient's words depended only on his immediately preceding words, the otherwise useful immediate stimuli which an interviewer might supply through his questions were not present to limit his speech to a given topic. Because of this, it appears less comprehensible.

Another study in our laboratory (Hammer and Salzinger, 1964) also revealed the schizophrenic's greater tendency
toward repetition of the same word or sequence of words. As in the stimulus-seeking experiments cited earlier, the schizophrenic does not discriminate between used (old) and not yet used (new) words. Only the immediately preceding words determine whether a word has been used before or not. The immediacy hypothesis seems to warrant at least further investigation, if only because of the large variety of behavioral differences between normals and schizophrenics it seems able to explain. Its propositions can be stated specifically enough so that it has the virtue of being testable and, if found to be invalid, of being discarded as incorrect. In making use of the concept of time as a central term in the description of stimuli, it employs a universal dimension of behavior to which all organisms must pay attention, thus providing a description with potential for being useful cross-culturally.

7. Summary

The purpose of this paper has been to present the immediacy hypothesis as a way of summarizing a large amount of the data on schizophrenia. Some comments have also been made with respect to the problems of theory construction in general and about schizophrenia specifically, with a view to making explicit the purpose of theory in this area. The present use of subclassification of the category of schizophrenia as a way of reducing the large degree of variability usually found in studies of schizophrenia was presented and some of its inadequacies described. An evaluation was made of the kinds of data which are relevant for testing a theory about schizophrenia, and some of the difficulties which an experimenter in the field of schizophrenia encounters when trying to use a particular method of data collection were detailed. The basic hypothesis was then pre-
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sent as a statement that schizophrenic behavior is primarily controlled by stimuli immediate in the environment. Examples of the effect of such stimulus control were given, and the role of behavior theory was spelled out in the production of the behavior we call schizophrenic. The final section of the paper made an attempt to present evidence in favor of the hypothesis. The data described came from experiments on the perceptual, conceptual, psychomotor, learning, and verbal comprehensibility functioning of the schizophrenic.

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REFERENCES


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The previous chapter still temporally bound to in some ways contrast the approaches of the present behavior. The frequency count of verbs in the perception is a modern, but an analysis can be done in the same time (Takor, 1950), with the assignment of language patterns, the other. For example, the language shows that schizophrenia is a present, rather than a past condition. To find “the present,” the schizophrenia condition due to his inability.