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The Effects of Verbal Praise and Token Reinforcement on the Selected WAIS-R Performance of Chronic Undifferentiated Schizophrenics

by

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Abstract

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Schizophrenia has been reviewed in the literature as a single entity covering a vast array of psychotic symptoms. It has gradually been subdivided into unique separate categories. Although different reinforcement conditions have resulted in different levels of achievement with schizophrenics, the effects of verbal as compared to material incentives on one type of schizophrenia, chronic undifferentiated schizophrenia, on WAIS-R performance has not been explored. Further, the effects of different reinforcement paradigms on standardized test performance have also not been systematically explored with chronic undifferentiated schizophrenics on a reliable and valid measure such as a structured clinical interview measure. Clinical diagnoses that are made on the basis of unstructured clinical interviews are unreliable, and data based on structured interviews offers considerably more external validity relative to formulating generalizations

(Saigh, 1992).

Subjects in this study were sixty adult chronic undifferentiated schizophrenics from a state psychiatric clinic. They were be assigned to one of three treatment conditions: a verbally reinforced group, a material incentive group, and a control. The rewards were 1) verbal praise and 2) tokens that could be turned in for chocolates, money, or a gift certificate at McDonald's. The reinforcements were given out on a continuous reinforcement schedule for each response in order to reinforce "effort." The verbal reinforcements and the tokens were given out after each response. The tokens could be traded in after the test. The control group was administered the Wechsler test according to the WAIS-R procedure but without any reinforcers.

The design for this study was a pre-test post-test control group treatment design with the following independent variables: WAIS-R examiner comments (i.e., verbal praise and neutral comments) and tokens (i.e., candy, money, or gift certificates). The outcome variables were the WAIS-R Picture Arrangement, Vocabulary, Block Design, Arithmetic, and Similarities scaled scores. It was predicted that there would be main effects for verbal praise and for tokens. The pre-test WAIS-R subtest scores served as covariates and the WAIS-R post-test scores constituted the dependent variables. The analysis that was used was

MANCOVA. In view of the nonsignificant differences that were found, no follow-up tests were conducted.

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Chapter I

Schizophrenia as we know it today is a relatively broad diagnosis that covers a variety of psychotic disturbances that can be classified into several specific mental disorders. It is defined as a "group of psychotic reactions characterized by marked distortion of reality" (Rosen & Gregory, 1965, p. 532). It is a general name for a group of psychotic reactions characterized by withdrawal, disturbances in emotional and affective life, and depending upon the type, the presence of hallucinations, delusions, negativistic behavior, and progressive deterioration (Chaplin,1985). In psychoanalytic terms, Kolb (1973) observed that schizophrenics "failed to evolve ego integrative processes" between their id, superego, and ego drives, and they are "defective in the capacity to adapt to social demands" as well as to their own drives. They lack a harmonious self-concept with clear goals and motivations. Much of their adaptation is made, instead, "through partially satisfying regressive or fixated infantile behavior" (p. 308).

Schizophrenia has been viewed in various ways for centuries. Early man made no distinction between physical and mental disease and all diseases were explained by the action of the spirits (Rosen & Gregory, 1965). From 400 B.C. to 200 A.D. many philosophers struggled to free themselves from the superstitions of earlier periods. Hippocrates (460-

377 B.C.) was considered the "father of medicine" (Rosen & Gregory, 1965, p. 19) and was the originator of empirical and naturalistic approaches towards behavior disorders. He observed and described the course of various illnesses and challenged the belief of a supernatural etiology. His position on the etiology of psychopathology was simple: more specifically, he held that mental disorders were caused solely by brain disease, brain injury or excessive amounts of bodily substance called humor which in excess was held responsible for different personality temperaments. Over the next several centuries, these temperaments evolved into personality types, and their abnormalities were attributed to physiological causes.

Following Hippocrates, a disregard for the physiological cause occurred in the understanding of mental illness. Plato (427-347 B.C.) espoused a doctrine where the mind was the only true reality and matter was a secondary substance that imperfectly copied the mental and ideal (Rosen & Gregory, 1965). Plato distinguished between the rational and irrational soul. Mental illness was therefore the absence of rationality and therapy should consist of philosophical persuasion back to rationality. This view of mental disorder with its contempt for the material and bodily, hindered the development of understanding mental illness for two millennia.

Ascelpiades, a Roman of about 50 B.C. was the next great

figure to clearly distinguish physiological illness from mental illness. He distinguished between acute deliria due to fevers from chronic mental disorders; the difference between illusions that are misperceived from an actual stimulus as opposed to hallucinations which occur when no actual stimulus is present to cause the individual's perception. Equally as important was his humanitarianism. He advocated humanitarian approaches to treating patients.

In the medieval period the return to primitivism in psychopathology that began earlier, took deeper hold, and lasted until the eighteenth century. Abnormal behavior was divorced from medicine and reassociated with the supernatural. It was not until the late 19th century that there was a renaissance in thinking about mental disorders.

The modern era of mental illness may be divided into two periods. The years up to 1900 and continuing to some degree beyond it were characterized by the organic point of view. The organic emphasis was a reaction against demonology and represented great advances in knowledge of human anatomy and physiology. Such figures as Wilhelm Griesinger (1817-1868) and Emil Kraepelin (1856-1926) are representative of this era. Griesinger (1845) suggested that all mental disorders were somatic diseases whose locus was the brain. Functional causes for mental disorders did not exist. The organic point of view succeeded in explaining a number of mental disorders. Kraepelin (1896) elaborated Griesinger's point of

view into a system of nosology (i.e., the systematic classification of diseases). His fundamental assumption was that the outcome of mental disease is predetermined. Patients either improve or deteriorate. Kraepelin's nosology defined and distinguished the important disorders of manic-depressive psychosis, a cyclical series of elations and depressions, and dementia praecox, a psychosis that often begins in adolescence. Kraepelin defined dementia praecox as "symptomatology consisting of hallucinations, delusions, incongruous emotivity, impairment of attention, negativism, stereotyped behavior, and progressive dilapidation in the presence of relatively intact sensorium" (Arieti, 1974, p.11). (The latter disorder was later renamed schizophrenia by the Swiss psychiatrist Eugen Bleuler.) Kraepelin attributed all disorders to brain disease, endocrine difficulties, metabolic disturbances or heredity, stressing biological factors only.

After 1880 a movement began away from the rigidity of the organic viewpoint and toward the flexibility of an organic-psychological combination. The organic movement rested on the existence of unproven hypothetical lesions on the brain and on the fact that many patients recovered. The psychological revolution was a result of the tradition of humanitarianism and emotional determinants. The shift in interest from organic to emotional determinants and from psychotics to neurotics led to the birth of psychotherapy.

Bleuler (1857-1930) accepted Kraepelin's work but revised it and made a strong attempt to go beyond a purely descriptive approach. He wrote on "dementia praecox" and renamed the syndrome "schizophrenia," implying that "a splitting of the various psychic functions, rather than a progression toward a demential state, was one of the outstanding characteristics" (Arieti, 1974, p. 13). He included in the schizophrenic group many syndromes that at that time no one was prepared to consider related to schizophrenia such as psychopathic personalities, alcoholic hallucinoses, and manic-depressive psychosis. He classified the symptoms of schizophrenia into two groups-fundamental (those that are present in every case) and accessory (those that may not occur).

Among the fundamental symptoms, Bleuler included "the disorder of the process of association which he considered the most important characteristic of schizophrenia" (p.14). The most important contributions of Bleuler were "those related to his study of the process of association and disturbances of the affective life, the concepts of autism and ambivalence, and his interpretation of negativism" (p. 14). He put less emphasis on the individual symptom and more on its intensity and extensiveness and its relation to the psychological setting. According to Arieti (1974, pp.14-29), other contributions were made by Meyer, Freud, Jung, and Sullivan. Meyer stressed the psychological

aspects. Freud stressed the unconscious processes and instinctual demands causing a schizophrenic regression. Jung stressed that emotional disorders due to a psychological fault produced an abnormal metabolism that causes physical damage to the brain, and Sullivan attributed schizophrenia to difficulties originating in interpersonal relations (Arieti, 1974).

The search for underlying causes of schizophrenia has thus centered on both functional and organic factors up to the present day. Cameron (1939) hypothesized that schizophrenics' primary deficit was in the area of poor social motivation due to internal and external stimuli. Shakow (1946), on the other hand, stressed schizophrenics inability to handle environmental stresses which could lead to abnormal behavior. Family therapists such as Bateson and Haley stressed psychological maladjustment in parent-child relationships and communication resulting in marked psychopathology or immaturity in behavior. Genetic factor theories also emphasize a hereditary predisposition toward developing the disorder. The etiology of schizophrenia is still being explored but the classification and description has become quite specific.

