THE EFFECTS OF FAILURE ON GOAL-SETTING BEHAVIOR OF SCHIZOPHRENIC AND NORMAL SUBJECTS

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AN ABSTRACT

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The study concerned itself with the post failure goal setting behavior of a group of 32 mixed schizophrenics and a group of 32 "normal" subjects equated for age, education, intelligence and initial performance on the tasks to be used.

A level of aspiration setting was utilized for two tasks: (a) solution of simple addition problems (b) tweezer dexterity. These tasks were presented to the subjects as tests of intelligence and mechanical ability in order to "ego involve" them.

The two major groups were divided into two equated subgroups of 16 subjects. All four subgroups were given five practice trials on each task and five success trials during which they achieved their levels of aspiration.

From this point on the experiment consisted of a failure trial, in which level of aspiration was not achieved, followed by two success trials (referred to as post failure trials). This sequence was repeated five times for each task. The failure trials were differentiated into strong failure (in which only 50 per cent of the goal was reached) and mild failure (in which 90 per cent of the goal was reached).

Sixteen schizophrenic subjects and sixteen controls were exposed to strong failure, an equal number being exposed to mild failure.

Six variables were studied, viz: level of aspiration, discrepancy score, efficiency, reaction time, errors, and responses to questions asking for their subjective feelings after failure and success.

The hypotheses stated that after failure both schizophrenic groups should give higher levels of aspiration, higher discrepancy scores and

longer reaction times than the controls. Further that they should show lower efficiency, greater error scores than the controls, and finally that they should attempt to deny subjective feelings of failure more frequently than the controls. Also, that the schizophrenics in strong failure should show these reactions to a greater extent than those in mild failure.

The data, analyzed by means of the one tailed t test, substantiate all of the hypotheses. The data further indicate that there is some behavioral disruption due to failure in the control strong failure group. Though they do not react as strongly as the schizophrenic groups, they do show a higher level of aspiration after failure than they did in success. They also show lower efficiency and greater reaction time. The above findings also apply when they are compared to the control mild failure group.

The findings are interpreted in accordance with Cameron's theory of reaction sensitivity to failure.

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INTRODUCTION

Knowledge of the goal a person sets for himself is important for the true appraisal of the efficacy of his behavior and for the understanding of his reactions to environmental stress. Such goals may be explicit and formulated by the individual himself who announces, for instance, his intention of running a certain distance in a given time, or the formulation may come from the environment which prescribes a standard of achievement which the individual has to attain. In either case the setting of the goal is the first step toward action which will culminate in attainment or non-attainment, in success or failure. The subjective feeling of success or failure will in its turn influence other goal settings, as well as other goal oriented behaviors.

A comparison of the goals of different individuals as well as a comparison of their reactions to success and failure may thus prove a useful approach to the study of personality make-up.

The present investigation is concerned with the goal setting behavior of schizophrenic subjects in a situation which threatens them with failure in various degrees. To an extent the writer hopes to show the connection between failure situations and the "unrealistic" behavior toward the world which is clinically noted in schizophrenia.

Specifically the writer wishes to correlate the changes in goal setting behavior with changes in the outcome of preceding experiences, with previous success or failure.

However it is difficult if not impossible to compare directly the principal goals in life of any individual or of any group of individuals. The problem has to be narrowed down to enable objective measurement. One of the better known approaches to this problem has been via the studies in level of aspiration. Here one can observe the setting of goals, their accomplishment or non-accomplishment and the effect of this success or failure on future goal setting, and on objective performance in certain specified tasks.

As will be seen in the review of the literature, these studies began with qualitative observations, and only recently has there been some attempt to quantify the approach. Though there is nothing sacred in quantification per se, it is of some help particularly when one is still in terra incognita.

In the writer's opinion, Frank's (14) introduction of the discrepancy score (the difference between previous performance and subsequent goal), lent clarity to the further studies of level of aspiration. It represented an advance over Hoppe's (39) qualitative method of evaluation. Rotter's pattern analysis (62) represents an even more fruitful way of dealing with the problem.

Measures of rigidity or lack of responsiveness to success and failure, as well as objective measures of performance in success and failure conditions also have been of help in clarifying the complexities of the individual's reaction to success and failure in a goal setting situation.

The control of success and failure, first introduced by Jucknat (45), again added to the certainty of measurement. While the studies of

Bayton and Holt (4, 36) which have attempted to control ego involvement have brought further facets of the problem to light.

Recently Steisel and Cohen (67) have met another problem in the methodology of level of aspiration studies. In their study they defined failure in terms of two criteria: (a) non-attainment of level of aspiration (b) social disapproval. Their method allows them to set up degrees of failure beforehand and to control for them. Though some objections may be leveled at this equation of subjective feeling of failure and objectively controlled failure, it must be admitted that as yet no accurate method of ascertaining subjective feelings of failure exists, and that the controlled method, by defining failure independently of the results, does add to precision of measurement.

Thus with the passage of time level of aspiration studies have become more precise. Their use in studies with certain clinical groups which was at first decried because the method itself had not been sufficiently explored, seems at present advisable, and perhaps even necessary; for it seems to the writer that success and failure and the reactions of persons to them, in both performance and setting of future goals is a most important area in the field of psychopathology. Schizophrenia, as one of the most prevalent and least understood of the mental disorders, bears definite investigation along these lines.

Thus, it may be asked: Does the schizophrenic set his aspirations beyond his performance ability in a greater measure than do other people? What are his reactions to mild and strong failure in settings of success? How do his reactions to mild and strong failure differ from that of normals in a setting of basic success? Is the schizophrenic

able to modify his aspirations in line with his actual performance as much as others? Does the pattern of reaction to success and failure seen in schizophrenics resemble that of those who have had many failures in life?

These are the basic questions which this investigation attempts to answer, in the hope that some small particle of knowledge may be added to the existing concepts of schizophrenia.

REVIEW OF THE LITERATURE

Early Studies in Level of Aspiration

The term "level of aspiration" first came to the attention of the psychological world as a result of Tamara Dembo's study "Anger as a Dynamic Problem." (8). By presenting her subjects with insolvable problems she was able to elicit reactions of anger directed against themselves. Dembo accounts for this via the construct of "level of aspiration," which she felt determined whether a given performance would be acknowledged as successful or not by the subject.

A second student of Lewin's, F. Hoppe (39), continued to investigate this phenomenon described by Dembo. By observing his subjects in a wide variety of simple tasks given in a relatively free situation, he felt that he was able to infer experiences of success and failure from their spontaneous utterances and general behavior. These subjective experiences of success and failure seemed to depend, according to Hoppe, not as much on the actual performance, as upon what the individual expected of himself.

Thus, if in a task of target shooting, the subject feels fairly certain that he can hit the fifth ring from the center and then only hits the seventh, he is likely to express his disappointment over his experienced failure. However, if in the course of subsequent trials he continued to hit within the seventh and eighth rings from the center, a hit on the sixth ring would be experienced as success, as he no longer expected to hit any closer than the seventh ring. In this case the

subject experienced failure over a particular goal at one time, and success over a lesser goal at another time. This specific goal, the level of difficulty which a person chooses to attempt in a situation where he has a choice between tasks of different degrees of difficulty, is what Hoppe defined as "level of aspiration."

The "level of aspiration," as can be noted from the above is not static and absolute, but tends to fluctuate with the fortunes of the day. Hoppe found that success experiences tended to raise the level of aspiration while experiences of failure lowered it. However, this generalization is only an approximate one, as there seem to be many individual differences in goal setting. It was the existence of these differences which led Hoppe to stress the value of this technique in the assessment of personality.

Of course the difference in "level of aspiration" is not only a function of individual differences, but also of the task itself. Hoppe describes a "borderzone of ability," that is a certain range of task difficulty within which this phenomenon seems to occur. Thus tasks perceived as too simple or too difficult do not elicit levels of aspiration.

Hoppe's work may be seen as an extension of Dembo's on a qualitative plane. It was totally dependent on the acuteness of observation and liable to the errors of all purely qualitative evaluations.

Jucknat (45) whose work followed Hoppe's, undertook to quantify the method. She used a series of paper and pencil mazes of increasing size and complexity. These she arranged on a table in the form of a ladder, with the smallest and easiest on the bottom.

The subject was informed of the difference in the difficulty of the tasks, asked to choose any one of the mazes and instructed to complete it at another table. The particular maze which the subject chose was considered his momentary level of aspiration, as it was the one which he apparently expected to do. The raising or lowering of the level of aspiration could be judged by his subsequent choices.

Jucknat also introduced the technique of controlling for success and failure. This was accomplished by introducing a set of unsolvable mazes which were given along with the ordinary set. She arranged her experiment so that one group of subjects first experienced failure and then success, while another group experienced success first. Jucknat's quantifiable study substantiated Hoppe's qualitative pioneer work.

One of the most persistent investigators in this area has been J. D. Frank (14, 15, 16, 17, 18, 19). He has used tasks of a somewhat different nature, such as printing with the fastest possible speed, and ring tossing.

In Frank's studies the subjects are first given a few trial runs to acquaint them with the task. At the end of each of these practice trials they are told how long they have taken to do it. After a number of practice trials they are then asked to estimate the time they will take to complete the task on the next trial. At the end of this trial they are again informed of their scores and again asked to state their next aspiration. By this method the goal is expressed in the same units in which goodness of performance is measured, (i.e. time) thus enabling direct comparison to be made between level of aspiration and level of performance.

Frank uses two principal scores to evaluate goal setting behavior (a) the goal discrepancy score (D score) which is the difference between previous performance and subsequent goal and (b) the percentage score of typical reactions to success and failure (i.e. lowering level of aspiration after failure and raising it after success).

Special Characteristics of Level of Aspiration Scores

Individual differences. Frank's primary interest is in the psychological determinants of the level of aspiration and in the individual differences observed in this situation. He assumed past performance at any time depends primarily on the relative strength of the following needs: (a) the need to keep the level of aspiration as high as possible regardless of level of performance, (b) the need to make the level of aspiration approximate the level of future promise as closely as possible, (c) the need to avoid failure where failure is defined as a level of performance below level of aspiration regardless of its absolute goodness.

He also assumed that certain types of behavior on level of aspiration express what are usually termed personality traits.

Frank offers evidence to show that the difference between level of aspiration and level of past performance in a given task represents a relatively permanent characteristic of personality, and that this permanence can be demonstrated regardless of the type of ability that the task requires. He presents data to show that the traits manifested in the experiment are to a large extent independent of the physical nature of the tasks. Frank suggests that the size of the average level of past performance is due to the involvement of the "ego-level" of the

individual in the task, as shown by self-competition and social pressure.

Reliability of level of aspiration scores. Many subsequent investigations of the level of aspiration have been carried out in the last decade. These include investigations of the reliability of the technique by means of the split half reliability method and by retests after an interval.

Frank (14) found reliability coefficients ranging from 0.57 to 0.75, the lowest correlation (test-retest) obtaining in quoit tossing which he explains as a function of the fact of the task's, game like, and thus irreal character. These findings were challenged by Gould (26) who found reliability to be quite a bit lower. Gardner (24) using controlled success and failure as well as various tasks obtained reliability coefficients ranging from 0.79 to 0.98. Heathers (32) also found that "as in other aspiration studies the aspiration scores were found to be highly reliable. The corrected odd-even correlation between the mean deviation scores ranged from 0.93 to 0.99 for all tasks with every group of subjects." (p. 348).

Lewin et al. (51) state "The difference between the results of Gould and Frank is perhaps due to the greater diversity of the tasks used by Gould and the lesser amount of control over the subjects attitudes in the Gould experiment." (p. 347).

Generality of level of aspiration behavior. Generality of the behavior has also been examined by several psychologists (14, 24, 26, 32). The correlations were all positive and such as to warrant Frank's description

of the behavior as a "relatively permanent characteristic of personality." (14). This generality is not absolute and is affected to varying degrees by situational factors, by similarities of abilities tested as well as by the amount of success and failure experienced.

Levels of reality. Another factor which has been examined and which also affects generality is the level of reality-irreality.

Gould (26) found that the level of aspiration statement had four possible meanings (a) the average level or the actual score expected the next time (b) the least level or the lowest score expected (c) greatest or highest score expected (d) a mixed grouping in which the subjects shifted the three levels according to the momentary situation. She found that different persons used different levels of approach to the request for an aspiration level as a function of their defensive needs. Thus some consciously gave a lower level than they expected to get, while others gave a higher level than they could hope to reach. She concludes that "the evidence points to the fact that the estimates given in this and similar situations do not accurately express what the individual is striving for." (p. 47).

Frank (17) experimentally varying these levels found that subjects asked "what do you think you will do" were more realistic than those asked "what do you intend to do."

