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The effect of frustration upon performance on a motor task with high grade mental retardates

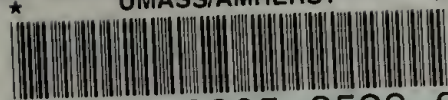
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THE EFFECT OF FRUSTRATION UPON PERFORMANCE
ON A MOTOR TASK WITH HIGH GRADE MENTAL RETARDATES

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The Effect of Frustration upon Performance
on a Motor Task with
High Grade Mental Retardates

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Problem submitted to the Psychology Department
in partial fulfillment of the requirements
for the degree of Master of Science
University of Massachusetts, Amherst

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December 1962

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Consideration of the personality characteristics of the mentally retarded individual has been a topic about which there has been much recent discussion (Hutt and Gibby, 1961; Ruess, 1958; Sarason, 1953; Thorne and Andrews, 1945). The present classification system of mentally retarded individuals, which is based mainly upon the I.Q. score especially within the high grade retardate, has led to an often implicit assumption that individuals within a retarded I.Q. range are essentially homogeneous in all other respects as well. As a result of this limited outlook on the mentally retarded individual, the retardate is most often looked upon in the United States as an instance of intellectual deficit without much research interest in personality variables that may influence his functioning.

The limitation of depending upon the I.Q. score as the sole criterion in our classification and understanding of the mentally retarded has often been expounded (Hutt and Gibby, 1961; Sarason, 1953). Sloan and Birch (1955), for example, stress the fact that mental retardation refers to the over-all efficiency of the functioning organism. Walker (1950) also concludes that the intellectual functioning of the mentally retarded child cannot be considered apart from his emotional and personality functioning. It has been pointed out by many investigators including Sarason (1953) that a low I.Q. score in itself does not enable one to state in what ways a particular individual is different from others with an identical score or what his reactions may be to a variety of situations.

Judging from these statements, which appear to be representative of a changing trend in thought concerning the mentally retarded

individual, it appears that with regard to the mentally retarded individual there are definite differences among individuals within an I.Q. classification (Hutt and Gibby, 1961; Sarason, 1953; Thorne and Andrews, 1945). With regard to I.Q. tests themselves, studies have shown that, while individuals may attain the same score, the patterns of performance vary among individuals in a mentally retarded I.Q. group (Sarason and Sarason, 1946).

Emotional differences among mentally retarded individuals have also been suggested. This consideration has been appearing with increasing regularity in the literature concerning the mentally retarded. McLachlan (1955), for example, studied the emotional aspects of the backward child and concludes that the emotional needs of the mentally retarded child are the same (qualitatively) as those of the normal child. McLachlan states that the degree of the retarded child's emotional stability is more dependent on his methods of responding to social situations than on his intellectual level.

Ellis and Sloan (1958), working with a series of physiological measures, have shown that within a mentally retarded I.Q. classification there are definite differences among mentally retarded individuals on a variety of autonomic measures. Further research in this area has also substantiated these conclusions (Collman, 1959).

Beier, et. al. (1951) studied the fantasy life of mentally retarded children by means of the TAT, comparing the psychological aspects of the themes expressed and the environmental aspects of the stories they created with those of children regarded as normal. It was their conclusion that differences in the intellectual capacities

of children do not contribute significantly to their emotional needs. Hutt and Gubby (1961), in reviewing the research of Beier and his associates, conclude that differences which did exist between the two groups (such as the production of a larger number of stories, the fact that the retarded children's themes were less aggressive than the normal children's, etc.), are not the direct result of the defective intellectual capacities of the retarded child but, rather, are the result of the child's experiences in relating to others -- both in his family and in society in general.

That mentally retarded individuals differ with regard to personality characteristics has been suggested as a result of differing performances on a number of projective techniques. Bergman and Fisher (1953), working with the TAT, found it to be useful in the diagnosis and the understanding of the dynamics of the mentally retarded child. Other researchers have reached similar conclusions working with projective techniques. Sarason and Sarason (1946), working with the Rorschach, conclude that within a group of defectives who are etiologically homogeneous there are marked differences in behavioral patterns. In a subsequent study by Sarason and Sarason (1947), their results not only emphasize how heterogeneous defectives are but conclude that even within one etiological grouping heterogeneity in behavior patterns is marked. Sarason (1953) summarizes the results of studies on projective techniques in the area of mental retardation and concludes that the defective individual, like the normal one, has fears, anxieties, wishes and needs which may affect his intellectual functioning in various degrees.