Current Nosology

The American Psychiatric Association's (1987) Diagnostic and statistical manual of mental disorders (DSM-III-R) defines schizophrenia today in the following

way. Schizophrenics have characteristic symptoms that involve multiple psychological processes involving "characteristic disturbances in content and form of thought, perception, affect, sense of self, volition, relationship to the external world, and psychomotor behavior" (American Psychiatric Association, 1987, pp. 188-189). They show weakness in such areas as adaptation, social intelligence, attention, concentration, perception and integrating stimuli (Kolb, 1973, pp. 318-326). The DSM-III-R diagnostic criteria for Schizophrenia is as follows:

A. Presence of characteristic psychotic symptoms in the active phrase; either (1),(2), or (3) for at least one week (unless the symptoms are successfully treated):

(1) two of the following:

(a) delusions

(b) prominent hallucinations

(throughout the day for several days or several times a week for several weeks, each hallucinatory experience not being limited to a few brief moments)

(c) incoherence or marked loosening of associations

(d) catatonic behavior

(e) flat or grossly inappropriate affect

(2) bizarre delusions (i.e., involving a phenomenon that the person's culture would regard as totally

implausible, e.g., thought broadcasting, being controlled by a dead person)

(3) prominent hallucinations [as defined in (1)(b) above] of a voice with content having no apparent relation to depression or elation, or a voice keeping up a running commentary on the person's behavior or thoughts, or two or more voices conversing with each other

B. During the course of the disturbance, functioning in such areas as work, social relations, and self-care is markedly below the highest level achieved before onset of the disturbance (or, when the onset is in childhood or adolescence, failure to achieve expected level of social development).

C. Schizoaffective Disorder and Mood Disorder with Psychotic Features have been ruled out, (i.e., if a Major Depressive or Manic Syndrome has ever been present during an active phase of the disturbance, the total duration of all episodes of a mood syndrome has been brief relative to the total duration of the active and residual phases of the disturbance).

D. Continuous signs of the disturbance for at least six months. The six-month period must include an active phase (of at least one week, or

less if symptoms have been successfully treated) during which there were psychotic symptoms characteristic of Schizophrenia (symptoms in A), with or without a prodromal or residual phase, as defined below.

Prodromal phase: A clear deterioration in functioning before the active phase of the disturbance that is not due to a disturbance in mood or to a Psychoactive Substance Use Disorder and that involves at least two of the symptoms listed below.

Residual phase: Following the active phase of the disturbance, persistence of at least two of the symptoms noted below, these not being due to a disturbance in mood or to a Psychoactive Substance Use Disorder.

Prodromal or Residual Symptoms:

(1) marked social isolation or withdrawal

(2) marked impairment in role functioning as wage-earner, student, or home maker

(3) markedly peculiar behavior (e.g., collecting garbage, talking to self in public, hoarding food)

(4) marked impairment in personal hygiene and grooming

(5) blunted or inappropriate affect

(6) digressive, vague, overelaborate, or

circumstantial speech, or poverty of speech, or poverty of content of speech

(7) odd beliefs or magical thinking, influencing behavior and inconsistent with cultural norms, e.g., superstitiousness, belief in clairvoyance, telepathy,"sixth sense," "others can feel my feelings," overvalued ideas, ideas of reference

(8) unusual perceptual experiences, e.g., recurrent illusions, sensing the presence of a force or person not actually present

(9) marked lack of initiative, interests, or energy. Examples: Six months of prodromal symptoms with one week of symptoms from A; no prodromal symptoms with six months of symptoms from A; no prodromal symptoms with one week of symptoms from A and six months of residual symptoms.

E. It cannot be established that an organic factor initiated and maintained the disturbance.

F. If there is a history of Autistic Disorder, the additional diagnosis of Schizophrenia is made only if prominent delusions or hallucinations are also present.

Classification of course. The course of the disturbance is coded in the fifth digit:

1-Subchronic. The time from the beginning of the

disturbance, when the person first began to show signs of the disturbance (including prodromal, active, and residual phases) more or less continuously, is less than two years, but at least six months.

2-Chronic. Same as above, but more than two years.

3-Subchronic with Acute Exacerbation. Reemergence of prominent psychotic symptoms in a person with a subchronic course who has been in the residual phase of the disturbance.

4-Chronic with Acute Exacerbation. Reemergence of prominent psychotic symptoms in a person with a chronic course who has been in the residual phase of the disturbance.

5-In Remission. when a person with a history of Schizophrenia is free of all signs of the disturbance (whether or not on medication), "in Remission" should be coded. Differentiating Schizophrenia in Remission from No Mental Disorder requires consideration of overall level of functioning, length of time since the last episode of disturbance, total duration of the disturbance, and whether prophylactic treatment is being given.

O-Unspecified (American Psychiatric Association,

1987, pp.194-195)[1]

It is of particular interest to note that the DSM-111-R conceptualization of schizophrenia entails the recognition of a number of subcategories and that this dissertation will focus on psychiatric patients with the chronic undifferentiated form of this disorder. Viewed in this context, the DSM-111-R lists the following relative to the diagnosis of this term of psychiatric morbidity. The essential features of the Undifferentiated Type of Schizophrenia are prominent psychotic symptoms (i.e., delusions, hallucinations, incoherence, or grossly disorganized behavior) that

1. From Diagnostic and statistical manual of mental disorders by American Psychiatric Association, 1987 Washington, D.C. : Author. Copyright 1987 by American Psychiatric Association. Reprinted by permission.

cannot be classified in any category previously listed or that meet the criteria for more than one category. (American Psychiatric Association, 1987, p.198).

A type of Schizophrenia in which there are:

A. Prominent delusions, hallucinations, incoherence, or grossly disorganized behavior.

B. Does not meet the criteria for Paranoid, Catatonic, or Disorganized Type (p. 198).

In short, the manifestations of schizophrenia have been chronicled for centuries and the most recent nosology (i.e., DSM-III-R) denotes fairly clear criteria for diagnosing this disorder.

Epidemiology

Schizophrenia is a major psychiatric category affecting over four to six million individuals in the United States (Yolles & Kramer, 1969, p.92). Examined from a clinical perspective, it is important to note the prevalence of schizophrenia in the general population constitutes approximately .2% to well over 1% depending on the scope of the definition of schizophrenia and the area of the world being considered (American Psychiatric Association, 1987, p. 192). Prevalence rates are, however, higher and vary from 1.5 per 1,000 to 5.1 per 1,000, internationally (Jablensky & Sartorius, 1975, p. 115). Between 1% and 2% of the entire population will sometime in their life experience a schizophrenic episode (Yolles &

Kramer, 1969, p.92).

Schizophrenia has been estimated at a minimum rate of 50 per 100,000 population in the United States.(Arieti, 1974, p. 492). Yolles and Kramer (1969) reported an adjusted rate of 116.8 per 100,000 for schizophrenic reactions. In 1964, 289,055 schizophrenic patients were reported to be in residence in state and county mental hospitals and constituted half of the population of these hospitals (Arieti, 1974, p. 492). New cases have continued to appear at a constant rate in spite of the fact that reproduction is less among schizophrenic patients (males tend not to marry) and that high rates of early mortality (e.g., suicide) continue to characterize the disorder. In the United States, an average of 3 persons per 1,000 can be observed to have schizophrenia at any given time (Yolles & Kramer, 1969, p. 80).

The onset of illness is usually during adolescence or early adulthood, but the disorder may begin in middle or late adult life. Some studies indicate a somewhat earlier onset in males than females, but the disorder is apparently equally common in both sexes (Lewine, 1981, p. 435). All investigators have found a higher prevalence of the disorder in first-degree biologic relatives of people with schizophrenia than would be expected in the general population (American Psychiatric Association, 1987, p. 192). The American Psychiatric Association (1987) goes on to point

out that "although genetic factors have been proven to be involved in the development of the illness, the existence of a substantial discordance rate, even in monozygotic twins, indicates the importance of nongenetic factors" (p. 192). Such factors as stress can act as adjustment hazards and cause adverse psychological pressures on an individual that prevent his psychic reserves from "neutralizing schizophrenogenic variables" (Arieti, 1974, p. 504).

Given the level of impairment that schizophrenics experience, mental health practitioners are required to devise and implement intervention programs (e.g., psychopharmacological, behavioral, or insight-oriented regimens) for these patients. Standardized test results (particularly indices of mental ability) may be of considerable utility in devising appropriate interventions for schizophrenic patients in mental health facilities. Unfortunately, the very nature of the disorder makes it rather difficult to obtain estimates of mental ability that are indicative of the actual ability of schizophrenic patients. All too often, schizophrenics fail to attend or lose interest in the material that examiners present during the administration of standardized tests like the Wechsler Adult Intelligence Scale-Revised (WAIS-R) (Bolles & Goldstein, 1938; Garmezy, 1952; Webb, 1954). Examined from a broader perspective, it is also of interest that mental health practitioners have used a variety of incentive

conditions to facilitate the progress of examinees (with and without psychiatric morbidity) for more than 50 years. This body of literature will be considered in some detail in as much as it presents interesting insights relative to the effects of incentive conditions in general and as it may also present useful insights regarding optimum ways to facilitate the performance of schizophrenics. Given that the majority of these studies have involved children and adolescents and that a modicum of this literature base has involved schizophrenics, this chapter will present separate reviews of these investigations.

Incentive Conditions and Test Performance

Reinforcement of an examinee's performance has been explored for decades. Terman (1916) reported that praising a child's efforts in a testing situation could contribute more than other variables to the establishment of a good relationship and help bring about the best efforts of examinees. Hurlock (1924) also investigated the effects of praise and reproof upon intelligence test performance. She concluded that neither was superior but both resulted in better performance than practice alone. Thorndike (1924) made a similar observation when he stated that in testing, it was theoretically possible to "arrange a system of incentives such that each person put forth approximately his maximum effort" (p. 228). Likewise, Terman and Merrill (1937) observed that "the subject's best

efforts are to be enlisted by the establishment and maintenance of adequate rapport," and "it is wise to praise frequently and generously" (p. 57).