Festinger (13) found that a group asked "what score would you like to get "has significantly higher discrepancy scores than a group asked "what do you expect to get;" the former group also evidenced greater variability in levels of aspiration. These results were corroborated by Irwin and Mintzer (42) who found that an increse in motivation has

a significant effect on the two approaches to level of aspiration. In the "prediction" group strong motivation led to a lowering of the discrepancy score (more realism) while in the "hope" group, to a higher discrepancy score (less realism).

Preston and Bayton (60) and MacIntosh (52) found that the "least level of aspiration" (the lowest score one might attain) was lowered by failure and even by reaching the level of performance (60) attained by a superior reference group. The other two levels were not significantly different, though both investigators did find that all of their subjects tended to place the actual and maximum estimates closer to each other.

Holt (36) found results similar to Irwin and Mintzers. Controlling success and failure and asking for three levels of aspiration, he noted that in neutral and variable conditions subjects tended to give maximum estimates a little more than four points better than their preceding performance score. In success, however, this was markedly decreased to only 2/3 of a point whereas in failure it was dramatically increased to more than 18 points. "The least levels", in keeping with the study of Preston and Bayton and that of MacIntosh, were raised in success and lowered in failure.

In summary, the level of aspiration seems to vary with success and failure, either directly experienced in the present, or anticipated as the result of broader life experiences. Thus, the negro subjects in the study of Preston and Bayton (60) lowered their levels of aspiration even when informed that their performance equalled that of a white group. As Gould (26) pointed out, the statement of the level of aspiration is a complex phenomenon in which wishes and fears play a predominant role.

Reality-irreality also play a role in the type of task chosen. Both Frank (14) and Gould (26) have found less consistency in behavior in tasks which are playlike in character. Holt (36) (vide infra) interprets these findings in terms of more or less ego involvement.

Forces Operating in Goal Setting

General Forces. The dynamics of goal setting have been analyzed by several writers (13, 18, 42, 51). According to Frank (18) "the level of aspiration represents the final investigation of complex and constantly shifting personal and situational factors" (p. 219). Different investigators, notably Frank (17) and McGehee (53) have shown that the goal the individual sets himself is not simply an intellectual estimate of his performance but that conative factors play a part in determining this estimate. Thus, if a subject is instructed to predict his score in dart throwing (state his level of aspiration) while another subject is instructed to estimate the score which the first subject will obtain, we find that "the estimator is more cautious in interpreting the relation between the score and bids in any series of trials than is the bidder." (52, p. 10).

Frank (16) states that the verbal statement of a goal is the resultant of a conflict or choice between realistic judgement, the desire for self protection, and the desire for gratification of one's self esteem. The judgement factor would tend to approximate the goal to the actual performance, the other two factors work to distort this judgement. Of these two factors self protection tends to lower the goal so as to increase the opportunities for exceeding it at the subsequent trial.

The other factor however, works in the opposite direction; it tends to push the goal up and is bound up with the individual's opinion of himself.

The preponderance of either of these two factors over judgement, results in a deviation of the level of aspiration from that of performance, in either a positive or a negative direction. The extent to which any of the three tendencies mentioned above will operate, will largely depend upon the degree of the involvement of the ego-level (Hoppe's term).

Ego Involvements and Levels of Aspiration

Both Hoppe (39) and Frank (14) use this term to indicate the setting of ideal goals and as self regard. Holt (37), in a brilliant review of ego involvement, feels that this is rather confusing and states that perhaps self regard is probably the most valid definition of "Ichniveau" (ego-level).

Though the ego level has been talked of since the beginning of level of aspiration studies, little actual work has been done with it. Sears (64) states that "social values incorporated in the ego become reference points for self judgements of success and failure, that is, that a child cannot succeed or fail in an activity which has for him no ego value." (p. 526). In her study she found a few subjects who were less involved in school work than were others. Three out of four of these children gave inconsistent response patterns which Sears felt may be due to a lack of ego involvement.

Heathers (32), though not primarily concerned with ego involvement, did find that her highly motivated group (high school students who were applying for a college scholarship) gave more consistent (more highly intercorrelated) responses than did a group of college students paid by the hour to participate in an experiment.

Irwin and Mintzer (42) may be considered the first experimenters to have controlled ego involvement. Their control group was told that the experiment had not as yet begun and that they were in a practice session; while the experimental group was instructed to do their best in the dart throwing and were given a further incentive by being told that their performance scores would be posted on a bulletin board. As noted above the ego involvement group showed consistent results on two levels of aspiration (the hope group giving higher discrepancy scores, the prediction group lowering them).

Bayton (4) operationally defined ego involvement by asking his subjects which of two tasks (arithmetic and cancellation) they would prefer to excel in. The task so chosen was defined as the ego involved task. He found that a high expectation of future success was associated with good subsequent performance only in the ego involved task.

Holt (37), in an intensive experiment with 10 subjects in which both ego involvement and success and failure were controlled, found that level of aspiration behavior could be more successfully correlated with personality traits when it resulted from relatively more ego involved tasks. He states "When more ego involved .... the aspiration loses its close integration with other responses to the task at hand. It becomes an expression of something deeper, more personal, less determined by outer and more by inner forces." (p. 314).

Though both Frank (14) and Hoppe (39) considered "ego-level" as both a combination of ego ideal and self regard, they tended to emphasize the latter interpretation. Sears (64) also tended to emphasize the ego involvement in the latter terms -- as the extent to which an individual considers his performance as an expression of his own worth. Holt (38) in an experiment involving predictions of future grades on examinations, found results contrary to those of Bayton's (4). He states that the level of aspiration may be either goal striving or esteem defense; if it is the former then one might deduce that a higher level of aspiration should, if ability is held constant, be positively correlated with subsequent achievement. If it is the latter, no relation should obtain. He found that no correlation between aspiration and achievement existed when past level of achievement was partialled out. He concludes (a)

> When ego involvement is minimal, levels of aspiration have little motivational significance, being primarily rational judgements. /cf. Frank (17) and McGehee (53)/ (b) When ego involvement is present but at low intensities, levels of aspiration have some defensive meaning, but reflect to some extent the intensity of motivation. (c) When ego involvement surpasses a certain limit, defensive considerations become paramount and the level of aspiration becomes more complexly determined. (pp. 413-414).

The strength of the ego involvement seems to be a function of (a) the task itself (b) the environmental factor or reference scales against which the individual evaluates his performance (c) the personality make up of the individual.

Characteristics of The Task

Festinger (13), Escalona (10) and Lewin et al. (51) have pointed to the fact that the level of difficulty of the task plays an important part in goal setting. They state (51):

> The greater the degree of difficulty .... the higher the valence of success, within the boundary zone of ability. The absolute value of the negative valence of failure usually changes in the opposite direction. On levels of extreme difficulty the negative valence of failure would be negligible. (p. 361).

Thus it would seem that a person would always try for the most difficult task or consistently keep as high a level of aspiration as possible.

However, the question of probability enters into the picture. That is, the chances of success or failure are evaluated in terms of certain scales of reference, and the estimate of performance is formed accordingly.

External Reference Scales

Reference scales in terms of mythical or actual competitors have been experimentally produced. In these experiments the scores obtained by certain groups are given to the subject at some time during the task (usually at first) and the level of aspiration is observed.

Anderson and Brandt (3) in an experiment with fifth grade children, in which previous performance on given tasks was publicly posted, found that there was a convergence of the level of aspiration toward the group mean.

> Those in the lowest ranks of achievement consistently set goals considerably above their past achievements. Those in the upper ranks of achievement set goals considerably below their preceding achievement .... (Thus) .... the level of aspiration in all .... achievement groups tended consistently toward mediocrity. (p. 232).

The same result obtained in the experiments of Hilgard, Sait and Magaret (33) with college students.

Gilinsky (25) informed college students about mythical performance scores on a vocabulary test obtained by individuals with certain I.Q.'s.

She then had them state their I.Q. and the score they hoped to achieve and compared the difference between the subjects own estimation of his I.Q. and that of the comparison group, and its effect on the expected performance on the test. She found as had Chapman and Volkman(7) that if the subject judged his ability to be superior to that of the comparison group that the level of aspiration went up, if on the other hand the comparison group was perceived as a superior the opposite result was obtained.

Preston and Bayton (60) and MacIntosh (52) corroborated this with white and negro students. Preston and Bayton working with groups of negro students gave one group fictitious scores which white students supposedly reached, and told the other group that negro students had reached a certain score. They found that the group which was compared to the whites lowered their "least estimates" in situations in which they were informed they were doing as well as whites, significantly more than the other negro groups when they were told they were doing as well as negroes. They concluded that the need to avoid failure is strongest when the students are compared to a socially superior group. MacIntosh (52) reversed the situation by having a group of whites "compete" with a mythical negro group. He found that the "highest" and "actual levels" (the most one might achieve and what one <u>really</u> expected to do in the task) were raised but that the least level remained the same.

The expectancy of success and failure is thus well illustrated in terms of external reference groups. If the group is seen as superior, failure is expected in direct competition; therefore, the expected achievement goal is lowered (7.25) or the expectancy of failure is

accepted via lowering of the least estimate of possible performance (60). But even this behavior is not simply determined. We note (3, 33, 34) that if a person is too far behind the crowd he tries to catch up, and if too far ahead he slows down a little. As Holt so nicely puts it (38) "a person asked for a level of aspiration is under social demands of a conflicting nature: his statement should be realistic, expressive of enough modesty, and yet show him to be properly ambitious." (p. 412). The dominance of any one of these attributes seems to be a function of that situation: realistic when one is told ahead of time that literary critics have achieved a certain score on a test of "literary ability," (7) modest when one sees ones-self conspicuously ahead of one's peers, (3) ambitious and perhaps defensive when one is far behind (3) or when one competes with social inferiors, (7).

Internalized Reference Scales

Other reference scales are internalized. Sears' (64) very illuminating study of successful and unsuccessful school children points to significant differences in their level of aspiration behavior. Her studies show that children who are academically successful have a relatively low discrepancy score (i.e. their level of aspiration approaches their level of performance) and show a high degree of responsiveness in their level of aspiration to changes in the level of performance. Conversely, subjects whose achievements are below the average of their group have a high positive discrepancy score (i.e. level of aspiration is considerably above their past performance) and are less responsive in goal setting behavior to changes in their performance level. Moreover,

their standard deviations as a group are larger, their goal setting behavior being less uniform than that of the success group. Gould (26) obtained high discrepancy scores from individuals who came from a low socio-economic background, while those who came from upper-middle class homes gave low discrepancy scores. Previous life experiences related to success and failure are thus extremely important in goal setting and seem to act in much the same way as immediately experienced success and failure.

Attempts To Use Goal Setting Behavior Diagnostically

Other studies have tried to link level of aspiration behavior to personality traits.

Level of Aspiration and traits. The first systematic approach along this line was pioneered by Frank (19) who attempted to correlate deviation score and rigidity with personality traits obtained via a paper and pencil test. He found that a high positive level of aspiration yielded a correlation greater than +0.20 with narcissism, aggression, emotionality, creativity, projectivity, intensity. Rigidity correlated better than +0.20 with counteraction, impulsion, and endurance and -0.20 or better with succorance and harm avoidance.

Previously Hoppe (39) had spoken of some relation of level of aspiration behavior to ambition, prudence or daring, self confidence or feeling of inferiority and courage to face reality. Jucknat (45) suggested a tendency to fear failure, ambition and prudence as possible variables. However, both of these were speculative attempts to account for the subject's behavior in the level of aspiration situation.

Gardner (24) tried to correlate the level of aspiration behavior with ratings on subjective achievement level, dissatisfaction with status, general sense of security, importance attached to intellectual achievement, tendency to face failure frankly, realism, fear of failure and motivation. Though some trends appeared in his data he concluded that no consistent relationship existed between level of aspiration and any one of the variables dealt with.

> In other words the mistake of Hoppe, Frank and Jucknat was not in suggesting that such factors were operative but in claiming that a particular sort of aspiration level behavior could be directly and unequivocally traced to the action of any one particular force .... (the) level of aspiration behavior (rather) is due to the particular organization or constellation of these factors in the given individual. (p. 203).

Gould and Kaplan (28) in another attempt to correlate personality factors conclude "all that can be said at present is that what is elicited in the 'level of aspiration' situation is not the same thing as revealed by the questionnaires." (p. 38).

More recently Klugman (48) using the McFarland-Seitz Psychosomatic Inventory as a measure of emotional stability found trends which he felt were "high enough to indicate that there seems to be some .... relationship between size of discrepancy and emotional stability as measured by the Inventory." (p. 114).

Lewin et al. (51) state in relation to these correlational studies:

> the evidence is far too slim to provide a solid basis for future thinking in this area. The variables so far investigated are probably too broad and generalized to be usefully isolated as correlatives or determinants of specific level of aspiration scores such as the goal discrepancy. (p. 351).

Holt (36, 37), however, did find some significant correlations, in ego involved situations, between level of aspiration behavior and

personality traits, which were obtained from a questionnaire "Common Forms of Behavior," but only with ten subjects.