The limitations of relying mainly on the I.Q. as a basis for understanding mentally retarded individuals has also been pointed out by investigators concerned with the behavior of the retardate. In a study conducted by Dybwad (1941) with institutionalized mentally retarded children, it was found that the Binet I.Q. score bore no relation to the eventual discharge for good adjustment in the institution as contrasted with eventual commitment to a correctional institution for poor adjustment. Thorne (1943), in considering the mentally retarded individual's ability to withstand stress, concludes, "measures of intelligence (such as the I.Q.) alone are inadequate because of their failure to indicate the ability of the mentally retarded to withstand the disintegrating effects of stress".

The preceding research cited appears to indicate that we can no longer consider the mentally retarded solely as an instance of intellectual deficit, or refer to any single aspect of his makeup, but must consider him in his entirety. It has become increasingly apparent that the crucial issue concerning the high grade mental retardate centers around the problem of his social-emotional adjustment. Evidence strongly suggests that this is often the crucial parameter in the successful return of the institutionalized high grade retardate to the community. In spite of the fact that this aspect of the mental retardate is receiving the consideration and attention it deserves, most of the articles concerned with this aspect of the mental retardate are of the case study type or, more frequently, of the discussion type. Only very recently has there

begun to appear in the literature a few empirical investigations of the social-emotional characteristics of the mental retardate, with specific interest on the problem of behavioral control.

Most relevant among these is a study by Foreman (1962), concerned with an attempt to predict behavioral problems among mental retardates, using tasks designed to elicit frustration. There were three groups of subjects pre-selected on the basis of their behavior in the institution and placed into one of the groups according to arbitrary criteria as either behavior problem, behavior neutral or behavior model. An analysis of the responses elicited to the Rosenzweig Picture-Frustration study indicated that each of the behavioral groups reacted to the frustrating situations in a pre-dominately ego-defensive fashion.

The present investigation is concerned with an attempt to determine whether within a homogeneous I.Q. population of institutionalized high grade retardates there are differences in their ability to tolerate an externally imposed frustration and whether these differences are the result of personality differences within this group.

The institution itself, because of its limitations and restrictions on behavior, can be considered as a source of stress to its inhabitants (Frankenstein, 1958). Walker (1950) concludes that, for many retardates, institutionalization can result in severe emotional reactions. Sarason (1953) also concludes that institutionalization involves a drastic change for the individual and there is every reason for assuming that it is experienced as a stressful one.

Goffman (1957), in an observational study, documents the process

the initiate must undergo when he enters the new society of a total institution such as the army, mental hospital or, by extension, a school for the retarded. He stresses the difficulty the initiate experiences in being forced to accept new norms and new patterns of behavior and that this often results in a period of frustration and stress for the individual.

In the process of adjustment to the institution it has been widely observed by those connected with institutions for the mental retardate that, among individuals within the high grade I.Q. classification, there are wide differences in their ability to tolerate the external stress and frustration of the institution as reflected in their behavior in the institution.

Behavioral adjustment in the institution can be classified into two broad groups, those individuals who adjust to the institution and those individuals who do not. In general, those individuals who do not adjust to the institution may manifest this lack of adjustment by such acts as habitual aggressive behavior, emotional outbursts or, at the other extreme, by withdrawal. These types of behavior reflect a lack of behavioral control. Many patients who do not adjust to the institution appear to reflect this adjustment through an ability to control their behavior.

It appears then that within the high grade I.Q. range there are varying degrees of adjustment in the institution, and that these degrees of adjustment can be thought of as reflecting the degree to which the retardate is capable of controlling his behavior in response to a frustrating environment. Hegge (1942), working on the assumption


that the ability of the retardate to control his behavior is represented by his degree of adjustment to the institution, developed a "Rating Scale for Adjustment" for use with institutionalized mental retardates. Supervisors rated the individual according to his behavior in the institution on a number of statements designed to describe various aspects of behavior. Although Hegge was concerned with a general measure of adjustment based upon the attitudes of the child and his relationships with the social environment, many of the statements in the rating scale are centered around the question of behavioral control.