Others such as Klugman (1944) attempted to apply this concept by giving rewards in order to reinforce the performance of children on an intelligence test that was individually administered. He found that money seemed to be more effective than verbal praise on the Stanford-Binet scores of black and white children. His test results, however, were not significant and no control group was used.

A selected review of the literature will be presented to give an overview of the studies that have used different types of reinforcements that served as incentive conditions on test performance with children, adolescents, and schizophrenic adults.

Computer and manual searches were conducted in this area of reinforcement research. Two data bases were used; PsychINFO and the Educational Resources Information Center (ERIC). Both searches covered the years 1974-1990. There was also a library search of Psychological Abstracts for the same period. This total process yielded six studies on reinforcement with nonschizophrenic children and adolescents on test performance.

Reinforcement Studies Involving Children and Adolescents

Witmer, Bornstein, and Dunham (1971) examined the effects of verbal approval and disapproval on selected WISC

subtests (Arithmetic, Digit Span, Picture Arrangement, and Block Design) on the performance of 48 male and 42 female third and fourth graders. These children were randomly assigned to one of three groups (two experimental and one control). The treatments consisted of verbal approval, verbal disapproval, and neutral. The verbal approval was defined by statements as "Good," or "Fine" (p. 350). The approval was made after the response to the first item (whether right or wrong) in each subtest and in between subtests which accumulated seven approval responses. The disapproval statements were "I thought you could do better than that" which was given after the first item (whether right or wrong) in each subtest and "That wasn't so good" (p.351) between each of the subtests which also accumulated seven disapproval responses. The neutral group received no approval or disapproval statements. Data analysis determined that the verbal approval group performed significantly better than the verbal disapproval or control groups. The researchers concluded that in real-life testing situations, reinforcement may not be as intense and the amount of approval given by different examiners is likely to vary, and that reinforcement is a variable that can influence results.

Saigh and Payne (1976) tested the effects of praise with a retarded population on a short form of the WISC (Arithmetic, Block Design, Picture Completion, and Digit

Span). Here, 40 educable retarded (EMR) students were examined. The average age of the subjects was 12.4 and the sex and race (black/white) were evenly distributed. The subjects were randomly assigned to one of two treatment groups-those to receive verbal praise and those not receiving verbal praise. Each of these groups was further subdivided into four groups. One group in each of the Approval and Neutral subject groups was randomly assigned to an examiner. The verbal praise consisted of such responses as "You're doing well, keep it up," "That was very good, let's try some more," and "That was a good job" (p.343). The verbal praise was given after the first and second items in each of the four subtests and at the end of each subtest. In the neutral condition, neutral nonevaluative procedural comments were made such as "Let's try this," "Here is the next," and "Let's try these" (p. 343). These responses were given in a similar rate of reinforcement. The results showed significant effects of verbal praise on the Block Design and Digit Symbol subtests. No significant differences were found on the Arithmetic and Picture Completion subtests. Saigh and Payne suggested that educable mentally retarded subjects are sensitive to examiner praise which supported the positive effects of verbal comments. Culturally disadvantaged subjects were tested in this study and minor differences between the examiners ability to implement the praise were noted, a fact which may have affected the

results. Further study with the entire WISC was suggested.

The effects of verbal reinforcement and socioeconomic status on intelligence test performance of preschool children was examined by Goh and Lund (1977). In this study, 90 preschool children of middle and low socioeconomic status were given the Form A of the Peabody Picture Vocabulary Test (Peabody) and the Verbal Scale of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) according to three treatment conditions. After each subject received the Peabody, the subjects were randomly assigned to a control group or two experimental groups. Each group received a different administration of the WPPSI. One experimental group received noncontingent "social praise reinforcement" (p. 1012), from the examiner such as "Good," "Very good" or "You're pretty smart" (p. 1012), and the other experimental group received reinforced responses for "correctness" (p. 1012), such as "Right," or "That's a good answer," (p. 1012) without regard to the accuracy of the examiner's response. The schedules of reinforcement were not specified by the authors. The control group received standard administration with no verbal reinforcement. The results of the test performance showed that subjects of middle class status scored significantly higher than their lower-status counterparts on both the Peabody and WPPSI measures. No significant verbal reinforcement effect or interaction of status X reinforcement was found. Goh and

Lund suggested the results were due to a socioeconomic difference on intellectual performance at the preschool level. Second, the lack of significant results for reinforcements may be due to the age factor as preschool children were used as subjects whose responses to the verbal reinforcements used might differ because of their age. Third, they suggested that excessive verbal reinforcement might have a distracting effect.

In another study, Saigh and Payne (1979) tested 120 educable mentally retarded institutionalized subjects on four subtests of the WISC-R under one of six conditions. The average age was 11.8 with approximately equal numbers of males and females. The subjects were randomly assigned to one of three types of reinforcement categories (verbal praise, token, and verbal neutral). They were also assigned to one of two reinforcement schedules (fixed-ratio or continuous reinforcement). Verbal praise or tokens were given according to which experimental group the subjects were in without regard to correctness of the response. The verbal praise consisted of such comments as "That was very good; keep up the effort" (p. 107). The subjects in the fixed ratio group were rewarded verbally or with a token after the first three responses regardless of the correctness of the response and between subtests. In the continuous reinforced groups, the rewards were given after each response and in between subtests. The tokens could be

exchanged for back-up reinforcers. Twenty of the 40 subjects in the Fixed Ratio-Verbal Neutral group received neutral nonevaluative comments such as "Let's try this," or "Here is the next" (p. 107). The other half received the same comments on the Continuous Ratio-Verbal Neutral schedule. The results indicated there was a statistically significant positive effect on the scaled scores for token and verbal praise reinforcers on the Arithmetic, Digit Span, and Picture Completion WISC-R subtests. There was no effect found on the Block Design scores. There was also no interaction between type of reinforcement and schedule, and no main effect for the type of schedule. Saigh and Payne suggested that treatment effects were not evident on the Block Design because this task tests perception, analysis, synthesis, and the reproduction of abstract figures which are often difficult for educable retarded children. Thus different reinforcements work with different populations.

In a related study, Saigh (1981) examined the effects of verbal reinforcement on the total WISC-R performance on educable mentally retarded subjects (EMR). Here, 40 subjects (22 black and 18 white with a mean age of 11.5) were randomly selected and assigned to one of two treatment groups. The subjects in the experimental group received verbal praise after each response and the subjects in the control group received nonevaluative procedural comments. Praise was made after the first four responses in each

subtest and then after every other response and between subtests. The control group received such neutral comments as "Let's try this one" or "How about this..." (p. 87). These comments were given after the first four responses and after every other response after that as well as between subtests. The results revealed that the subjects who were verbally praised had significantly higher scores on the WISC-R Verbal, Performance, and Full Scales. More specifically, the verbal praise group had significantly higher scores on the Arithmetic, Vocabulary, Digit Span, Picture Completion, and Coding subtests under the experimental condition. This study shows the effect of verbal praise again on the entire WISC-R performance of educable mentally retarded subjects.

Bradley-Johnson, Payne Graham, and Johnson (1986) examined the effects of token reinforcement on the WISC-R performance for white upper and lower socioeconomic elementary school children. In this study, 40 white children (19 males and 21 girls) were randomly assigned to experimental and control groups. Both groups were given the WISC-R. The control group was given the WISC-R according to standardized procedures. The experimental subjects received token reinforcement directly after each correct response to the WISC-R items. Upon completion of the test, the tokens were exchanged for back-up reinforcers costing less than $3.00, e.g., candy bar (80 tokens), a squirt gun (100

tokens), and a record (200 tokens). The results showed that the experimental subjects scored significantly higher than the controls. There was also a significant difference found between the grade levels with the first and second graders scoring higher than the fourth and fifth graders.

Summary of Reinforcement Studies Involving Children and Adolescents

In summary, six studies involving school age children were reviewed. Of these, five studies reported that various forms of reinforcement influenced test performance. Two studies (Saigh, 1981; Witmer, Bornstein, & Dunham, 1971) reported significant results when verbal praise was the reinforcer, and one study (Bradley-Johnson, Payner Graham, & Johnson, 1986) had significant results when tokens were the reinforcer. Two of the studies (Saigh & Payne, 1976, 1979) also found significantly positive results, but they were not totally effective across all the dependent measures. One study did not find any significant effects (Goh & Lund, 1977). Factors such as cultural disadvantage of subjects, different examiners' ability, mental retardation (Saigh & Payne, 1976, Saigh & Payne, 1979) and age (Bradley et al., 1986; Goh & Lund, 1977)) may interfere with the effectiveness of reinforcement. The type of reward (Bradley et al., 1986) may also be a factor to consider. There was also a methodological problem with one study. Contingent reinforcement for correct responses was used in one study

(Bradley et al., 1986) which is contrary to the recommendations of the test makers (Terman & Merrill, 1973; Wechsler, 1974).

Different types of reinforcement, (i.e., verbal praise or tangible rewards such as candy or money) had positive effects on different populations of children. As noted from the selected review of the literature, reinforcement has proved to be an effective tool to change behavior but such factors as type of reward, population sampled, age, intelligence, and socioeconomic factors can influence its effectiveness. It has worked with children and adolescents, but what about with adult schizophrenics?