Rotter (63) has indicated that certain stable modes of reaction to the level of aspiration situations do obtain. His analysis of extreme scores suggested the presence of several patterns of response and also suggested that the interpretation of the meaning of any score depended upon the relation to other scores. Using deviation score, frequency of shifts, unusual responses (lowering in success, raising in failure) forgetting to state the bid, as well as an analysis of incidental behavior and comments he has arrived at nine definite patterns. In his experiment he used fifty Worcester State Hospital Employees, forty-five College Students (both normal controls), twenty-one crippled College Students, eighteen Prisoners (both experimental groups.) His patterns which he states are not discrete include in order of descending adjustment level: (1) low positive discrepancy pattern, (2) low negative or very slight positive deviation, (3) medium high deviation, (4) achievement followers, (5) step pattern, (6) high positive deviation, (7) high negative deviation, (8) rigidpattern, and (9) confused or breakdown pattern.

He concluded that the full value of this technique for clinical and some experimental purposes lies in the consideration of the whole pattern of response rather than of the deviation score or any other single score. Rotter feels that his results indicate that the test roughly demonstrates the degree of feelings of inferiority or inadequacy and the nature of the defense or compensation with which the subject attempts to meet his feelings of inadequacy. He considers the test to be clinically

diagnostic to a high degree at the extremes. Diagnostic accuracy within the group of less extreme responses appears reasonably high but further work is necessary to determine this more accurately.

In general it may be said that attempts to correlate personality traits arrived at by paper and pencil tests with results obtained in a level of aspiration setting have not proven their worth. Perhaps it is as Gardner (24) states that level of aspiration variables are too broad and generalized to be correlated with personality inventories. But the fact that these inventories are far from the best indicators of personality characteristics, should also be considered.

Studies With Clinical Groups

A more feasible approach may be via clinical groups where somepredictions in terms of known or hypothesized dynamics may be made.

Studies with neurotics. Eysenck and Himmelweit (11) and Himmelweit (35) have conducted experiments with two groups of neurotics, and have compared these to normals. In the first experiment (11) two groups of neurotics; hysterics and affective syndromes (differentiated previously by a factorial study) were compared.

Following Jung's typology they hypothesized that the introverts' (affectives) level of aspiration should be less affected by success and failure than that of the extroverts (hysterics). Using a modified pursuit rotor they found that (a) affectives show greater interpersonal variability than hysterics, (b) hysterics show greater intrapersonal variability, (c) affectives tend to keep the level of aspiration at the same level after both success and failure whereas hysterics did not.

They conclude that the affectives (anxiety, depression, obsessional, irratable or apathetic cases) were more rigid and subjective, neglecting external reality whereas hysterics placed their emphasis on objective and factual relations. In a comparison with normals Himmelweit (34) found that the neurotic scores spread over a wider range than did the normals; there was a bi-modality to the neurotic groups' scores (cf. above). Both groups however overestimated their level of aspiration, also both underestimated their past achievement, the difference between the groups being quantitative rather than qualitative. In general , normals were more realistic than neurotics, placing their level of aspiration somewhat in keeping with their estimation of their past performance.

Studies with psychotic groups. Escalona (10) was the first to attempt an investigation with psychotics. She administered 4 series of paper and pencil mazes, controlling for success and failure by Jucknat's (44) method, to 16 manics,,24 depressives and a control group of 33 college students.

Although she states that the number of cases analyzed were inadequate for statistical purposes, certain trends did appear. The depressives kept on the same level of aspiration for all tasks, success and failure alike. She felt that they were less influenced by the character of the situation but by inner forces which changed little during the experiment. The manics though aspiring high at first lowered their level of aspiration after the first encounter with failure. She stated that the manics approached the task superficially, and in accordance with their moods and increased self esteem, they tended to shoot high

simply because they never considered failure possible. However, only one encounter with failure was enough to lower their level of aspiration and to keep it there.

A more recent study by Miller (57) with four clinical groups (conversion hysterics, character disorders, paranoid schizophrenics and neurasthenics) merely adds to the already existing confusion. His findings with the neurotic groups are almost contradictory to those of Eysenck and Himmelweit (11). Using a three dimensional form board, the Carl Hollow Square Scale, Miller found that the conversion hysterics were "the most defeated group. The mean goal discrepancy is lowest; it has the fewest S's with positive median goal discrepancies and the fewest with a majority of positive individual goal discrepancies, (and further) the conversion hysterics consistently predict that their scores will go down." (57, p. 386).

This is in contrast to Eysenck and Himmelweit's statement that hysterics as "extroverts" are sensitive to the environment and will adjust their levels of aspiration to the success and failure of the preceding trial. Miller's neurasthenic group though not exactly equivalent to the so-called affectives shows many of the latter's traits (anxiety, depression, apathy), and so may be roughly compared. Again we note discrepancies. Whereas Eysenck's affectives were relatively rigid and unresponsive to external reality (i.e. to success and failure) keeping their levels of aspiration at virtually the same level throughout the whole of the experiment, Miller's neurasthenics "find it difficult to predict anything but improvement." (p. 385).

The writer is unable to account for these diametrically opposite results with only the published data available to him. However some

differences in method (e.g. induced degree of motivation, control of success and failure) as well as selection of the population may account for the results. In a way this highlights the great difficulty of experimentation with goal setting behavior. The amazing thing is not that the literature sometimes yields contradictory results, but that in the assessment of so complex a phenomenon we have had the overall consistency obtained up to the present time.

With character disorders Miller again found rather consistent reactions. He stated that "the character disorders .... appear to be the most realistic group" (57, p. 386) in terms of level of aspiration. However, they "reveal considerable conflict and anxiety in the face of possible failure .... they seem to be so fearful of failure that they cannot risk predicting improvement even when such a prediction is warranted." (57, p. 386).

His normals like Eysenck and Himmelweit's are the most responsive of the experimental groups. They exhibit a slightly positive discrepancy score and "compared to the psychiatric S's (they) seem less overwhelmed by the possibility of failure." (p. 386).

Studies using schizophrenics as subjects are almost as rare as those using other clinically diagnosed groups. Hausman (31) in an early study with a diverse group of psychiatric patients found that paranoids showed a rigidity and a stubbornness in clinging to a rather high level of aspiration despite any change in performance. He does not report any other significant observations, with paranoids and he apparently did not investigate any other schizophrenic groups.

Recently Bowman (5) and Kyle (49) have attempted more quantitative studies with groups of schizophrenics. Both attempted somewhat unsuccessfully

to correlate goal setting behavior with the Rosenzweig P. F. test. However, both did find that in general schizophrenic patients tended to show a significantly higher positive goal discrepancy score than did the normal subjects, and further that schizophrenic patients showed some trends toward rigidity (i.e. they were less responsive to previous experiences of success and failure than were normals.)

Bowman used a group of thirty schizophrenic patients in her experiment. They were randomly selected from a group of male patients who were under forty years of age and who had been hospitalized for less than five years. The sample consisted of 10 patients diagnosed hebephrenic, 1 simple, 9 paranoid, 3 catatonic and 7 mixed schizophrenics. A control group of 30 males picked randomly from the hospital staff was also used.

The task consisted of rolling wooden balls so that they would sink into cups on a board twenty feet away. No attempt was made to ego-involve the subjects, nor was there any control of success and failure. She found (a) that the discrepancy between the level of aspiration and the level of past performance was significantly higher for her schizophrenic patients than for her "normals", (b) that while no difference existed between performance scores, the schizophrenic group's level of aspiration score was significantly higher than that of the "normals", (c) the aspiration and performance scores of the control group were somewhat highly correlated (mean r.465) whereas no such correlation existed for the schizophrenic group (mean r.030), (d) that the schizophrenic group showed some tendency toward more rigidity, i.e. invariance of response, than did the controls, though this did not reach statistical significance.

Using the Rosenzweig Picture Frustration test she found that no significant difference existed between the schizophrenic and control groups on any of its nine factors. She did find a correlation of 0.322 between the group conformity score on the Rosenzweig and the average D score for normals while the schizophrenic group's D score correlated at a non-significant level (0.115).

She also found that the so-called super-ego score (extra and intro punitiveness scores combined) correlated significantly with D for the schizophrenic groups but not so for the controls. However, she made no attempt to account for these results, rather dismissing the Rosenzweig Test as a probably invalid instrument.

Kyle (49) performed essentially the same experiment with better controls. His population consisted of 64 male schizophrenics (16 of each type) and 64 normals matched for age, education and socio-economic background.

The subjects were presented the Rotter Jensen Form-board (a board with a series of depressions over which the subject shoots a ball bearing by means of a short cue), as a task of motor coordination. Failure was controlled by means of surreptitiously raising the angle of the board in such a manner that high scores were made impossible; success however, remained uncontrolled.

Kyle's findings agree essentially with Bowman's. He found (a) that there were no significant differences between the beginning levels of aspiration for normals and schizophrenics, (b) the schizophrenic group as a whole showed a higher deviation score than did the normals, (c) the schizophrenic group showed a higher level of aspiration than did

the normals, (d) the schizophrenic group was more rigid than the control group but not at a statistically significant level, (e) the control group generally raised their level of aspiration after success and lowered it after failure while the schizophrenic groups remained at the same level or raised after failure as well as after success, (f) paranoids and hebephrenics were the most rigid of the schizophrenic groups staying on the same level despite any change of fortune, (g) paranoids in general had a significantly higher level of aspiration than did the other schizophrenic groups.

His results with the Rosenzweig P. F. test are also similar to those of Bowman in their lack of clarity. He found only three intercorrelations to be significant for the schizophrenic group (-0.57 in the paranoid group between average D and general conformity, -.161 in catatonics between average D and general conformity, and -0.50 in simple schizophrenics between average D and need persistence).

No significance was found in the normal groups between the Rosenzweig and goal setting behavior.

Essentially then, these two studies are in agreement. Kyle's conclusions are very similar to Bowman's: (a) the high discrepancy score is interpreted as a rejection of reality, and also as related to anxiety, insecurity and a general lack of self confidence, (b) the rigidity noted is interpreted in terms of the rigidity often seen in schizophrenic behavior.

Miller's (57) results with a group of paranoid schizophrenics more or less corroborates the work of Kyle and Bowman. While the paranoids as a group show only a low positive mean discrepancy score and thus

resemble the normal controls, "the paranoid schizophrenics are comparable to the neurasthenics in their devotion to high attainment .... when the reality situation requires prediction of the same or a lower score, the schizophrenics still feel compelled to estimate some improvement." (p. 385).

Thus it seems that somewhat consistent results have been obtained in the studies of goal setting with schizophrenics. All investigators but Miller found rather high positive goal discrepancies in their schizophrenic groups. All have found some sort of lack of responsiveness to the demands of reality. But as yet no one has been able to attribute these behaviors specifically to failure. Of the four experiments cited only Miller's was designed to make it possible to abstract post failure behavior from pre-failure behavior. Despite this, Miller does not specifically make the needed analysis.

None of the four investigators have studied the effects of different degrees of failure with schizophrenic patients.

None of the four investigators have studied the effects of failure on performance.

For these reasons a study which can control success and failure in an objective way and which can further control degree of failure seems to be called for. Only in this does it seem possible to begin to establish or disprove whether the behavior noted in goal setting situations is explicable in terms of reaction to failure.

Summary

The basic problem posed by this discussion may be stated as follows: What effect does failure have on the goal setting behavior of a

group of schizophrenics? It has been noted that it is difficult if not impossible to compare directly life goals of individuals or groups, but that one might obtain information bearing on the question posed via a level of aspiration experiment.

A brief history of the method, of its special characteristics and of the attempts to use it to further explore personality, indicate that more recently, better controlled studies of goal setting behavior have been carried out. The method, at first quite qualitative, has become more quantifiable. As a result of this, studies with various groups are more feasible and more meaningful. Despite this, comparatively little work has been done with schizophrenic patients.

The studies which have been published consistently indicate a higher level of aspiration and a greater degree of rigidity among schizophrenic patients, but none have as yet attempted to link these directly to failure, nor have any attempted to control the degree of failure.

It is to this task (the relation of goal setting behavior to failure) that this study addresses itself.

SCHIZOPHRENIA FAILURE AND FRUSTRATION

Theories of Schizophrenia

The problem of achieving a thorough understanding of the schizophrenic processes still remains unsolved. The thinking on the nature of schizophrenia has ranged from the completely organic approach postulated by Kraeplin to the more environmental approach advocated by Adolf Meyer and more recently by Cameron. The Freudians seem to hold an intermediate position between the two. Abraham (1) feels that there is a congenital psychosexual constitution for Dementia Praecox, which predisposes the individual toward withdrawal in the face of conflict. He emphasizes that unlike neurosis where the conflict is internal, the battle of the psychotic person is between the ego and the outer world.