Reinforcement Studies Involving Adult Schizophrenics

Webb (1954) examined the effects of negative reinforcement on the WAIS Similarities subtest performance of adult schizophrenic subjects. Fifty-two white male hospitalized schizophrenic patients were tested: 28 were in the experimental group and 24 served as controls (the groups were matched for age but the age was not specified in the study). Both groups were given pre-test and post-test similarity subtest which were separated by a short time interval (approximately two minutes). The experimental subjects received threat of failure designed to induce a feeling of stress. More specifically, the experimental subjects were told after the pre-test that "It looks like you did worse than would have been expected of you" (p.

221). The subjects' tests were subsequently then scored and they were told "Well, I've scored your answers and it turned out that you did worse than I thought at first-I have another test. Let's see how you do on it" (p.221). The controls were asked to perform eight rather simple Knox Cube Test items during this interval and were not given any information on either the similarities test or the Knox Cube. The responses were also scored as to quality level and were rated as to the presence of qualitative attributes of speech which are found in schizophrenics verbalization (Cameron, 1938). The results revealed on a *t* test that the control group showed a significant improvement in scores from pre- to post-test and the experimental group showed a significant decrease in performance after the threat of failure. The findings for the quality level of speech and qualitative attributes were not significant. The author concluded that the mild threat used in this study served to maintain a deficit in conceptual ability of the subjects and it was also suggested that mild threats may effect the motivation of the schizophrenics to perform better. The type of schizophrenia was not specified in this study.

The effects of experimentally produced increase in motivation on the performance of schizophrenics and normals was investigated by Cohen (1956). Cohen hypothesized that schizophrenics would show greater improvement under experimentally increased motivation conditions and that non-

clinical controls would not. Here, 38 schizophrenics were examined: 15 paranoid, five hebephrenic, four simple, three catatonic, one mixed, and 10 unclassified. Thirty-two non-clinical controls were also examined. There were 29 men and 9 women (mean age = 35.3 years with a median of 36.5. The mean years of education = 11.2 years). All the subjects were initially given a motor task of responding to successively presented stimuli before subjects were divided into "shock" and "rapport" subgroups.

A second motor task involving learning two patterns (Pattern II and Pattern III) was administered under a normal "rapport" condition with ordinary appropriate instructions and one under a experimentally controlled "shock" condition where electric shock was administered through a wristwatch band. The shock was given concurrently with the visual stimulus and stopped when a correct response was given. The results indicated that the schizophrenic subjects who received "shock" scored significantly lower on Pattern III than on Pattern II, but significantly lower on Pattern II than on Pattern III in the "rapport" condition. There was no significant change in the performance of the non-clinical cohort. The author concluded that the results confirm previous findings that schizophrenics have a deficit in learning and that variables in motivation may be responsible for some portion of the impairment.

Johannsen (1961) examined the ability of schizophrenics

to codify information about their behavior when that information was derived from external social sources. Here, 125 male subjects (age between 20-59) were examined. Johannsen compared 24 nonparanoid schizophrenics, 24 normal, and 15 paranoid with 24 nonparanoid schizophrenics, 24 normal and 14 paranoid schizophrenics on a visual motor task under social and nonsocial feedback conditions. The task was to learn a repetitive double alternative pattern (RRLLRRLL, R=right, L=left) and respond by pressing one of two buttons. Forty trials were initially given for practice. The social feedback consisted of the experimenter giving verbal feedback in the room stating "I will tell you after each time whether you pressed the right one or the wrong one. If you pressed the correct one button, I'll say right; if you pressed the wrong one I'll say wrong" (p.107-108). In the nonsocial feedback, the experimenter was not present and the feedback was signaled by two lights indicating a correct or incorrect response. The results indicated that three diagnostic groups showed significant differences in performance under social feedback but not under nonsocial feedback conditions. The normals performed significantly better under social feedback than the schizophrenics but not under the nonsocial feedback. All groups performed equally well under the nonsocial feedback conditions. There was a significant difference in performance of the different schizophrenic groups. The nonparanoid schizophrenics scored

significantly higher under nonsocial than under social feedback conditions. There were no significant differences found between the scores of the paranoid schizophrenics under both conditions. Thus, the hypothesis that schizophrenics do not do as well in learning tasks that involve social situations was only partially supported.

Calhoun (1970) examined the effects of monetary reinforcement and informational cues on the information processing ability of schizophrenics. In this study, 162 hospitalized male schizophrenics in their forties were tested on a recall task consisting of remembering conceptual categories of nouns under three conditions of monetary reward crossed with three conditions of informational cues. The subjects were made up of three subgroups of schizophrenia: paranoid reactive schizophrenia, nonparanoid reactive schizophrenia, and nonparanoid process schizophrenia. Groups consisting of eight to 10 men from all three subgroups were seen twice. In the first session, the subjects were administered the Shipley-Hartford Vocabulary Test (Shipley, 1940), the Ullmann-Giovannoni (1964) Process-Reactive Scale, and the WAIS Digit Span subtest. In a second session, the groups were given the five free recall tasks under one of three conditions of monetary payoff conditions (no reward, proportionate reward-one penny/word, and nonproportionate reward-two dimes) and one of the three conditions involving informational cues (no cues, increasing

cues across tasks, and all cues across tasks). Each recall task presented 25 nouns in five conceptual groups to be recalled. The cues consisted of statements in the material recognizing conceptual groups, grouping them, and recalling items. The no cue group was given task relevant statements that did not pertain to organizing cues but were not specified. No significant differences were found between the groups in the first session.

In the second session, the results revealed that performance reward and informational cues significantly increased the number of words recalled across all subjects. Performance payoff provided the greatest improvement in recall over nonpayment. On the other hand, there was no difference between proportionate and nonproportionate payment. Subjects receiving cues also performed significantly better than those not receiving cues. There was, however, no difference between the cues being presented in a single setting or the cues that were presented multiple times during different settings. Moreover, no significant difference was observed between the groups receiving both cues and payoff and the groups receiving only payoffs or only cues. Between the three groups, the process nonparanoid subjects were not significantly influenced by different information conditions and the reactive paranoid subjects were not significantly affected by different payoff conditions. Calhoun concluded that the performance of some

schizophrenics on a conceptual task may be modified.

Caulfield and Martin (1975) examined the effects of praise as a reinforcer as based on the motor responses of chronic schizophrenics. They studied 54 hospitalized males (aged 20-55) with the diagnosis of chronic undifferentiated schizophrenia. There were four parts to this experiment. The first involved a preliminary verbal conditioning paradigm. The subjects were initially shown 50 neutral nouns and asked to label them as either masculine or feminine. Half of the subjects were reinforced for labeling each word masculine and the other half for labeling each word feminine by one of two lights that stated either "Good" or "Bad." Second, a timed visual motor task was presented that involved turning a light on and off to determine a baseline reaction index. In the third part, the purpose was to pair "Good" with the termination of a negative reinforcer. Here, the same reaction task was administered to three groups: an experimental group received repeated pairing of "Good" with the termination of a censure tone which implied poor performance; a positive reinforcement control group received a tone with a positive connotation and "Good" on faster responses than the ones observed during the baseline; a punishment control group received a tone given neutral connotation and "Bad" contingent on slow responses. The fourth and final phase consisted of the same verbal conditioning task as in the

first phase.

The results revealed no significant difference between groups relative to the use of "Good" in the preliminary verbal conditioning and reaction time task for these subjects. The experimental and punishment-control groups showed significantly faster responses in the treatment conditioning phase. The experimental group also showed a significant increase in the frequency of responses in the fourth phase. The results indicated that "Good" had little effect on the performance of these subjects either in a verbal conditioning or reaction time task. On the other hand, significant results were obtained in reaction time where punishment involving censure and negative reinforcement involving the offset of a negatively defined tone were employed. The pairing of "Good" with the termination of censure also made it an effective reinforcer on the subsequent verbal conditioning task. As such, the greater effectiveness of punishment and negative reinforcement paradigms involving censure have been demonstrated.

Rierdan and Brooks (1977) examined the effect of verbal conditioning on the motor responses of middle and lower socioeconomic class schizophrenics. Here, 140 male patients in four Veterans Administration hospitals were examined; seventy were diagnosed as schizophrenic, and 70 were normal patients from medical and surgical wards. It is important

to note that none of the schizophrenic subjects were described as being delusional or paranoid. The schizophrenic subjects were also compared with medically ill patients. Five subjects from each of the four diagnostic/ socioeconomic groups (i.e., subjects from the middle class schizophrenic group) were reinforced with a positive or negative word, said in a positive, negative, or neutral tone of voice. A control group consisting of the same number of subjects received no reinforcement. Eighty stimuli items consisting of a neutral verb followed by the pronouns "I, We, You, They" were presented on a screen. Subjects were asked to make up a sentence for each stimuli with one of the four pronouns and verb. There were three positive word conditions, (i.e., positive word/positive tone, positive word/negative tone, and positive word/negative tone). The experimenter reinforced all sentences beginning with "I" or "We" with two different positive words-"Good" or "Right.". There were also three negative word conditions, (i.e., negative word/positive tone, negative word/negative tone, and negative word/negative tone). The experimenter reinforced all sentences beginning with "You" or "They" with two different negative words: "Bad" or "Wrong." The results revealed that the normal subjects scored significantly higher than the schizophrenic subjects in all reinforced conditions that entailed incongruent word/tone pairs, i.e., positive word/negative tone. Whereas there was

no diagnostic group differences in the reinforcement conditions in which word and tone were congruent, i.e., positive word/positive tone and negative word/negative tone. Social class also had an interaction effect but only among the normal subjects. The middle class normals learned significantly more than the lower class normals, but the middle and lower class schizophrenic groups did not differ from each other. These results conflict with earlier findings that stated schizophrenics respond only to tone.