Freud (21), writing somewhat later than Abraham, plays down the "psychosexual constitution" though he does not abandon it. He states,

> There always remains as a common feature in the etiology both of the psychoneuroses and the psychoses the factor of frustration - the lack of fulfillment of one of those eternal uncontrollable childhood wishes that are so deeply rooted in our composition, phylogentically foreordained as it is .... Now the pathogenic effect depends upon whether in the tension of such a conflict the ego remains true to its allegiance to the outer world and endeavors to subjugate the id or whether it allows itself to be overwhelmed by the id and thus torn away from reality. (p. 253).

Fenichel (12) who summarizes the major analytic work up to recent times stays quite close to the above formulations. He feels that frustration is an important aspect, but that unlike the neuroses where frustration alone is operative, in schizophrenia both constitution and precipitating experiences play complementary roles.

Cameron (6) feels that schizophrenia is a disorganization of the biosocial reaction system which characterizes personality. Lacking ability in role taking as a function of early difficult childhood experiences, the schizophrenic, faced with a series of serious life problems, cannot adequately deal with them, and slowly retreats beyond the reach of the world and its frustrations.

Recently Jenkins (43) has postulated the hypothesis "that schizophrenia is a progressive maladaptation resulting from frustration beyond the tolerance of the patient." (p. 256).

Using Maiers (55) theoretical framework as a basis, Jenkins feels that continuous frustration beginning in childhood "inevitably leads to further frustration, the process [being] typically progressive." (43, p. 256). He cites numerous references which point to the fact that the schizophrenic patient has as a child been either rejected or overprotected by the parents who are described as "overpowering parent(s) with whom it would be more than usually difficult for a child to establish his individuality, his self, without doing so through negativism or schizophrenic withdrawal." (43, p. 246).

Cameron (6) states essentially the same thesis when commenting on the growth and development of schizophrenic patients, namely that the parents are either rejecting or overprotecting. This behavior leads to the development of self attitudes which lead the individual to become unusually "reaction sensitive" to signs that he may be guilty, inferior or unworthy in the eyes of others. That is to say, that as a result of these acquired self attitudes they may be more ready to react to stimuli in the environment in a manner consistent with these attitudes. Thus,

derogatory or unfriendly comments are more readily perceived by persons who are "reaction sensitive" to signs of inferiority and guilt. As time goes on a "progressive reaction sensitization" occurs, i.e. a "process in which a person, once he has become reaction-sensitive in some specific direction, continues to develop further readiness-to-react in the same direction on the basis of successive acquired reactions." (6, p. 69). Thus, in time even neutral stimuli may be interpreted in terms of this basic frame of self reference, leading to delusions, hallucinations and other clinically observed abberations.

Fromm-Reichmann (22) states:

> traumatic experiences in this early period of life will damage a personality more seriously than those occurring in later childhood such as are found in the history of psychoneurotics. The infant's mind is more vulnerable the younger and less used it has been; further, trauma is a blow to the infant's egocentricity. In addition early traumatic experience shortens the only period in life in which an individual ordinarily enjoys the most security thus endangering the ability to store up, as it were, a reasonable supply of assurance and self reliance for the individual's later struggle through life. Thus is such a child sensitized considerably more towards the frustrations of later life than by later traumatic experience. Hence many experiences in later life which would mean little to a healthy person and not much to a psychoneurotic mean a great deal of pain and suffereing to the schizophrenic. His resistance against frustration is easily exhausted. (p. 413).

Summary. These authors seem to view the schizophrenic in terms of early childhood frustrations and failures which leave the individual "reaction sensitive" to many more frustrations. The sensitivity leads to an increase in frustration, the frustration leads to maladaptive behavior which may be seen as defensive. This behavior by definition does not gain the effects which are desired from the world and leads to greater frustration and so on, cyclically.

The Effects of Frustration on Goal Directed Behavior

One of the most potent areas of frustration lies in the field of interpersonal relations, particularly in setting and achieving goals. As Alexander (2) has pointed out, our children are filled with stories of great accomplishment and ambition, with the feeling that the world belongs to anyone who will get out and work, but the reality of this frontier philosophy cannot be easily realized. The results can often be disasterous to the adolescent and young adult. In this connection Adolf Meyer [quoted in Jenkins (43)] states:

> The greatest difficulty in life, the greatest source of disharmony, apart from the influence of heredity, infectious disease and poor feeding and poor chances of growth, is the discrepancy between impulse yearning and ambition, on the one hand and the actual opportunities and the actual efficiency of performance on the other. We know people who try continually to put square pegs into round holes. They are unable or unwilling to learn to know and to accept their own nature and the world as it is, and to shape their aims according to their assets.
>
> In a large percentage of cases in which persons come to grief in their mental and moral health, the trouble is of just that kind. Failing with what is frequently impossible and undesirable anyhow, these persons develop emotional attitudes and habits and tendencies to fumble or to brood or to puzzle or to be apprehensive until what students of the functional diseases of the head call 'a break of compensation' occurs, a break of nature's system of maintaining the balance with a more or less sudden slump and implication of collateral functions.

It is known that children who have experienced continuous failure before, act unrealistically in an experimental goal setting situation (64), either setting the goal far too high, striving as it were only to create an impression of their ambition, or even perhaps living in a dream world in which the statement of the goal is magically equivalent to its attainment; or setting the goal ridiculously low and gaining satisfaction from the fact that they are not as bad as all that. Preston

and Bayton's (60) negro subjects show similar sensitization to defeat presumably as a function of the conviction of their inferiority to whites.

Studies with those who apparently were not sensitized to failure (inferiority) seem to indicate the same unrealistic defensiveness when the stigma of failure is inevitable. Sears (64) found that in a severe failure situation:

> the general hostility level was less for the failure than for the success subjects. The frequency of daydreaming and autistic thinking was sharply increased, and the social responsiveness (was) reduced .... All this reduces the possibility of his having new experiences or of initiating new ways of behaving. He avoids the environment.
>
> Second in direct relation to this, failure leads to a dogged but ineffectual continuation of the task at which failure occurred. What interaction with the environment there is, is in the direction of the old activity. But the old activity is half avoided, and the card sorting is unfinished in order to avoid the danger of failing; this effectively precludes success, and therefore, the person fails anyway ....
>
> Finally, the process of decontextualization that failure subjects exhibit serves in still another way to reduce their adjustive effectiveness. This process splits off the activity from its social frame of reference, reduces its contact with reality, and hence decreases the opportunities for the person to check upon the task's importance by reference to reality. (pp. 256-257).

Kendig (47) testing a group of college students on the production of words beginning with the letters "c" and "s" found that under experimentally induced failure, there was more perseverative activity. Lantz (50) found significant differences between a previously equated success and failure group on the Binet Form M. She concluded that the experience of failure in an unrealted activity seems to have a great effect on mental processes.

Katz (46) in a recent failure experiment found that subjects who failed drew human faces with a great deal less expression. He explains the drawings and the incidental failure behavior in terms of "(1) covering up or self concealment (to) insulate the person against the power

field of the thwarter (2) apathy or depressed psychological functioning (which) reduces emotional tension and lessens awareness of the implication of failure." (p. 348). He states that in failure, "Emotional tension is reduced as failure aroused attitudes and feelings lose their sharpness and intensity. And as cognitive processes become dulled the painful significance of failure is lost. Secondly communication with the external environment is reduced, i.e. the person is both indifferent and inactive." (p. 347).

Marquart (56) duplicating Maier's rat experiment with human subjects found that some of her subjects became fixated while other did not. She explained this bimodality in terms of threshold, i.e. that fixation occurred only in those cases where the impact of punishment exceeded the frustration threshold.

This threshold concept has been elaborated by Eglash (9) who states:

> according to this principle there is some thing we can term as a limit or capacity which organisms possess for tolerating or enduring increments of excitation. As accumulative increments mount, quantitative changes pile up until the limit of the animal's capacity to contain them is reached. When threshold level is reached, something different from what has been happening before then occurs. There is a quantitative change. (p. 84).

French (20) in a theoretical paper lists several prevalent reactions to frustration: (a) concentration upon overcoming the obstacle; here the goal remains unchanged, new energy is expended, renewed effort is tried. "at least temporarily the original goal is forgotten. The energy of the original wish is concentrated upon the task of overcoming the obstacle. Not the original goal but the obstacle becomes the center of interest." (p. 65) (b) Deflection to avoid the obstacle; this may include getting around it or modifying the goal.

These French labels successful attempts to deal with non attainment of a goal. The unsuccessful attempts do not differ in kind from the above but only in intensity. Thus concentration on the obstacle may become fixation on the obstacle and deflection, neurotic substitution.

This difference in the effects of failure may be seen in Hurlock's (41) study. She found that reproof as well as praise acted as an incentive and both increased efficiency of performance when compared to a "no comment" situation. However continued reproof over several days led to a disintegration of efficiency. Steisel and Cohen (67) controlling degree of success and failure found that in a setting of success even strong failure is motivating, as a function of "achievement expectancy." In other words, if the subject is accustomed to success, whether it be in life experience or in an experimentally produced situation, an occasional bump on the head can spur one on, if failure has been the mode it can only lead to non-adaptive defensive behavior.

Summary. Many theorists include frustration as one of the possible factors in schizophrenia. In an achievement oriented culture such as ours failure to obtain one's goals can be, as Meyer [in Jenkins (43)] points out, a major cause of frustration. If as Cameron (6) and Jenkins (43) assume the schizophrenic, as a function of many many early frustrations, is "reaction sensitive" to them, has a lowered threshold as it were, it is possible to conclude that a little frustration will go a long way with schizophrenic patients.

It has been noted, particularly in Sears' study, (65) that apparently "normal" individuals will become withdrawn, rigid, and perseverative

in the face of strong failure. However, if the failures are tempered by success as in Steisel and Chen's study (67) they apparently can be tolerated and may even prove to be motivating. Thus it seems to be a matter of degree not of kind. This is not unlike the reaction of two persons, one of whom is sunburned, to a slap on the back. A slight tap will not disturb the unbaked person, while it might result in considerable pain for the other. However, a rather lusty blow will even effect the latter.

Thus with frustration, it seems possible that slight amounts will elicit rather unrealistic behavior in schizophrenics, but not in normals. If it can be assumed that failure to achieve a stated goal is frustrating we can change the above proposition into a more testable form by substituting the word failure for the word frustration.

Hypotheses

The first major hypothesis of this study can therefore be stated as follows:

Hypothesis I. After failure the schizophrenic subject will be less influenced by his past performance in goal setting than will the control group.

Thus:

Hypothesis a. The schizophrenic subjects will tend to give a higher level of aspiration following failure than will the controls.

Hypothesis b. The schizophrenic subjects will tend to give higher levels of aspiration following failure than in success.

Hypothesis c. The schizophrenic subjects will give higher levels of aspiration following strong failure than they will following mild failure.

Hypothesis d. The schizophrenic subjects will tend to give a higher positive discrepancy score (level of performance of the previous trial minus level of aspiration for the next trial) after failure than will the controls.

Hypothesis e. The schizophrenic subjects will give higher positive D (discrepancy) scores following failure than they do in success situations.

Hypothesis f. The schizophrenic subjects will give higher positive D scores following strong failure than they will following mild failure.

The second major hypothesis may be stated as follows:

Hypothesis II. As a result of the postulated reaction sensitivity to failure the quality of work of the schizophrenic subjects should be more disrupted than that of the controls.

Therefore:

Hypothesis a. The schizophrenic subjects will show a greater drop in efficiency (seconds taken per item) following failure than will the controls.

Hypothesis b. The schizophrenic subjects will show a greater drop in efficiency after failure than after success.

Hypothesis c. The schizophrenic subjects will show a greater drop in efficiency following strong failure than they will following mild failure.

Further:

Hypothesis d. The schizophrenic subjects will show a greater number of errors following failure than do the controls.

Hypothesis e. The schizophrenic subjects will show a greater number of errors following failure than after success.

Hypothesis f. The schizophrenic subjects will show a greater number of errors following strong failure than after mild failure.

Hypothesis III. The schizophrenic subjects will attempt to withdraw from the failure situation to a greater extent than will the controls.

Hypothesis a. The schizophrenic subjects will take a longer time to state their next level of aspiration after failure than will the controls (this is referred to as longer reaction time).

Hypothesis b. The schizophrenic subjects will show a longer reaction time after failure than after success.

Hypothesis c. The schizophrenic subjects will show a longer reaction time after strong failure than after mild failure.

Hypothesis d. The schizophrenic subjects will attempt to deny a subjective feeling of failure more often than will the controls.

Hypothesis e. The schizophrenic subjects who experience strong failure will attempt to dany a subjective feeling of failure more often than those who experience mild failure.

METHODOLOGY

Requirements of the Experiment

As has been noted before, the results obtained in several studies which involved level of aspiration behavior have been unclear or even contradictory. Part of this lack of clarity must be attributed to the inadequate use of experimental controls. There can be no doubt that goal setting behavior even in a quasi-artificial experimental situation is extremely complex. Since the effect of many factors on goal setting are as yet unexplored, they must somehow be held constant, or at least minimized.

Requirements in the selection of the groups. Several factors seem to be of great importance in the selection of the group: (a) Age — Though no experimental evidence has as yet been produced showing a direct connection between age and level of aspiration, the possibility that a shift in levels of aspiration occurs with aging cannot be ignored. (b) Education — This seemed to be of importance in this study since one of the tasks required the solution of arithmetic problems. Even though these problems were of a relatively simple nature, it seemed as if educational background might make a difference in terms of ability and confidence with which the problems were approached. Since initial levels of aspiration are often a function of past performance [cf. Kyle (49) and Bowman (5)], any difference in ability and/or confidence might reflect itself on goal setting behavior. (c) Intelligence — This was also a possible factor to be considered in relation to the first task

(arithmetic). Again its effect on ability in the practice trials and indirectly on goal setting had to be controlled. (d) Initial Performance Ability on the Tasks -- As has been noted this seems related to initial levels of aspiration. (e) Degree of Reality Contact -- All of the schizophrenic subjects used had to be in sufficiently good contact (as determined by a brief interview) to follow the given instructions. (f) Lack of Neuropsychiatric Disability in the Control Group.

Requirements in the selection of the task. The criteria for tasks to be used in a goal setting behavior experiment have been listed by several writers, among them Holt (38), Rotter (62) and Gardner (23). They may be summarized as follows:

a) The task should be able to pass as a measure of whatever ability the examiner claims it measures,

b) The task should be able to be divided into units of performance so trends can be easily seen,

c) The nature of the task should be such that the primary emphasis can be put on time rather than on achievement or errors, since the subject finds it much harder to judge time accurately,

d) Brief trials should be feasible so as not to tire the subject,

e) The task should be interesting enough to guarantee sustained attention.

Some controversy exists about the novelty of the task, Rotter (62) and Gardner (23) both considering this of importance. However, Holt states: "To have used tasks of the neutral or colorless character that Rotter and Gardner demand would have been to insure that they were removed as far as possible from ego involvement." (38, p. 92).

These then are the prerequisites which were considered by the writer in selecting the groups and the tasks. Undoubtedly more uncontrolled factors exist but only further research can bring them to light.

The Groups

Basis of choice of the control group. As noted above the basic criterion for inclusion in the "normal" group was a negative psychopathological history. Since the members of the control group were all patients at a Veteran's Administration General Medical and Surgical Hospital, it was relatively easy to obtain case histories. The case history along with an opinion obtained from the patient's physician constituted the basis of choice. The following factors were considered: (a) no history of hospitalization for a neuropsychiatric disorder, (b) no hospitalization for a psychosomatic complaint, (c) no history of encepholopathy, (d) negative history of accident proneness, (e) opinion of the attending physician as to current absence of psychopathology.

Basis of choice of the schizophrenic group. The schizophrenic group posed a few more problems in selection. Since the hypothesis concerned the behavior of schizophrenics in general as opposed to specific sub-categories, the writer faced the problem of getting a representative group. Three possibilities existed (a) Bowman's (5) method of obtaining a random sample from the hospital regardless of subcategory, (b) Kyle's (49) method of obtaining individuals representative of each category, (c) obtaining a diagnostic sub-group which might show a cross section of schizophrenic pathology. The last method was chosen, and a group of mixed or unclassified schizophrenics was selected. There were

several reasons for this: (a) the population of mixed schizophrenics was one of the largest in the hospital with the possible exception of the paranoids, (b) with the exception of paranoids this group had the greatest number in good contact, (c) this group by definition (58, 67) showed a mixture of behavioral manifestations seen in all of the other categories, (d) to an extent one had to worry less about "pure" cases here than in any of the other groups, thus making criteria of choice simpler.

The paranoid group was not used, as it seemed least representative of the schizophrenics both in terms of age, intelligence, etc., [cf. Cameron (6), Noyes (58), Hunt and Cofer (40)] as well as in terms of goal setting behavior [cf. Miller (57)]. A representative sample of each subcategory was rejected since: (a) Kyle (49) and Bowman (5) indicate that in general there is a much greater difference between schizophrenics and controls than among schizophrenics thus making it feasible to test only one group, (b) Hebephrenics and catatonics in good contact were not available in sufficiently large numbers, (c) Clearly defined diagnoses of schizophrenics subgroups by means of objective or projective tests is not feasible or at least has not been conclusively demonstrated.

A randomized selection was avoided since if the criteria of good contact is used a preponderant amount of paranoids will accumulate. (vide supra). The specific criteria utilized for the choice of the schizophrenic group, other than the normative data were (a) diagnosis of schizophrenia type unclassified after review of the case by the hospital staff (psychiatrists, psychologists, social workers). (b) Agreement of the

results of the Rorschach with this diagnosis. [cf. Schaefer (p. 78)]. (c) Lack of any definite projective tendencies of long duration, as determined by the history. (d) Relatively good contact with reality (as determined by a brief interview previous to testing).

The normative data. For purposes of the experiment the schizophrenic and control groups were both divided into two subgroups of 16 persons each. An attempt was made to match all subgroups as to age, education, intelligence, and performance ability. Intelligence was measured by means of the C.A.S., a short form of the Wechsler consisting of the Comprehension, Arithmetic and Similarities subtest [cf. Rabin (60) for reliability data on this short form]. Performance ability was measured by the level of performance reached on the last of the five practice trials with each task (vide infra). The results are presented in Table 1.

TABLE 1

A COMPARISON OF THE GROUPS WITH RESPECT TO SOME NORMATIVE FACTORS

	Schizo. Group 1	Schizo. Group 2	Control Group 1	Control Group 2
Age M	26.2	26.8	25.9	26.7
S.D.	5.29	6.03	5.84	5.28
I.Q. M	102.5	101.9	102.5	101.4
S.D.	5.20	5.64	4.84	5.72
Ed. M	10.2	10.2	10.1	10.1
S.D.	1.59	1.51	1.54	1.68
Perf. Task I	9.87	9.63	9.62	9.93
S. D.	2.20	2.36	2.38	2.36
Perf. Task II	9.00	8.94	9.06	9.43
S.D.	1.92	1.52	1.52	1.15

As can be seen the groups are fairly close to each other in all of the factors which we considered. This is no doubt due to the manner of selection. The following normative criteria were employed in the group's selection: (a) Age range of 19-38 years. (b) I.Q. range of 90-110. (c) Educational range of from 8-12 grades.

The Tasks

The Arithmetic Problems. Twenty-five sets of 30 simple two digit addition problems were used for the first task. The problems were constructed with the aid of a table of random numbers. To further aid in randomizing possible difficulty one problem was written on each of the twenty-five pages which were then shuffled. The second problem was then written on each page, and the pages were again shuffled. This continued until there were thirty problems on each page.

The use of thirty problems was arbitrary. However, the following considerations had to be taken into account. (a) There should be a sufficient number of problems to offer some sort of a challenge to the subject when told he was to complete as many as he could in a given time, (b) the number of problems should be suffieciently large to allow for the possibility of continuously increasing the level of aspiration over all of the trials, (c) on the other hand, there should not be so many problems that the subject would be discouraged from the start. In general the use of twenty-five trials of 30 arithmetic problems each meets all of our stated criteria for the task. They were introduced as a test of intelligence, and the writer feels that in most cases they were accepted as such by the subjects.

The second task. The one objection which can be leveled against the use of arithmetic problems is that arithmetic is often an emotionally loaded task, and that there might well be definite intragroup and/or intergroup variability as a function of the subject's attitude toward arithmetic. This might well effect our other measurements. In order to control for this, a second task was also presented. This consisted of a modification of the Johnson O'Connor Tweezer Dexterity Test (59). This test consists of a board in which small holes have been drilled. The object is to lift a metal pin from a tray by means of a tweezers and insert it in the hole, starting with the lower right and working each row from left to right. The original test consists of one hundred holes (10 rows of 10). Since brief trials were considered essential for our study, seven of the ten rows were covered by a piece of cardboard leaving thirty holes available. This task was presented as a test of mechanical aptitude, and seemed to be accepted as such.

Time limits. It is obvious that if the subject were given unlimited time in either of the tasks he could easily complete them. The time limits had to be set in such a way as to allow the individual to do several problems or put in several pins, thus encouraging him, but they also had to be set in such a way as to prevent his completing all of the problems in the first few trials, thus leaving nothing more to aspire to.

The determination of the optimal time for our groups had to be on an empirical basis. At first the thirty second time limit used by Steisel and Cohen (67) was tried with the arithmetic problems. The subjects (five randomly selected schizophrenics and five matched attendants)

finished from 8 to 15 problems (M 12.5) on the first trial. This was felt to be too many problems so a time limit of 20 seconds was used on a second group of five schizophrenics and five attendants. The mean in this case was about 8.4 problems. This was felt to be satisfactory as (a) no subject subjectively seemed disappointed at his score, (b) this performance left a rather wide goal to shoot at both in terms of further learning and in terms of aspiration.

A similar study of the second task was attempted with the same two groups. In this case 30 seconds seemed optimal, the mean performance being 7.25 pins.

Experimental Procedure

General set. The major problem faced in any experiment of they type is to motivate the subjects in such a way that success and failure in the task are rather seriously taken. That is in such a way as to ego-involve the subject. This was accomplished in several ways: (a) All subjects were told that we were interested in the intellectual ability and mechanical ability of patients in V.A. Hospitals and that this information was to go in their case files. Further it was to be used as a basis for further improvements in the educational and shop programs in the hospitals, (b) An air of excitement and of spurring them on was maintained by the examiner during the practice session. Thus if a subject finished six problems he was told, "That's wonderful but I'll bet you can do more than that. (c) Whenever possible time was called in the middle of a problem or as a pin was about to be placed in the hole. These were not counted but the examiner used this to encourage the person: "Gee, you almost got

that one. Let's try to get it next time." (d) The Success Trials (vide infra) were also used to motivate the subjects and to spur them on.

Instructions. The instructions to the task were designed to be as clear as possible, particularly in regard to the level of aspiration, in order to avoid the possibility of getting several interpretations of what was required [cf. Gould (26) and Festinger (13)].

The instructions may be divided into two parts (1) instructions for the learning series (trials 1-5), (2) instructions for the goal setting series (trials 6-25). The instructions for the learning series are as follows: "Psychologists have found that the ability to do arithmetic problems is closely related to intelligence. So we may consider this a test of intelligence like the one you did before (Wechsler). You are going to be given some simple addition problems; you will find that they are all very easy and if you were given plenty of time you could finish them all. But you will only get 20 seconds in which to do them -- that's not very long. I want you to get all the problems you do right because wrong answers don't count in the score but I also want you to go as fast as you can. Ready - Start -". At the end of the trial he was told he had done very well and encouraged to do better on the next trial.

The instructions for the second task were essentially the same: "Here is a test of mechanical ability. The object is to get the pin in the hole using the tweezers. You will note that if you hold the pin by the middle (examiner demonstrates) it's pretty hard to get it in the hole. If you pick it up by the end nearest you (examiner demonstrates) the pin pops out of the tweezers, but if you pick it up by the end farthest from you (examiner demonstrates) it is pretty easy to put in.

Now you fill in the first 10 holes to get the feel of it. (Subject does this). Now let's see how many pins you can put in in 30 seconds."

The necessity of the practice and demonstration stems from the fact that the learning trials were designed not only as a basis for equating the groups as to ability but also to provide the motivation necessary for ego involvement.

The level of aspiration instructions were as follows: "We are going to do some more problems just like the ones we finished. You will have the same amount of time to do them (20 or 30 seconds depending on the task). Before you start them I want you to make a bid like in Pinochle or Bridge. I want you to tell me how many problems you will finish next time. (Examiner answered any questions which occurred at this point.) Remember before you start I want you to tell me how many you are going to do. I will not remind you of this, you are to remember to do it on your own. Now have you decided how many you will do next time? How many?" (Time taken to respond is recorded as reaction time). If no response occurs after 45 seconds the S is again reminded that he is to tell how many he will do.

General Procedure. The testing situation can be divided into five sections, four of which are repeated. They are (1) C.A.S. of the Wechsler Bellvue, (2) Five practice trials with the arithmetic problems, (3) Five practice sessions with the Tweezer Dexterity Test, (4) Five success trials with the arithmetic problems, (5) 15 success-failure trials with the arithmetic problems (a failure trial followed by two success trials, repeated five times), (6) Brief interview. This series is followed by a ten-minute break after which sections 3-6 are repeated with the Tweezer Dexterity Test. The total session averaged about 90 minutes.

The C.A.S. The C.A.S. consists of the Comprehension, Arithmetic and Similarities subtests of the Wechsler-Bellvue Intelligence Test. This test was administered after the first few minutes which consisted of attempts on the examiner's part to put the subject at ease, as well as to ascertain age and education for all subjects and degree of contact for the schizophrenic patients. The test was scored as the subjects took it and an I.Q. was obtained within a few minutes after its administration. This was made necessary in order to determine if the subject was suitable for the rest of the testing.