Saddick (1981) examined how the effects of high or low expectations influence success on the motor performance of schizophrenics. Thirty chronic schizophrenics (21 males and 9 females aged 18-40) were matched on the basis of IQ intelligence and randomly assigned to three groups. The three groups were given the WAIS-R Digit Symbol subtest according to a pre-test post-test regimen twice under one of three groups (two experimental and one control). The treatments consisted of positive expectations, negative expectations, and a neutral group. In the first experimental group, the subjects were initially told that the task they were about to perform was "extremely hard for their age group, and they were expected to perform poorly" (p. 104). After the pre-test, these subjects were then told they had "performed surprising well relative to other subjects in their age group and were expected to perform very well on the Digit Symbol post-test as well due to the similarity of

the two tasks" (p.104). In the second experimental group, the subjects were told they would be given an "extremely easy task for their age group, and they were expected to perform very well" (pp. 104-105). After the pre-test they were told "that they had performed poorly on the pre-test relative to the other subjects in their age group, and they were expected to perform poorly on the post-test as well due to the similarity of the two tasks" (pp. 104-105). The subjects in the third group (no treatment/ control), were not given any information regarding the complexity and difficulty of the tasks. The results indicated that there was no significant differences between the three groups under the three different conditions. Saddick concluded that the Digit Symbol performance of the chronic schizophrenics does not vary as a function of high or low expectation instructions. The type of chronic schizophrenia was also not specified in this study.

Layne and Wallace (1982) measured the preferences of paranoid and nonparanoid schizophrenic adolescents and a non-clinical control group. Sixty adolescent schizophrenics and nonschizophrenics were examined. Twenty paranoid schizophrenics (13 male and 7 female), 20 nonparanoid schizophrenics (14 males and 6 females), and 20 non-clinical controls (13 males and 7 females) were compared (mean age 18.8, 17.0, and 16.7 respectively). Each subject was given a choice between two kinds of rewards and asked "Which would

you rather have?" (p.53). The rewards consisted of colored pencils, a picture of a rock group, a penny, bubble gum and verbal praise. The verbal praise reward consisted of the words, "You are doing a very good job" printed on a 3" X 5" card (p. 53). Each of the 10 pairs of rewards were presented sequentially, and the subjects were asked to effect their choice. In the case of verbal praise, the examiner said, "Would you rather have a (pencil, picture, piece of gum, penny) or have someone important tell you that you have been doing a real good job?" (p. 53) while pointing to the respective reward. The dependent measure was the number of times each subject chose each of the rewards over the rewards with which it was paired. The results revealed that there was a significant difference in the preferences of the groups across the five rewards. The schizophrenic subjects exhibited significantly less of a preference for praise as compared to the normal control subjects. There was no difference, however, between the praise choices of the two schizophrenic groups. The control subjects chose praise significantly more frequently than any of the other rewards. The schizophrenics did not exhibit significantly reduced preferences for the other tangible rewards. The nonparanoids did not significantly prefer one tangible reward over the other, but the paranoid subjects only chose the card significantly more than the penny and gum. The nonpsychotics chose both the gum and penny significantly more frequently

than both the pencil and the card. As such, the nonpsychotic subjects tended to present with wider variability relative to reward preferences than did the paranoid subjects. Layne and Wallace concluded that one reason schizophrenics are withdrawn and uncommunicative may be due to their apathy towards social rewards. It was also reasoned that this apathy may be responsible for their limited social skills.

Summary of Effects of Reinforcement on Schizophrenic's Performance

Of the 14 studies that were reviewed in this chapter, eight involved schizophrenic subjects. Seven studies involved the effects of reinforcements and one study dealt with reinforcement preference (Layne & Wallace, 1982). Of the eight studies, seven examined the effects of different forms of reinforcement on performance. Positive and negative verbal and nonverbal feedback were examined in four studies (Johannsen, 1961; Reirdan & Brooks, 1977; Saddick, 1981; Webb, 1954). The effects of verbal reinforcement combined with a negative tone was examined in one study (Caulfield & Martin, 1975). Material incentives constituted the independent variable in one study (Calhoun, 1970). The effects of electric shock were examined in another (Cohen, 1956).

There were significant effects in six studies that examined various reinforcement paradigms (Calhoun, 1970; Caulfield & Martin, 1975; Cohen, 1956; Johannsen, 1961;

Reirdan & Brooks, 1977; Webb, 1954). One study reported no significant results (Saddick, 1981). Of the six studies that reported significant results, two involved the use of negative feedback (e.g., Cohen, 1956; Webb, 1954), one tested the effects of material incentives and cues (i.e., Calhoun, 1970), and three studies that were combinations of positive and negative feedback (i.e., Caulfield & Martin, 1975; Johannsen, 1961; Reirdan & Brooks, 1977). The age range of the studies that were reviewed revealed that selected subjects ages ranged from 16-60 years (i.e., veterans, Calhoun, 1970; adults between 20-55, Caulfield & Martin, 1975; adolescents, Layne & Wallace, 1982).

Usually the term schizophrenics was used and occasionally the descriptor, "chronic" was employed in the absence of operational criteria. Only one study involved chronic undifferentiated schizophrenics (Caulfield & Martin, 1975). Only in Cohen's study (1956) were specific types of schizophrenia represented. Structured clinical interviews were not used to identify subjects in all of the studies that were reviewed. Whereas a variety of outcome measure were employed, only two reports employed the Wechsler subtests (Saddick, 1981; Webb, 1954).

Statement of the Problem and Rationale

Information about the mental ability of schizophrenic patients frequently plays an important role in treatment planning. Given accurate information about the intelligence

of schizophrenics, therapists may assign them to therapeutic regimens that are commensurate with their ability. By way of example, operant techniques have been shown to be very effective with low functioning patients (Lowther, Martin, & Nicholson, 1978; Saigh, 1981; Zigler, 1963). Patients with average or above average intelligence may be more suitable candidates for treatments involving personal insight such as cognitive behavior therapy (Garfield, 1989; Haaga, DeRubeis, Stewart, & Beck, 1991).

Due to the nature of the particular morbidity of schizophrenics, these patients frequently do not do well on evaluations that remain within the narrow guidelines for test administration as proposed in the Wechsler manual (Shakow, 1962). Although different reinforcement conditions have evinced different levels of achievement with schizophrenic samples, the effects of incentives on the WAIS-R performance of chronic undifferentiated schizophrenics has not been explored. Information pertaining to the effects of different reinforcement paradigms on a standardized test performance have also not been systematically explored with psychotic patients who met diagnostic criteria for chronic undifferentiated schizophrenics as measured by reliable and valid measures such as structured clinical interviews. It is recalled that clinical diagnoses interviews are unreliable (Saigh, 1992; Spitzer & Fleiss, 1974), and that data based on structured

interviews offers considerable more external validity relative to formulating generalizations.

Purpose of the Study

The purpose of this investigation was to compare the effects of different reinforcements (verbal, tangible, and neutral) on the WAIS-R Picture Arrangement, Vocabulary, Block Design, Arithmetic, and Similarities subtest performance of chronic undifferentiated schizophrenics. These specific subtests test cognitive and emotional skills that are difficult for chronic undifferentiated schizophrenics (Matarazzo, 1972).

Rationale and Hypotheses

As the literature review suggested that verbal praise was generally associated with improved performance (Batton, Squyres, & Lund, 1982; Johannsen, 1961; Krasner & Ullman, 1958; Reirdan & Brooks, 1977; Salzinger & Pisoni, 1958), the following hypothesis was proposed:

Ho 1. The mean scaled scores of the WAIS-R subtests in the verbal praise group would be significantly greater than the mean scaled scores of the WAIS-R subtests in the control group.

As the literature also indicated that token reinforcement effectively facilitated test performance (Ayllon & Azrin, 1968; Calhoun, 1970; Isaacs, Thomas, & Goldiamond, 1960; Kale, Kaye, Whelan, & Hopkins, 1968;

Paul & Lentz, 1977), the following hypothesis was proposed:

Ho 2. The mean scaled scores of the WAIS-R subtests in the token reinforcement group would be significantly greater than the mean scaled scores of the WAIS-R subtests in the control group.

Although verbal praise and token reinforcement improved performance with other populations, e.g., mentally retarded or normal children, the effects of such reinforcement on the intellectual functioning of schizophrenic subjects had not been systematically compared in the literature. Therefore, it was difficult to predict if one treatment would be more effective than the other. As such, the following hypothesis was proposed:

Ho 3. There would be no statistically significant difference between the scaled scores of the WAIS-R subtests in the verbal praise and token reinforcement groups.

Chapter II

Methodology

This chapter presents a description of the methodology for the study. Information involving subjects and subject selection, diagnostic and outcome measures, the independent variables, and research design is presented.