The practice sessions. The subject was given five trials with the arithmetic problems (each set of 30 problems being presented on one sheet). This was followed by five practice sessions with the Tweezer Dexterity Test. The aim here was to assign the subjects into one of two subgroups. This was done on the basis of both the normative data, as well as of the performance data. Thus, if individual A was 22 years of age, with 8 years of education and an I.Q. of 101, and if his mean performance on Task 1 were 7.5 and on Task 2, 8.5 problems, the examiner would endeavor to assign a person of the same age, educational and intellectual level and performance ability to the other subgroup. It is obvious that the same age, etc., etc. do not frequently occur in two individuals. However, the examiner was fortunate enough to get fairly close approximations.

The subgroups. On the basis of the two preceding steps the individuals of both the control and schizophrenic groups were placed in either the strong or mild failure subgroups. Originally the writer had hoped to

use the empirically tested criteria of Steisel and Cohen (67) to determine strong and mild failure, namely: mild failure was equal to being stopped within five or six problems of the stated goal, whereas strong failure meant being stopped within 10 or 12 problems of the goal. However, the rather low level of performance of the subjects made this impossible. It would be difficult indeed to tell a person whose average practice performance was around seven or eight problems in twenty seconds that his time was up after he finished barely two problems. It would be impossible to have him fall within 10 or 12 problems of his goal as he more often than not set his goal between 8 and 10 in the first few trials. Thus mild failure was arbitratily defined as coming within 10 percent of one's goal, while strong failure was defined as coming within 50 percent of one's goal. The analysis of the first few records convinced the writer that the results seemed satisfactory (i.e. that there were some noticeable differences in the goal setting behavior of the two subgroups of both the control and schizophrenic subjects) and so this arrangement was maintained. Sixteen schizophrenics were placed in the mild failure group (Group I), sixteen controls in the mild failure group (Group II), sixteen schizophrenics in the strong failure group (Group III), and sixteen controls in the strong failure group (Group IV).

The success trials. After the individual was assigned to a subgroup he was given the level of aspiration instructions (vide supra) and the experiment proper began. The first five trials in both tasks were "success" trials. That is time was not called until he had finished the number of problems he said he would finish (reached his level of aspiration). The purpose of these trials was to observe goal setting behavior in a

rewarding situation, and to obtain as a basis for comparison with trials in a non-rewarding or frustrating situation, trials which were not contaminated by the memory of previous failure.

The success-failure series. The five success trials were followed by a series of 15 trials which began with failure (either mild or strong).

Each success trial was followed by the following comment: "You did very well, you made your bid, that's fine."

Each mild failure trial was followed by: "I'm afraid you didn't quite make it. You came within x problems of your bid. That's not too bad but it's not too good either."

The strong failure trials were followed by: "You did very poorly, you only got x problems, that's x problems below your bid. That's not good at all." These remarks were usually preceded by an expression of surprise and disappointment on the part of the examiner.

The purpose of these remarks was to reenforce the objective failure, and thus produce a frustrating state of affairs.

The success-failure series was then followed by a brief questioning period during which the following standard questions were asked: (1) How did you feel after you failed to do as many problems as you said you would? (2) How did you feel when you did as many problems as you said you would?

Timing. The reaction time (or time required to state a level of aspiration) was recorded. The time it took to do the particular number of problems was also recorded. Since the examiner felt that despite the difficulty in estimating time, there might be some suspiciousness concerning the accuracy of his measurement of it, particularly with the

strong failure schizophrenic group, the following method was used:

1. In all of the learning trials the stop watch was placed in such a way that the subject could see it. Attention was called to it by the examiner by remarks such as: "Time's up, that's 20 or 30 seconds, isn't it?" or "The stop watch never lies — I guess time's up." Etc.

2. During the fourth or fifth success trial the stop watch was stopped at the expected time (20 or 30"), the examiner using a wrist stop watch to record the actual time. Again the subjects' attention was called to the stop watch. This same ruse was used after the first failure trial and after the 3rd or 4th failure trials. Since no comments were made either during the experiment or in the interviews, one might assume that the method was successful.

Order of presentation. Since the examiner could find no advantage to a counter balanced order of presenting the tasks [cf. Lewin et al. (51) and Gould (26)] it was not used. Specifically, since (a) the tasks were presented as discontinuous by the examiner to avoid transfer effect, (b) the early levels of aspiration were based on the levels of performance of the practice trials, there seemed to be no necessity for counterbalancing the two tasks. Thus the arithmetic test was always the first test.

Summary. The objective of this study was to observe the effect of failure on goal setting behavior. In order to do this efficiently it was felt that (a) degree of failure should be varied (b) failure and success trials should be separated. Further the groups should be equated for age, education and intelligence and performance on tasks.

The task itself should be one which could be relatively ego-involving, and which would fit into a scheme of controlled success and failure.

To an extent these objectives would seem to have been fulfilled. (A more unified concept of the experimental procedure may be obtained from Table 2 which follows).

TABLE 2

PROCEDURAL SEQUENCE OF TASKS FOR THE EXPERIMENTAL GROUPS

		Trials																
		1-5[a]	6-10[b]	11[c]	12[d]	13	14	15	16	17	18	19	20	21	22	23	24	25
Schizophrenic Mild Failure	CAS	Learn.	Suc.	MF	S	S	MF	S	S	MF	S	S	MF	S	S	MF	S	S
Control Mild Failure	CAS	Learn.	Suc.	MF	S	S	MF	S	S	MF	S	S	MF	S	S	MF	S	S
Schizophrenic Strong Failure	CAS	Learn.	Suc.	SF	S	S	SF	S	S	SF	S	S	SF	S	S	SF	S	S
Control Strong Failure	CAS	Learn.	Suc.	SF	S	S	SF	S	S	SF	S	S	SF	S	S	SF	S	S

[a] In the learning trials time (20 or 30") was accurately called by examiner. The subject was told how many problems he had completed in the 20 or 30 seconds time.

[b] In the success trials the level of performance was made equal to the level of aspiration by not calling time until the subject had completed the number of problems he had said he would.

[c] MF (Mild Failure) - Subject comes within 10 percent of his goal.
SF (Strong Failure) - Subject comes within 50 percent of his goal.

[d] Success.

FINDINGS

Method of Analysis

As has been mentioned before our interest was directed to the effects of success and failure on several variables, viz. Level of Aspiration, Discrepancy Score, Efficiency, Number of Errors, Reaction Time, and Responses to Questions. With the exception of the last mentioned variable, the data were statistically analyzed in the following manner: (a) the mean score for each individual was obtained for the success trials (trials 6-10), as well as for the immediate post-failure trials (trials 12, 15, 18, 21 and 24) and the second post-failure trials (trials 13, 16, 19, 22, 25). It will be noted that these post-failure trials are the success trials which follow the failure conditions. Immediate and second post-failure trials were separately analyzed in order to note the possible existence of a delayed reaction to failure. (b) A group mean was then calculated, i.e. the mean of the means of the success trials etc. was computed for each of the two schizophrenic groups and for their respective control groups. (c) Fisher's t formula for small samples (30) was then utilized for the following comparisons:

1. Intragroup comparisons

   a. Differences of means between success and immediate post-failure trials,

   b. Differences of means between success and second post-failure trials.

   c. Difference of means between immediate and second post-failure.

2. Intergroup comparisons

a. Difference of means between schizophrenics in the mild failure condition and their controls for all three types of trials (success, immediate and second post failures).

b. Difference of means between schizophrenics in the strong failure condition and their controls for all three types of trials.

c. Difference of means between the two schizophrenic groups for the three types of trials.

d. Difference of means between the two control groups on each of the three trial types.

All of these comparisons were made for each task (Task A, arithmetic problems -- Task B, peg board) with the exception of mean number of errors which was only computed for Task A, as errors were not scored on the second task.

Since our hypotheses had "a directional character" the one tailed t test was utilized. (44)..

Results of Level of Aspiration

The level of aspiration represents the subject's own estimate of what he will do on a trial which he is about to start. In this study it was given in the number of problems the subject felt that he could solve or the number of pins he could place within the given time limit.

The hypotheses concerning this variable were:

(a) that the schizophrenic group would give a higher level of aspiration following failure than would the controls,

(b) that there would be a higher level of aspiration with this group folowing failure than there was in success,

(c) that the schizophrenic subjects given strong failure would give still higher levels of aspiration than those in the mild failure condition.

The data in Tables 3, 3a and 3b substantiate these hypotheses. The difference between the two schizophrenic groups and their controls reach a statistically significant level after failure though none exists in the success trials.

When the schizophrenic mild failure group is compared to the schizophrenic strong failure group a statistically significant difference is also obtained.

One additional finding which was not predicted stands out very clearly. The control group in the strong failure situation shows a higher level of aspiration than does the control group given mild failure. Further the comparison of the success trials with Second Post-Failure trials for the former group also shows a significantly higher level of aspiration after failure.

It would seem that though the control groups are less sensitive to failure than the schizophrenic groups, strong failure does tend to yield higher levels of aspiration.

This seems consistent with the postulation of a threshold for frustration. In those subjects who are markedly sensitive to frustration (the schizophrenics) a small amount of it will lead to unrealistic aspirations, whereas in the case of those subjects who are not "reaction sensitive" it takes a greater degree of frustration to produce this

TABLE 3

MEAN LEVEL OF ASPIRATION FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN CONDITIONS OF SUCCESS AND FAILURE ON TWO TASKS

Groups	Task	Success Trials		Immediate Post-Failure Trials		Second Post-Failure Trials	
		M	S.D.	M	S.D.	M	S.D.
Schizophrenic Mild Failure	A	11.81	2.93	13.75	2.27	14.75	2.17
	B	13.75	2.29	15.50	2.82	16.75	2.19
Control Mild Failure	A	12.44	1.67	11.94	1.53	12.44	1.87
	B	14.25	1.76	14.00	1.94	14.75	1.88
Schizophrenic Strong Failure	A	12.00	2.67	15.56	2.05	17.50	2.10
	B	14.56	2.18	17.25	3.49	19.50	2.14
Control Strong Failure	A	12.44	1.44	13.12	1.42	13.62	1.87
	B	14.25	1.60	15.25	2.56	16.00	1.80

TABLE 3a

DIFFERENCES BETWEEN TYPES OF TRIALS ON MEAN LEVEL OF ASPIRATION FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN CONDITIONS OF SUCCESS AND FAILURE ON TWO TASKS

Groups	Task	Type of Trial: Success Trials		Immediate Post-Failure Trials		Second Post-Failure Trials	
		Diff.	t	Diff.	t	Diff.	t
Schizophrenic Mild Failure and Control Mild Failure	A	.61	.72	1.81	2.73**	2.31	3.27**
	B	.50	.70	1.50	2.12*	2.00	2.39**
Schizophrenic Strong Failure and Control Strong Failure	A	.44	.74	2.44	4.06**	3.88	5.64**
	B	.31	.65	2.00	2.93**	3.50	3.33**
Schizophrenic Mild Failure and Schizophrenic Strong Failure	A	.19	.31	1.81	2.40**	2.75	3.76**
	B	.81	1.03	1.75	2.28*	2.75	2.54**
Control Mild Failure and Control Strong Failure	A	0	0	1.18	1.96*	1.18	1.82*
	B	0	0	1.25	1.89*	1.25	1.65*

* Significant at the 5 per cent level or less.
** Significant at the 1 per cent level or less.

TABLE 3b

DIFFERENCES IN MEAN LEVEL OF ASPIRATION FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN CONDITIONS OF SUCCESS AND FAILURE ON TWO TASKS

Type of Trial	Task	Group: Schizophrenic Mild Failure		Control Mild Failure		Schizophrenic Strong Failure		Control Strong Failure	
		Diff.	t	Diff.	t	Diff.	t	Diff.	t
Success and Immediate Post-Failute	A	1.94	2.09*	.50	.90	3.56	4.24**	.78	1.57
	B	1.75	2.02*	.25	.31	2.68	2.70**	1.00	1.37
Success and Second Post-Failure	A	2.94	3.24**	0	0	5.50	6.61**	1.18	2.03*
	B	3.00	3.22**	.50	.81	4.94	6.72**	1.75	2.50**
Immediate and Second Post-Failure	A	.76	1.31	.50	.84	1.94	2.70**	.50	.87
	B	.87	1.37	.75	1.07	.99	2.30*	.75	1.04

* Significant at the 5 per cent level or less.
** Significant at the 1 per cent level or less.

result and even then it is not of the asme magnitude as that of the schizophrenic subjects who also experienced strong failure.

Results of D Score

The D Score is the discrepancy between the previous level of achievement and the present level of aspiration. It is positive if the subject states he will do more on the next trial than he did on the last and negative if he states he will do less.