Subjects

Sixty English speaking adult male and female outpatients at a psychiatric clinic were asked to participate in the study. The clinic was located in the Williamsburg section of Brooklyn and was part of Kingsboro Psychiatric Center. Permission from the hospital institutional review board was obtained to use the clinic as a test site. Patients were randomly selected from a list of patients with an existing diagnosis of chronic undifferentiated schizophrenia. The study was individually explained to them, and they were asked to voluntarily participate in this research. In all instances, patients were required to sign a consent form before proceeding. Once informed and written consent was obtained, the subjects were interviewed by a staff psychiatrist to determine if they understood the purpose of the study and if their consent was voluntary. An assessment of the patient's capacity to consent was then signed by the psychiatrist. (See Appendices A and B for copies of the consent form and assessment of the patient's capacity to consent).

Each subject was given the Psychotic Screening Module of the Structured Clinical Interview for the DSM-III-R (Spitzer, 1988) to determine if they met the criteria for chronic undifferentiated schizophrenia. Only those who met the criteria participated in the study. The total pool consisted of 60 subjects. These cases were randomly assigned to one of three treatment groups (i.e., verbal praise, token reinforcement, and controls) without regard to the age, gender, and ethnic background of the selected subjects.

A total population of 60 clients were examined. There were 24 blacks, 16 whites, and 20 Hispanics. The average age of the patients in the three groups was 43. There were 29 males and 31 females. The subjects (9 males and 11 females) in the verbal praise group was comprised of 5 whites, 9 blacks, and 6 Hispanics. The subjects (14 males and 6 females) in the token group was comprised of 4 whites, 9 blacks, and 7 Hispanics. The subjects (6 males and 14 females) in the control group was comprised of 7 whites, 6 blacks, and 7 Hispanics.

A one-way ANOVA was used to compare the age of onset of schizophrenics in the verbal praise group (M= 23.30, SD=7.47), token group (M=23.65, SD=6.65), and neutral group (M=28.30, SD=8.83), and a nonsignificant value was observed. Likewise, a one-way ANOVA was used to compare total years of psychiatric impairment in the verbal praise group (M=18.30, SD=10.92), token group (M=15.95, SD=10.92), and neutral

group (M=18.00, SD=11.83), and a nonsignificant difference was found.

Table 1 presents the demographic characteristics of the selected sample.

Table 1

Demographic Characteristics of the Selected Sample

	SUBJECTS		
	Experimental Groups		
	Verbal Praise	Token Reinf.	Control
Mean Age	42.8	40.66	46.2
Age Range	26.1-65.2	20.9-67.2	26.1-66.3
Males	9	14	6
Females	11	6	14
White	5	4	7
Black	9	9	6
Hispanic	6	7	7
% on Public Assist.	90	90	90

Diagnostic Measure

The Structured Clinical Interview for the DSM-III-R (SCID), (Spitzer, 1988) is a structured clinical interview that is based on the DSM-III-R diagnostic criteria. It is comprised of a number of modules that are indicative of the

actual criteria that are used to determine if an individual has a particular disorder. Viewed within this context, the Psychotic Screening Module was used to identify psychotic symptoms that have been present at any point in a person's lifetime and to make a differential diagnosis of psychotic disorders. The Psychotic Screening Module initially consists of 17 statements (e.g. "When you were psychotic, were you taking any drugs or medicines," "Did it ever seem that people were talking about you or taking special notice of you?", "What about receiving special messages from the tv, radio, or newspaper, or from the way things were arranged around you") to determine current or lifetime diagnoses of psychosis. The specific ratings of each diagnostic criteria are coded by the examiner as either 1, 2, 3, or ? : 1 indicates that the symptom described in the criterion is clearly absent or that the criterion statement is clearly false; 2, a subthreshold condition almost meets the threshold for the criterion (e.g., a 10 day period of depressed mood, rather than the required 2 weeks), 3, the threshold for the criterion is just met or more than met or that the criterion statement is true, and ? indicates there is inadequate information to code the criterion as either 1, 2, or 3. A differential diagnosis of psychotic disorders is then followed by a similar coding system. The module takes approximately 30 minutes to administer and is read to the patient.

A test-retest reliability study of the SCID for the DSM-III-R diagnostic categories was conducted on 390 lifetime schizophrenics. A Kappa coefficient of .68 was found when comparing the SCID and clinical diagnoses that were made by expert clinicians on the basis of the DSM-III-R criteria. (Williams et al., 1992).

Outcome Measures

Wechsler Adult Intelligence Scales-Revised. The Wechsler Adult Intelligence Scales (WAIS-R) (Wechsler, 1981) is an individually administered intelligence test consisting of six Verbal and five Performance subtests.

The WAIS-R was selected as the dependent variable because it is a widely used measure of cognitive tasks. Picture Arrangement, Vocabulary, Block Design, Arithmetic, and Similarities subtests measure social adjustment, general intelligence and disorganization, abstract thinking, concentration, and concept formation that are all areas that have been known to be difficult for schizophrenics (Matarazzo, 1972). It should be noted that the correlation of these subtests with the Full Scale IQ using a corrected formula was .94 (Silverstein, 1982).

Selected Subtests of the WAIS-R

Picture Arrangement. This timed subtest consists of 10 parts each containing several picture cards that tell a story. They are presented in a random order and the examinee is told to rearrange the pictures in the right

order so they tell a story. This subtest measures the examinee's ability to comprehend and size up a total situation. It reflects social intelligence, and appropriateness in social situations, which is a common problem with schizophrenics (Matarazzo, 1972,). The split-half reliability coefficient for this subtest is .74 (Wechsler, 1981). Test-retest (stability) coefficients for two age groups (25-34 and 45-54) for this subtest are .69 and .76 (Wechsler, 1981). Correlation with the WAIS-R Full Scale is .67, Verbal Score is .70, and Performance Score is .62 (Lindemann & Matarazzo, 1984).

Vocabulary. This subtest consists of 35 words. The words are read aloud by the examiner and the examinee has to define the word. According to Matarazzo (1972), this test taps general intelligence and different levels of disorganization associated with the schizophrenic process. The split-half reliability coefficient for this subtest is .96 (Wechsler, 1981). Test-retest (stability) coefficients for two age groups (25-34 and 45-54) for this subtest are .93 and .91 (Wechsler, 1981). Correlation with the WAIS-R Full Scale Score is .81, Verbal Score is .85, and Performance Score is .65 (Lindemann & Matarazzo, 1984).

Block Design. This is a timed subtest which contains 9 items and requires the examinee to replicate abstract designs through the manipulation of red and white blocks. This subtest involves the ability to perceive forms, to

conceptualize abstractly, and concept formation (Matarazzo, 1972). Schizophrenics have difficulty perceiving, integrating, and using stimuli appropriately (Anderson, Reiss, & Hogarty, 1986). The split-half reliability coefficient for this subtest is .87 (Wechsler, 1981). Test-retest (stability) coefficients for two age groups (25-34 and 45-54) for this subtest are .91 and .80 (Wechsler, 1981). Correlation with the WAIS-R Full Scale is .68. Verbal Score is .61, and Performance Score is .70 (Lindemann & Matarazzo, 1984).

Arithmetic. This is a timed test consisting of 14 word problems. The problems are read aloud to the examinee. The problems, according to Rapaport, Gill, & Schafer, (1968) come from daily life and their solutions require that the examinee have available to him the standardized arithmetical operations, and that they be done in his head and without the aid of pencil and paper. The subtest taps mental alertness, attention, and is a good measure of general intelligence. (Matarazzo, 1972). The split-half reliability coefficient for this subtest is .84 (Wechsler, 1981). Test-retest (stability) coefficients for two age groups (25-34 and 45-54) for this subtest are .80 and .90 (Wechsler, 1981). Correlation with the WAIS-R Full Scale Score is .72, Verbal Score is .70, and Performance Score is .62 (Lindemann & Matarazzo).

Similarities. This subtest consists of 14 items.

Examinees are asked how two different items are alike. This subtest tests abstraction or concept formation. Abstraction is an adaptive function of the organism. Difficulties in abstracting are often the consequence of failure of adaptation which is clearly seen in schizophrenic patients (Matarazzo, 1972,). The split-half reliability coefficient for this subtest is .84 (Wechsler, 1981). Test-retest (stability) coefficients for two age groups (25-34 and 45-54) are .82 and .86 (Wechsler, 1981). Correlation with the Full Scale Score is .75, Verbal Score is .74, and Performance Score is .64 (Lindemann & Matarazzo, 1984).

Examiner

A white, male, MS level therapist at the Williamsburg Clinic served as the examiner. This individual was a certified school psychologist and had worked in the state system for over 20 years as a therapist on a civil service titled Psychology Two level position. This individual was well versed in the administration and scoring of the WAIS-R.

Procedure

Each subject initially received an administration of the SCID by the investigator to rule out subjects who did not fall into the diagnostic category of chronic undifferentiated schizophrenia. The subjects were then administered the selected subtests of the WAIS-R under neutral nonevaluative conditions. Sixty days later, the subjects were randomly assigned to one of three treatment

groups (i.e., verbal, token reinforcement, or neutral conditions) and the same measures were administered under one of the three regimens. This 60 day period between the first and second administrations was designed to limit the effects of testing on test performance, but also to ensure test-retest reliability which could be affected if the interval was too long. (Anastasi, 1982). It was also to ensure that the subjects were available and still in treatment at the clinic.