The hypotheses concerning this variable were:

(a) that the schizophrenic subjects would give a higher positive D score than the controls after failure,

(b) that the schizophrenic subjects would give higher positive D scores after failure than after success,

(c) that they would give higher D scores after strong failure than after mild failure.

These hypotheses are confirmed by the data in Tables 4, 4a and 4b. Though no statistically significant difference between the schizophrenics and their respective controls appear when success trials are compared, a great difference is noted between them on both post-failure trials. The schizophrenics also differ, the strong failure group giving the higher D score.

The confirmation of the hypotheses concerning level of aspiration and discrepancy scores lead us to accept the first major hypothesis, viz: After failure the schizophrenic subject will be less influenced by his post performance in goal setting than will the control group.

TABLE 4

MEAN DISCREPANCY SCORE FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN SUCCESS AND POST-FAILURE TRIALS ON TWO TASKS

Groups	Task	Success Trials		Immediate Post-Failure Trials		Second Post-Failure Trials	
		M	S.D.	M	S.D.	M	S.D.
Schizophrenic Mild Failure	A	.69	.29	.94	.49	.94	.45
	B	.62	.24	1.31	.58	1.12	.59
Control Mild Failure	A	.56	.13	.56	.26	.50	.28
	B	.69	.25	.62	.33	.69	.35
Schizophrenic Strong Failure	A	.62	.33	2.69	1.02	2.18	.97
	B	.69	.25	2.62	.79	2.31	.95
Control Strong Failure	A	.69	.18	.69	.40	.62	.34
	B	.69	.24	.81	.44	.81	.55

TABLE 4a

DIFFERENCES BETWEEN TYPES OF TRIALS ON MEAN DISCREPANCY SCORES FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN CONDITIONS OF SUCCESS AND FAILURE ON TWO TRIALS

Groups	Task	Type of Trial: Success Trials		Immediate Post-Failure Trials		Second Post-Failure Trials	
		Diff.	t	Diff.	t	Diff.	t
Schizophrenic Mild Failure and Control Mild Failure	A	.13	1.64	.38	2.75**	.44	3.33**
	B	.07	1.19	.69	4.11**	.44	2.56*
Schizophrenic Strong Failure and Control Strong Failure	A	.07	.74	2.00	7.30**	1.50	6.05**
	B	0	0	1.81	8.04**	1.50	5.47**
Schizophrenic Mild Failure and Schizophrenic Strong Failure	A	.07	.64	1.75	6.18**	1.24	4.59**
	B	.07	1.19	1.31	5.39**	1.19	4.23**
Control Mild Failure and Control Strong Failure	A	.13	2.36**	.13	1.09	.12	1.08
	B	0	0	.19	1.39	.12	.74

* Significant at the 5 per cent level or less.
** Significant at the 1 per cent level or less.

TABLE 4b

DIFFERENCES IN MEAN DISCREPANCY SCORES FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN CONDITIONS OF SUCCESS AND FAILURE ON TWO TASKS

Type of Trial	Task	Group: Schizophrenic Mild Failure		Control Mild Failure		Schizophrenic Strong Failure		Control Strong Failure	
		Diff.	t	Diff.	t	Diff.	t	Diff.	t
Success and Immediate Post-Failure	A	.25	1.81*	0	0	2.07	7.72**	0	0
	B	.71	4.52**	.06	.60	1.94	9.42**	.12	.96
Success and Second Post-Failure	A	.25	1.92*	.06	.08	1.56	6.07**	.07	.72
	B	.52	3.23**	0	0	1.63	6.63**	.14	.94
Immediate and Second Post-Failure	A	0	0	.06	.10	.71	2.07*	.07	.53
	B	.21	.96	.06	.51	.31	1.00	0	0

* Significant at the 5 per cent level or less.
** Significant at the 1 per cent level or less.

One might see this as related to loss of contact with reality. No longer can past experience serve as a guide to future action; the painful past is in effect denied by the continuance of high aspirations after failure. This is not hopefulness but an obstinate refusal to face facts. We note that our controls exhibit a somewhat higher level of aspiration after strong failure and conclude that these differences are a matter of degree rather than of kind, that under frustration the most "normal" human being will also lose contact as it were and act in a most unrealistic manner.

Results on Efficiency

Efficiency is calculated by dividing the number of units into the time taken, i.e. it represents the number of seconds to either solve an arithmetic problem or to put a peg into the peg board.

The minor hypotheses concerning efficiency were:

(a) that the schizophrenic subjects would show a greater drop in efficiency following failure than would the controls,

(b) that there would be a greater drop in efficiency after failure than after success trials for this group,

(c) that schizophrenics receiving strong failure would be less efficient than those receiving mild failure.

Tables 5, 5a and 5b indicate that these hypotheses are confirmed. There is indeed a drop in efficient performance after failure among the schizophrenic subjects, more severe for the strong failure than for the mild failure subgroup. However, a drop in efficiency is also noted in the strong failure control group in Task A (Table 5b).

TABLE 5

MEAN EFFICIENCY SCORE FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN SUCCESS AND POST-FAILURE TRIALS ON TWO TASKS

Groups	Task	Success Trials		Immediate Post-Failure Trials		Second Post-Failure Trials	
		M	S.D.	M	S.D.	M	S.D.
Schizophrenic Mild Failure	A	1.94	.52	2.44	.59	2.50	.57
	B	3.50	.49	4.00	.70	4.06	.66
Control Mild Failure	A	1.87	.51	1.87	.54	1.94	.51
	B	3.56	.49	3.37	.59	3.44	.46
Schizophrenic Strong Failure	A	2.12	.56	2.87	.55	2.94	.58
	B	3.62	.60	4.50	.65	4.56	.65
Control Strong Failure	A	1.87	.45	2.19	.52	2.19	.48
	B	3.56	.44	3.69	.48	3.81	.47

TABLE 5a

DIFFERENCES BETWEEN TYPES OF TRIALS ON MEAN EFFICIENCY SCORE FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN CONDITIONS OF SUCCESS AND FAILURE ON TWO TASKS

Groups	Task	Type of Trial: Success Trials Diff.	Success Trials t	Immediate Post-Failure Trials Diff.	Immediate Post-Failure Trials t	Second Post-Failure Trials Diff.	Second Post-Failure Trials t
Schizophrenic Mild Failure and Control Mild Failure	A	.07	.43	.53	2.72**	.53	3.42**
	B	.06	.30	.63	2.85**	.63	2.90**
Schizophrenic Strong Failure and Control Strong Failure	A	.25	1.43	.68	3.49**	.75	3.39**
	B	.06	.32	.81	4.05**	.75	3.81**
Schizophrenic Mild Failure and Schizophrenic Strong Failure	A	.18	.96	.43	2.08*	.44	2.09*
	B	.12	.57	.50	2.11*	.49	2.17*
Control Mild Failure and Control Strong Failure	A	0	0	.32	1.76*	.26	1.53
	B	.03	.18	.32	1.76*	.37	1.98*

* Significant at the 5 per cent level or less.
** Significant at the 1 per cent level or less.

TABLE 5b

DIFFERENCES IN MEAN EFFICIENCY SCORES FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN CONDITIONS OF SUCCESS AND FAILURE ON TWO TASKS

Type of Trial	Task	Group: Schizophrenic Mild Failure		Control Mild Failure		Schizophrenic Strong Failure		Control Strong Failure	
		Diff.	t	Diff.	t	Diff.	t	Diff.	t
Success and Immediate Post-Failure	A	.50	2.56**	0	0	.75	4.33**	.32	1.92*
	B	.50	2.19*	.16	.89	.88	3.15**	.13	.57
Success and Second Post-Failure	A	.56	2.93**	.06	.38	.82	3.56**	.32	1.99*
	B	.57	2.60**	.11	.56	.94	4.33**	.25	1.55
Immediate and Second Post-Failure	A	.20	.30	.06	.34	.07	.29	0	0
	B	.07	.29	.07	.40	.06	.21	.12	.52

* Significant at the 5 per cent level or less.
** Significant at the 1 per cent level or less.

Further the mild failure control group is apparently more efficient after failure than is the strong failure group on both tasks despite the fact that there is little difference in their efficiency in the success trials. Thus we again emphasize the fact that failure and frustration disrupt all behavior to some extent and that the more sensitive are most disrupted.

Results on Number of Errors

The error score is merely the number of incorrect addition problems. An error score was not feasible for the second task since only the number of pegs put in counted toward the total score; whereas on the arithmetic task all problems finished were assumed correct and entered into the total score, i.e. as goal achievement.

Our predictions concerning errors were:

(a) that the schizophrenic groups would make more errors than the control group after failure,

(b) that they would make more errors after strong failure than after mild failure.

The means and t values for this variable may be found in Tables 6, 6a and 6b.

In general our hypothese are confirmed. The schizophrenic groups do make significantly more errors than their controls and the schizophrenic strong failure group does make more than the mild failure group. There is no difference in number of errors between the two control groups. (cf. Table 6a). In the intra-group comparisons (Table 6b) we note significant differences between success trials and the post failure trials for both schizophrenic groups but none for the control groups.

TABLE 6

MEAN NUMBER OF ERRORS FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN SUCCESS AND POST-FAILURE TRIALS ON ONE TASK

Group	Success Trials		Immediate Post-Failure Trials		Second Post-Failure Trials	
	M	S.D.	M	S.D.	M	S.D.
Schizophrenic Mild Failure	.25	.40	1.31	1.21	1.37	1.15
Control Mild Failure	.25	.58	.31	.66	.37	.81
Schizophrenic Strong Failure	.31	.47	2.75	2.53	2.87	2.40
Control Strong Failure	.25	.49	.62	.72	.69	1.09

TABLE 6a

DIFFERENCES BETWEEN TYPES OF TRIALS ON MEAN NUMBER OF ERRORS FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN CONDITIONS OF SUCCESS AND FAILURE ON ONE TASK

Groups	Success Trials		Immediate Post-Failure Trials		Second Post-Failure Trials	
	Diff.	t	Diff.	t	Diff.	t
Schizophrenic Mild Failure and Control Mild Failure	0	0	.96	2.71**	1.00	2.98**
Schizophrenic Strong Failure and Control Strong Failure	.06	.37	2.13	3.03**	2.18	3.37**
Schizophrenic Mild Failure and Schizophrenic Strong Failure	.06	.39	1.44	2.06*	1.50	2.30*
Control Mild Failure and Control Strong Failure	0	0	.06	.25	.32	.96

* Significant at the 5 per cent level or less.
** Significant at the 1 per cent level or less.

TABLE 6b

DIFFERENCES IN MEAN NUMBER OF ERRORS FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN CONDITIONS OF SUCCESS AND FAILURE ON ONE TASK

Type of Trial	Group: Schizophrenic Mild Failure		Control Mild Failure		Schizophrenic Strong Failure		Control Strong Failure	
	Diff.	t	Diff.	t	Diff.	t	Diff.	t
Success and Immediate Post-Failure	1.06	3.31**	.06	.21	2.44	3.92**	.37	.21
Success and Second Post-Failure	1.12	3.73**	.12	.24	2.56	4.27**	.44	.28
Immediate and Second Post-Failure	.06	.01	.06	.25	.12	.14	.07	.31

* Significant at the 5 per cent level or less.
** Significant at the 1 per cent level of less.

Thus our second major hypothesis, which states in effect that failure will disrupt the performance of schizophrenics to a greater extent than it will the performance of "normals" seems to be confirmed. It is interesting to note that while the "normals" in strong failure do exhibit an increase in the time taken to do the addition problems (Task A) they do not show any greater number of errors in their work. The schizophrenics even in mild failure not only are slower but are less accurate.

One might speculate about this difference in terms of recognition of failure on the part of the normal subjects who then attempt to compensate by striving for accuracy at the expense of speed. The schizophrenics, on the other hand, are perhaps thrown into a sort of panic state where they can neither move faster nor produce well. This, of course, must remain speculation.

The third major hypothesis concerns the attempt to withdraw from a failure situation on the part of our schizophrenic subjects after failure.

Results of Reaction Time

Reaction time is defined as the time (in seconds) which the subject takes to decide on his next bid (statement of level of aspiration). Our minor hypotheses concerning it were:

(a) that the schizophrenic subjects would show a longer reaction time after failure than in success,

(b) that the control groups would not show this difference,

(c) that a difference would exist between the schizophrenic mild

failure group and the schizophrenic strong failure group, the strong failure group giving the longer reaction time,

(d) that no such differences would exist between the two control groups.

The means and standard deviation for this variable are shown in Table 7, and the t ratios in Tables 7a and 7b.

We note that the schizophrenic mild failure group gives a significantly longer reaction time after failure than it does in the success trials. This applies to both immediate and second post failures except in Task B where the comparison between success and second post failure is not significant. There is not statistically significant increase or decrease in reaction time between the two post failure trials.

The control mild failure group on the other hand shows no significant differences between their reaction time in success trials and that in post failure trials.

The schizophrenic strong failure groups shows highly significant increases in reaction time after failure, on both tasks. As with the other schizophrenic group no differences of significance are obtained between the two post failure trials.

The control group does show an increase in reaction time after strong failure.

This failure to state the next level of aspiration following failure has been observed by many experimenters. Escalona (10) and Rotter (62) have interpreted it as withdrawal behavior while Miller (57) bases his operational definition of "conflict" on this reaction, a concept which he interprets in much the same way as do Rotter and Escalona.

TABLE 7

MEAN REACTION TIME (in seconds) FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN SUCCESS AND POST-FAILURE TRIALS ON TWO TASKS

Groups	Task	Success Trials		Immediate Post-Failure Trials		Second Post-Failure Trials	
		M	S.D.	M	S.D.	M	S.D.
Schizophrenic Mild Failure	A	7.12	1.89	8.75	2.18	8.94	2.14
	B	8.94	1.24	9.75	1.32	9.50	1.27
Control Mild Failure	A	6.50	1.20	7.00	.91	7.00	.93
	B	8.50	.92	8.62	.99	8.75	.92
Schizophrenic Strong Failure	A	7.50	1.70	10.25	1.76	10.44	1.88
	B	8.94	1.73	10.94	1.91	10.25	1.84
Control Strong Failure	A	6.75	1.54	7.75	1.46	7.75	1.44
	B	8.62	1.38	9.44	1.45	9.50	1.38

TABLE 7a

DIFFERENCES BETWEEN TYPES OF TRIALS ON MEAN REACTION TIME FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN CONDITIONS OF SUCCESS AND FAILURE ON TWO TASKS

Groups	Task	Type of Trial: Success Trials		Immediate Post-Failure Trials		Second Post-Failure Trials	
		Diff.	t	Diff.	t	Diff.	t
Schizophrenic Mild Failure and Control Mild Failure	A	.62	1.09	1.75	2.97**	1.94	3.32**
	B	.44	1.05	1.13	2.71**	.75	2.15*
Schizophrenic Strong Failure and Control Strong Failure	A	.85	1.40	2.50	4.46**	1.13	2.71**
	B	.34	.56	1.50	2.55**	.75	2.34**
Schizophrenic Mild Failure and Schizophrenic Strong Failure	A	.48	.77	1.50	2.18*	1.50	2.15*
	B	0	0	1.18	2.12*	.75	1.87*
Control Mild Failure and Control Strong Failure	A	.25	.62	.75	1.69*	.75	1.70*
	B	.12	.25	.82	1.86*	.85	2.33**

* Significant at the 5 per cent level or less.
** Significant at the 1 per cent level or less.

TABLE 7b

DIFFERENCES IN MEAN REACTION TIME FOR TWO SCHIZOPHRENIC AND TWO CONTROL GROUPS IN CONDITIONS OF SUCCESS AND FAILURE ON TWO TASKS

Type of Trial	Task	Group: Schizophrenic Mild Failure		Control Mild Failure		Schizophrenic Strong Failure		Control Strong Failure	
		Diff.	t	Diff.	t	Diff.	t	Diff.	t
Success and Immediate Post-Failure	A	1.63	2.26*	.50	1.38	2.75	4.49**	1.0	1.90
	B	.81	2.62**	.12	.30	2.00	3.16**	.82	1.60
Success and Second Post-Failure	A	1.82	2.57**	.50	1.38	2.94	4.65**	1.0	1.95
	B	.56	1.73*	.25	.63	1.31	2.10*	.88	1.89
Immediate and Second Post-Failure	A	.19	.27	0	0	.63	.32	0	0
	B	.31	.64	.13	.30	.65	1.08	.06	.20

* Significant at the 5 per cent level or less.

** Significant at the 1 per cent level or less.

Thus some withdrawal is noted in the "normals" under conditions of strong failure. The schizophrenic subjects, however, show this tendency even in mild failure and much more markedly in strong failure.

Results on Questions

A further indication of an attempt to withdraw from the consciousness of failure may be drawn from the classification of the answers given to the two questions asked at the end of the testing session. They were: (a) "How did you feel after you failed to do as many problems (put in as many pegs) as you said you would?" (b) "How did you feel when you did as many problems (put in as many pegs) as you said you would?"

Our minor hypotheses state that the schizophrenic patients will attempt to deny failure more than the controls and that they will tend to deny it more often after strong failure than after mild failure.

Of our 32 schizophrenic subjects, 20 or 62.5 per cent answered that they did not feel one way or another about it --- "It didn't bother me at all." "Failure! There was no failure, I wanted to make sure I was right." Only 9 or 28.1 per cent of the controls responded in this manner.

Eleven of the 20 schizophrenics denying failure were in the strong failure group, the other nine being in the mild failure group, while 5 of the 9 controls were in the strong failure group.

The responses above are further clarified by the fact that only 4 or 12.5 per cent of the schizophrenic subjects denied feelings of success, while six of the controls, or 18.7 per cent, were similarly disinterested.

The denial of failure then does not seem to result from a general lack of interest in the situation but rather from a need to perhaps forget about it.

Thus, our third major hypothesis is confirmed. It is interesting to note that while many of the normals in strong failure withdrew from the effect of failure in a more or less inconspicuous manner, by delaying the statement of the level of aspiration, they could nonetheless face the fact when it was directly thrust on them by the questions asked. The schizophrenic subjects could not face the fact at all and talked as if it did not matter at all, though succeeding did.

In general then we may state that schizophrenic subjects are quite "reaction sensitive to failure" and that as a possible result of this they tend to become more unrealistic and less efficient when faced with it.

DISCUSSION

It was assumed in this study that schizophrenic patients, as a function of their "reaction sensitivity" to failure would behave more defensively and less efficiently after failure than a control group of equated non-psychiatric subjects. In general these assumptions seem to have been borne out.

Comparison to Other Scizophrenic Groups

These results agree essentially with those of Kyle (49) and Bowman (5) in that the schizophrenic groups show a higher level of aspiration and a higher deviation score than the control groups. Perhaps this study has tended to clarify their results in that it demonstrated that both of these variables show this trend after failure but not in success, and also that in a situation of differential failure the schizophrenics who are exposed to strong failure react in a more exaggerated fashion than those exposed to the mild failure conditions. This, in spite of the fact that each failure trial is followed by two success trials.

In terms of these two variables we disagree with Miller's (57) findings of little difference in level of aspiration and discrepancy score between schizophrenics and normals after failure, though this difference may be the result of the use of different populations. However, we do find as he did that reaction time increases after failure. Again by showing that this applies only after failure and that it is a function of degree of failure, Miller's results seem to be clarified.

The other two variables, efficiency and errors, have not been used in level of aspiration studies with schizophrenics. However, Webb (69) found that in a conceptual task those schizophrenics who had been told they had done poorly on a pretest showed greatest imprecision and tangentiality on the post test while those who were not so discouraged did significantly better on a post test.

Comparison Between Schizophrenics and Controls

Since this study involved two degrees of failure, the results obtained with the control groups cannot be directly compared to those obtained by Miller (57), Kyle (49) or Bowman (5). In general the control group who experienced mild failure reacts similarly to their controls, i.e. their level of aspiration is not significantly higher in failure than in success, their discrepancy scores are not higher, nor is their reaction time longer. The controls in the strong failure situation, however, more closely resemble Sears (65) highly frustrated group of normals in terms of their comparatively unrealistic and inefficient behavior after failure. Though their behavior was disrupted it was not as disturbed as that of the two schizophrenic groups.

Thus, though they do tend to give higher levels of aspiration after failure, they do not completely lose sight of their past performance as did the schizophrenics. Therefore, their discrepancy scores after failure are not significantly different from those in the success trials, as are the D scores of the schizophrenics. It is almost as if the controls hope for better results, after failure, but keep the failure in mind. They take the probability of another failure into account, but

are not so depressed by past failure that they are content to stay at the same level as before or even retreat to a lower level.

The schizophrenics seem to act as if they had never failed; they continue to "go upward and onward" despite the very obvious fact that they have not previously been able to reach a goal more modest than the one they presently aspire to. Here one may speculate that the wish reigns supreme unhampered by judgment.

In terms of efficiency of work, the schizophrenics not only take a longer time to do the same amount of work after failure but they do it less accurately. The controls in strong failure are also a little stunned by failure but though their speed decreases, accuracy remains at about the same level as in success. Their work is not as disrupted by failure as is that of the schizophrenics. Further, the schizophrenics show a greater "burnt child" reaction after failure than do the strong failure controls. They not only withdraw from the situation by taking a longer time to get back into the task, but they deny subjective feelings of failure.

These differences can be accounted for in terms of reaction sensitivity. The schizophrenics are apparently quite sensitive to failure even of the mildest sort. They have a minimal tolerance for frustration. Failure leads to unrealistic and inefficient behavior of the grossest sort.

The controls seem to be better able "to take it," but even they have a threshold beyond which the effects of failure begin to tell. In effect a continuum of frustration tolerance or tolerance of failure seems to be demonstrated. The schizophrenic group in the strong failure

situation is the most disrupted, the schizophrenics given mild failure follow, then the controls given strong failure, and finally the control group who experience mild failure.

Our findings are therefore not specific to schizophrenics; rather these results seem to occur whenever frustration goes beyond the bounds of endurance.

The neurotics studied by Miller (57), Himmelweit (35) and Eysenck and Himmelweit (11) also behave in a rather disrupted manner after failure. Perhaps they would fit in between the schizophrenics and the controls on the proposed continuum. However, this must be ascertained by future research.

Implications

The findings of this study lend some weight to Jenkin's hypothesis "that schizophrenia is a progressive maladaptation resulting from frustration beyond the tolerance of the patient," (43, p. 256), as well as to Cameron's theory of "reaction sensitivity" to frustration on the part of schizophrenics (6).

What does this imply? The work of Sears (65), Katz (46) and Marquart (56), as well as the results obtained from the control strong failure group indicate that continued failure to achieve one's goal does result in attempts to neutralize the experience of failure by various withdrawal mechanisms. Jenkins (43) cites numerous studies which indicate that schizophrenic patients have experienced severe frustration within the family group at an early age. He feels that because of this they are ill prepared for the frustrations of every day life and thus withdraw

from the world of reality. Whether schizophrenia can be entirely explained on the basis of this hypothesis must remain a moot question, awaiting further research. However, it does seem likely that reaction sensitivity to failure, based perhaps on childhood experiences, may be an etiological factor not only in schizophrenia but also in the neuroses.

Perhaps it is aspiring too high to hope for answers to questions regarding the kind and amounts of frustration needed to produce emotional illness. But certainly further studies of the effects of frustration, especially longitudinal ones starting in early childhood, are to be desired.

Further research along the lines proposed by this study might yield more evidence of a continuum from mild to severe emotional disturbances.

Research on the reversibility of this great sensitivity to failure may also prove fruitful: Can a series of continuous successes, for example, "retrain" the individual to eventually absorb some frustration without headlong retreat?

Whatever the answers, it seems certain that the area of goal setting bears a great deal of study both by laboratory methods and by broader sociological procedures.

SUMMARY AND CONCLUSIONS

Two groups of sixteen patients, diagnosed as mixed schizophrenics, and two equated groups of patients at a general medical and surgical hospital were given twenty trials on two tasks (addition problems, tweezer dexterity) involving controlled success and controlled failure on two levels of intensity. The following variables were studied: (a) level of aspiration, (b) discrepancy score, (c) efficiency, (d) number of errors, (e) reaction time. All subjects were also asked for their reactions to achievement and non-achievement of their stated goal.

Results obtained within and between groups by the use of the one tailed t test indicate that (a) both schizophrenic groups show a higher level of aspiration, a higher discrepancy score, lowered efficiency, greater reaction time, and more errors after failure than they did after a series of success trials, (b) the schizophrenic groups showed a significant difference in the above directions when compared to their "normal" controls, (c) the schizophrenics in strong failure conditions showed a significant difference in the above direction when compared to the schizophrenic mild failure group, (d) the control strong failure group showed higher level of aspiration, longer reaction time and lowered efficiency after failure, (e) the control mild failure did not react differently after failure than before. Analysis of the answers to the questions which attempted to elicit verbal reactions to success and failure reveal that the schizophrenic subjects will more often deny any feeling of failure than will the controls, though they admit feelings of success almost as frequently.

These data are interpreted in accordance with thehypotheses of Cameron (6) and Jenkins (43) regarding reaction sensitivity to failure. The fact that the normal controls also show some effects of post-failure frustration is seen as essentially consistent with these hypotheses.

In general then we may state that failure even when cushioned with success, has a severe effect on schizophrenics. Further studies using variable failure with other schizophrenic groups and with neurotic groups should be attempted, as should studies involving retraining of schizophrenics after failure by giving massed success trials.

Though the literature is filled with level of aspiration studies there are still relatively few which attempt to relate goal setting to mental disease. It seems to the writer that further investigations seem warranted, as they may indeed add to our meager knowledge of psychodynamics.

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