The schedule of reinforcement was a continuous reinforcement schedule. Different schedules of reinforcement vary according to a host of variables being examined (i.e., motivation, attention span). Schizophrenics have exhibited poor attention span and difficulty concentrating (Matarazzo, 1972) as well as poor motivation (Cohen, 1956). Stimulus reinforcement (Hamlin, Haywood, & Folsom, 1965), and continuous and nonproportionate reinforcement techniques have effectively modified schizophrenics' performance (Cohen, 1956; Calhoun, 1970). A continuous reinforcement schedule was thus implemented to maximize the schizophrenics' effort and help to maintain it (Skinner, 1953; Lindsley, 1956).

Treatments

Following the initial testing session, the subjects received one of the three treatment conditions. Each treatment condition consisted of 20 subjects and each

treatment session was conducted individually.

Verbal Praise: The subjects in this group were given the subtests and verbally reinforced by the examiner who stated: "Very Good," "Fine," "Keep it up," or "You are doing a very good job," after every response. These verbal responses were given in a random order. The subjects were told to attempt to try each item. Examiner comments were presented according to a continuous reinforcement schedule. In effect, verbal praise was presented after each response whether right or wrong.

Token Reinforcement: The following statement was read to the subjects in this condition:

> "You are going to have an opportunity to earn some money, chocolates, or a gift certificate. To do this, you must try to answer a series of difficult questions to the best of your ability. You should attempt to answer as many as possible. Depending on the amount of effort that you make, you will receive a number of tokens. Each token is worth 10 cents. Ten tokens may be exchanged for either two candy bars, or $1.00, or one gift certificate worth $1.00 at McDonald's. Total rewards can equal 16 candy bars=$8.20; $8.20, or a gift certificate worth $8.20 at McDonald's. Your effort will be rewarded if you try each item."

The schedule for this treatment condition also involved a continuous reinforcement schedule (i.e., tokens were

awarded after each response whether right or wrong). The rewards were given to the subjects one week after the testing session.

Control: Subjects in this condition received the standardized WAIS-R administration, that is, their efforts were not verbally or materially rewarded, and they were given the subtests in a neutral, nonevaluative tone as was described in the manual. In the neutral condition the examiner stated: "Let's try this," or "Here is the next item." The neutral comments were presented after every examinee response.

In order to avoid a contamination effect of those subjects in the verbal and token groups influencing the subjects in the control group, the control group was first given the post-test followed by the verbal and then token treatment groups. Once all the treatment groups had been completed, the verbal and control groups were also given gift certificates from McDonald's worth $8.20 to reward these subjects for their help with this research.

Research Design

The design for this study was a pre-test post-test control group design. The independent variable was the three forms of test administration examiner comments. The pre-test WAIS-R scaled scores for the selected subtests served as covariates. The outcome

variables consisted of the WAIS-R scaled scores for the selected subtests. Figure 1 presents a schematic representation of the data collection design.

Figure 1. Schematic Representation of the Data Collection Design

1	2		
Pre-test WAIS-R	Post-Test Treatment Groups		
Subtests	Verbal Praise	Token Reinfor.	Control
Arithmetic			
Block Design			
Picture Arrangement			
Vocabulary			
Similarities			

1 Administered under standard conditions

2 Post-tests will occur 60 days following the Pre-test

CHAPTER III

RESULTS

This chapter provides a description of the results. Information regarding the interrater reliability relative to the experimental procedures will initially be presented. This will be followed by the basic descriptive statistics and the results of a MANCOVA and univariate *F* tests.

The WAIS-R protocols were scored by an independent clinical psychologist who was not aware of the research hypotheses. A second independent examiner (a Ph.D. psychologist at Kingsboro Psychiatric Center) checked the scored protocols as well. Interrater agreement for scoring compliance was calculated on the basis of the number of agreements divided by the total number of disagreements times 100. Examined along these lines, interrater agreement was estimated at 95%. The scoring was based on the WAIS-R manual standard scoring procedure, which accounts for the high level of agreement. In those instances where discordant decisions were made, the principal investigator individually reviewed the test protocol in question and decided on the test score.

Table 2 presents a breakdown of the WAIS-R subtest scores for each of the three treatment groups. Viewed in this context, it may be seen that the scaled scores of the three groups were consistently below normal limits.

A multivariate analysis of covariance (MANCOVA) was

Table 2

Means and Standard Deviations by Treatment Group for the Selected Subtests

	Treatment Groups					
	Control (n=20)		Verbal Praise (n=20)		Token (n=20)	
Subtests	M	SD	M	SD	M	SD
Vocabulary						
Pre-test	5.95	2.09	6.25	2.05	6.75	2.20
Post-test	6.55	2.21	6.85	2.35	7.15	2.23
Arithmetic						
Pre-test	5.15	1.09	5.50	2.33	5.15	1.53
Post-test	5.30	1.03	5.45	2.19	5.60	1.98
Similarities						
Pre-test	5.20	2.33	5.00	2.73	5.00	3.06
Post-test	6.00	2.51	5.55	2.86	5.50	3.15
Picture Arrangement						
Pre-test	5.15	1.98	5.65	2.64	5.25	2.12
Post-test	5.70	2.54	5.70	3.01	5.55	2.35
Block Design						
Pre-test	5.70	1.75	5.50	1.91	5.70	2.03
Post-test	6.05	1.67	5.75	1.41	5.80	2.12

computed on the WAIS-R scaled scores with the pre-test scores as covariate, the treatment groups as independent variables, and the five post-test scores as dependent variables. MANCOVA combines the multivariate analysis of variance (MANOVA) procedure with the analysis of covariance (ANCOVA). This multivariate procedure enables the researcher to analyze all dependent variables simultaneously (Spector, 1981). The multivariate technique has several advantages. It maintains an alpha level that is not affected by the number of dependent variables. Secondly, this procedure prevents artificial inflation of group differences due to intercorrelations among the dependent variables (Yaremko, 1982). The covariance technique enables the variation to be partitioned into three components; variation explained by the covariate, variation explained by the treatments, and residual or unexplained variation (Porter & Raudenbush, 1987). Paired comparisons on neutral, verbal praise, and token reinforcement (verbal praise vs control, token reinforcement vs control, and verbal praise vs token reinforcement) were investigated with respect to dependent variables.

Table 3 presents the MANCOVA results.

Table 3

Multivariate Analysis of Covariance for Five WAIS-R Subtests Using Pre-tests as Covariates

Source	Wilk's Lambda	F	Significance
Verbal vs Control	.98	.46	.50
Token vs Control	.98	.28	.76
Verbal vs Token	.94	.01	.98

Hypothesis 1 stated that the mean scaled scores of the WAIS-R subtests verbal praise group would significantly exceed the mean scaled scores of the WAIS-R subtests of the control group controlling for the WAIS-R scores. The MANCOVA based on the Wilk's lambda criterion showed that there were no statistically significant differences found between the two groups, F (1, 37) = 0.46, p > .05. As such, the hypothesis was not supported. Hypothesis 2 stated that the mean scaled scores of the token group would be significantly greater than the mean scaled scores of the control group. The data analysis failed to show a significant difference between the two groups, F (1, 37) = 0.28, p >.05, and the hypothesis was

not supported. Hypothesis 3 stated that there would be no significant difference found between the scaled scores in the verbal and token reinforcement groups. The data analysis failed to show a significant difference between the two groups, F (1, 37) = 0.01, p >.05. This hypothesis was supported. In view of the nonsignificant differences, no follow-up tests were conducted for the individual WAIS-R scales.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary

This study compared the effects of two types of examiner comments (i.e., verbal praise and neutral, non-evaluative comments) and a tangible reinforcer (tokens) on the selected WAIS-R subtest performance of chronic undifferentiated schizophrenics. The subject pool consisted of 60 clients (16 white, 24 black, and 20 Hispanic) attending a psychiatric state out-patient clinic in the Williamsburg section of Brooklyn. Subjects were randomly assigned to one of three experimental treatment groups (i.e., verbal praise, token reinforcement, and control). Data analysis failed to evince significant effects between groups on five selected subtests of the WAIS-R. A general discussion regarding the observed results, and directions for future research are presented in this chapter.

Discussion

Verbal Praise

The first hypothesis predicted a main effect for examiner praise (i.e., that the mean scaled scores of subjects who received verbal praise would significantly exceed the scaled scores of the subjects who received neutral comments). Statistical analysis failed to support this hypothesis.

The nonsignificant effects may be associated with the psychiatric morbidity of the selected sample. It should be recalled that the subjects were chronic undifferentiated schizophrenics who were receiving outpatient services at a state-supported clinic. Earlier research (Calhoun, 1970; Cameron, 1939; Cohen, 1956; Johannsen, 1961; Matarazzo, 1972; Webb, 1955) has shown that schizophrenics have difficulty in sustaining attention and concentration. The DSM-IV indicates that undifferentiated schizophrenics experience delusions, hallucinations, and grossly disorganized behavior. Schizophrenics also experience problems with tasks that require abstract reasoning (Arieti, 1974; Cohen, 1956; Matarazzo, 1972; APA, 1994-DSM-IV). As such, it may be said that despite the fact that the experimental subjects received a systematic course of verbal praise, the host of symptoms that are indicative of their condition may have significantly limited their ability to perform on standardized measures that rely on attention, concentration, and freedom from distractibility (Calhoun, 1970; Malmamud & Palmer, 1938; Roe & Shakow, 1942; Saddick, 1981).

The nonsignificant effects are consistent with the results of earlier investigations involving schizophrenic samples (Cohen, 1956; Layne & Wallace, 1982; Johannsen 1961; Reirdan & Brooks, 1977; Saddick, 1981). Layne and Wallace (1982) observed that schizophrenics are not very responsive

to verbal reinforcement. Analogously, Saddick (1981) reported that schizophrenics may not be able to recognize and respond appropriately to verbal cues or discriminate stimuli. More specifically, Saddick reported a nonsignificant difference on the Digit Symbol performance of schizophrenics as a function of praise, verbal reprimands, or non-evaluative examiner comments. In a similar vein, Johannsen (1961) reported nonsignificant results on a visual motor task following a course of verbal praise. Reirdan and Brooks (1977) found nonsignificant effects when verbal praise made up of incongruent word and tone combinations was presented to schizophrenics following a series of motor responses.

It is of interest to recall that the investigators that reported significant effects with this population used a combination of verbal praise and reproof or just reproof (Caulfield & Martin, 1975; Cohen, 1956; Webb, 1954). Caulfield and Martin (1975) failed to evince significant results of verbal praise on visual motor tasks but did find significant results from a combination of praise and negative reinforcement. Cohen (1956) reported that negative reinforcement had a significant facilitating effect on how schizophrenics learned motor tasks. Cohen also observed that verbal reinforcement was not associated with a similar outcome. Webb (1954) reported that verbal reprimand on the Similarities subtest of the WAIS-R was associated with a

significant decrease in performance. As such, it may be argued that the exclusive use of praise in the absence of reproof may have failed to induce the attention and concentration of the subjects.

Token reinforcement

The second hypothesis predicted that the token reinforcement group would have significantly higher scores than the control group. Data analysis failed to support this hypothesis. A possible explanation for the lack of significance may involve the age of the selected subjects and their relative level of satiation.

Bradley-Johnson et al. (1986) reported that there may be an inverse relationship between the efficacy of token economies and chronological age. It is recalled that these investigators reported that the WISC-R performance of elementary school children was positively influenced by a token economy and that nonsignificant effects were observed when tokens were offered to an older group. Given that the mean age of the selected subjects (40 years and 6 months), it may be said that the subjects may have been less motivated to respond to the contingencies of reinforcement than a younger sample.

It should be noted that satiation may have had an influence on the observed performance of the subjects who were presented with a course of token reinforcement. It is recalled that Skinner (1953a) determined that the relative

valance of a reinforcer can be influenced by the previous schedule of reinforcement that was used to maintain the behavior of an organism. If a reinforcer is presented too frequently, an organism may fail to emit the desired response. With this point in mind, it is of interest to note that 90 percent of the subjects in the token reinforcement group were on public assistance, and that they received a mean monthly tax free income of $564, free subsidies that ranged in value from $10 to $80 per month in the form of food stamps, free housing, medical services, and medication. Given the aggregate amount of public assistance that the subjects were receiving, and as they were not required to work to receive this assistance (i.e., reinforcers), the noncontingent and abundant application of reinforcement may have served to limit the responsiveness of the selected sample to the possibility to earning $8.20 during the 30 minute assessment.

Verbal Praise vs. Token Reinforcement

The third hypothesis predicted there would be no significant difference between the mean scaled scores of the verbal praise group and token reinforcement group. Data analysis supported this hypothesis. Possible explanations for the observed nonsignificant effect main involve the previously mentioned points regarding psychiatric morbidity of these clients (e.g., poor attention and concentration, difficulty with abstract reasoning), nonresponsive to verbal

praise, inability to discriminate stimuli, age, and satiation.

Limitations

The external validity of this study was limited to subjects with similar psychological and demographic characteristics. It should be noted that the subjects (29 male and 31 female) were predominantly lower class white, black, and Hispanic clients with a mean age of 43 years old. Moreover, 90 per cent were on welfare. The ability to generalize may not extend to other populations or also other outcome measures e.g., neuropsychological tests like The Luria-Nebraska Neuropsychological Battery (Golden, Hammeke, & Purisch, 1980), or The Halstead-Reitan Neuropsychological Battery (Haldstead, 1947; Reitan, 1974). The results should also be viewed with the understanding that the principle investigator collected the data. As such, the possibility of an examiner expectancy effect must be considered.

Directions for Future Research

A number of studies that combined positive and negative reinforcements with this population have been found to be effective. Being sensitive to censure (Cohen, 1956; Webb, 1954), congruency of tone with positive and negative words (Caulfield & Martin, 1975, Reirdan & Brooks, 1977), as well as the effect of social versus nonsocial feedback (Johannsen, 1977) appear to influence the way that schizophrenics respond to reinforcement conditions. As age,

type of incentive (Layne & Wallace, 1982) as well as reinforcement schedules (Calhoun, 1970) may influence the frequency and quality of the responses of schizophrenics, research that systematically explores the effects of these variables would be of considerable interest.

Given that research has shown that schizophrenics are less responsive to social rewards (Layne & Wallace, 1982), it may be of interest to explore the effects of different reinforcers on performance of schizophrenics during the administration of standardized intelligence tests. Credit at a local food store or more substantial monetary rewards may serve to induce greater and better test scores. It would also be of interest to explore the effects of more aversive or negative reinforcement paradigms. Viewed along these lines, a response-cost procedure wherein subjects are told that they have a preset amount of credit (e.g., $20) and that each wrong answer will reduce automatically the amount of money that they are allowed to keep by a set amount (e.g., 50 cents) may serve to facilitate performance. Given that 90 percent of the subjects were receiving a host of free benefits, it would be of interest to replicate this study with schizophrenics who have not been receiving free housing, medical care and subsidized food.

Inasmuch as the present study only examined chronic undifferentiated schizophrenics with specific demographic characteristics, future research should consider exploring

the efficacy of verbal praise and token reinforcement on the Wechsler performance of clinical chronic undifferentiated schizophrenics from different economic strata.

Given that the experimental treatment involved a continuous schedule of reinforcement and as variable schedules have been associated with different outcomes (Skinner, 1953b), it would be of interest to replicate the current methods using an intermittent schedule of reinforcement.

Given that the WAIS-R directions require curtained assessment after a selected number of incorrect answers, it would be of interest to test the limits of the subjects by overlooking the manual requirements to stop testing after a given number of wrong answers. This approach would serve to increase the opportunity to shape a desired response over time.

Finally, it would be of interest to consider a follow-up study that compares performance of different groups under different testing conditions. A study comparing the performance of normal and schizophrenic subjects would serve to highlight responsiveness to treatment conditions as a function of psychiatric morbidity.

Appendix A: Consent Form

INFORMATION

"The Effects of Verbal Praise and Token Reinforcement on the Selected WAIS-R Performance of Chronic Undifferentiated Schizophrenics"

INVESTIGATOR

Robert Seligson, Psychologist 2

PURPOSE

To investigate various techniques to improve patients' performance during psychological testing.

PROCEDURES

Your help in the research project will involve completing a test two times within two months. The test will only involve answering selected parts of an standardized test and should not last more than one hour. A structured clinical interview will also be conducted during the first session.

RISKS

Patients will not be exposed to any risks. Your participation in this study is completely voluntary. You do not have to take part if you do not want to and you can change your mind and withdraw at any time. Your decision about whether to participate will not have any effect on any treatment or benefits to which you are entitled. All of the information that you provide will be kept confidential, and will not become part of your clinic record. All the test data will be kept in a locked file cabinet. The only people

who will be allowed access to the information will be myself, your therapist, and the doctor. When the results of the research are presented, I will not use your name or other information that could identity you.

BENEFITS

Patients who participate may learn new ways to improve their performance on psychological tests and may help others at the clinic in the future with their performance.

QUESTIONS

If you have any questions about this study, please call Robert Seligson at 718-782-1900. If you have any questions about your rights as a subject, please call Dr. George Demuth at 718-221-1391. Dr. Demuth is associated with the Kingsboro Psychiatric Center Institutional Review Board which will review this study and approve the recruitment of subjects.

CONSENT

Name of person providing this information_____

_____. I, _____ agree to

Name

participate in the research project described above.

_____ _____

(Signature of Subject) (Date)

_____ _____

(Signature of Witness) (Date)

Appendix B: Assessment of the patient's capacity to consent

This form must be signed by two psychiatrists or clinical psychologists currently having New York state license to practice.

INSTRUCTIONS:

The patient must be examined by at least two people who shall include:

1. An investigator who is part of the research team for the study in question and
2. A member of the patient's treatment team (this physician cannot be involved in the research project).
3. A copy of this form must be included in patient's treatment record.

"I examined_____ on _____ for the purpose of determining whether he/she is capable of understanding the risks and benefits of the research and consenting to his/her participation in Mr. Robert Seligson's project.

On the basis of my examination, I have arrived at the conclusion that

(a) This patient has capacity to consent at this time.

(b) This patient's capacity to consent is questionable at this time.

(c) This patient lacks the capacity to consent.

(Note: Check the appropriate box. If you want to give a detailed report, please use another sheet and enclose it with this form).

_____

Member of the Research Team

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