Lipman (1959), in attempting to find some test correlates of behavioral aggression in institutionalized retardates, concludes that, with regard to mental retardates, frustration tolerance is a key variable in differentiating aggressive and non-aggressive groups. Although Lipman was not able to clearly differentiate between his groups, he concluded that what is needed is a situation which will arouse sufficiently intense frustration necessary to elicit differential responses.

In considering frustration there appears to be some disagreement with regard to its effects upon qualitative changes in performance. In general, there appears to be two points of view concerning the effects of frustration upon performance. One maintains that frustration can lead to more effective performance; the other holds that frustration produces disorganization and thereby leads to less effective performance. Lazarus (1952), in reviewing the literature on psychological stress, comes to this same general conclusion. In

support of the first point of view, he cites the research of Miller (1948) and Wickert (1947) suggesting that fear, produced in a stressful situation, acts as a motivator and is usually accompanied by an increased output in performance.

Other investigators have found that the effects of stress upon performance lead to disorganized activity (Sherman and Jost, 1942). Waterhouse and Child (1953), studying the effects of frustration upon a series of complex motor tasks, conclude that the effect of frustration upon a complex on-going performance is to create a decrement in that performance.

The activation hypothesis is an attempt to integrate this discrepancy and maintains that, on a neuro-physiological level, stimuli input elicit nervous impulses from the various sense organs to the cortex and the Reticular Activating System (RAS). According to this hypothesis, changes in the "activation" level of the cortex seem to have a profound effect on the way the incoming primary sensory impulses are dealt with; i.e., in performance. The relationship between activation and performance has been established as being -shaped, suggesting that up to a certain point as activation level increases performance increases, after which as the activation level continues to increase performance decreases. In terms of the present problem this would assume that under a slight amount of frustration there would be an increment in performance, or at least no decrement. However, under an increased amount of frustration there should be a decrement in performance.

In general, the degree of stress or frustration which an individual can handle or control before showing signs of disorganization of

behavior is referred to as his stress tolerance or frustration tolerance (Coleman, 1956). Redl and Wineman (1951), in working with severely delinquent children, have maintained that the degree of frustration tolerance is a function of some hypothetical construct state of the personality organization which they refer to as the ego-control capacity of the individual. This personality construct, ego-control, will be defined for the purposes of this paper as the ability of the individual to tolerate frustration without showing a decrement in performance.

While the effects of experimentally induced frustration have been studied with regard to various populations including young children (Barker, Dembo and Lewin, 1941), college students (Waterhouse and Child, 1953) and various clinical populations (Sherman and Jost, 1942), there have been very few controlled laboratory experiments designed to study the effect of experimentally induced frustration with the mental retardate. Two of these studies have already been cited, those of Lipman (1959) and Foreman (1962). In another study dealing with frustration in mental retardates, Angelino and Shedd (1958) were concerned with the reactions to "frustration" of a group of mentally retarded children as measured by the Rosenzweig Picture-Frustration study. They conclude that "groups low in intelligence" do not have a different mode of response to frustration than normals. The preceding research seems to indicate that there are important and meaningful differences among high grade retardates that have, as yet, to be fully investigated.

Statement of the Problem

The fact that frustration can lead to a decrement in performance has already been established for a normal population (Barker, Dembo and Lewin, 1941; Waterhouse and Child, 1953). Foreman (1962) has attempted to predict behavioral problems among institutionalized mental retardates by means of frustrating tasks. Lipman (1959) concludes that his data strongly suggest the advantage of including highly frustrating behavioral tasks in conjunction with controlled observation as a means of developing a test battery to predict behavioral aggression. Although neither Lipman nor Foreman were able to conclusively differentiate between their extreme behaviorally classified groups, these studies suggest the need for research in this area.

The present study is concerned with an attempt to determine whether, within a homogeneous I.Q. population of institutionalized high-grade mental retardates, there are differences in their ability to tolerate experimental frustration and whether behavioral control in the institution is directly related to this ability.

Specifically, it is assumed that behavioral control in the institution reflects an ability to tolerate the frustration of the institution, and it is hypothesized that:

1. High grade mental retardates having good control exhibit less decrement in performance following frustration than high grade mental retardates having poor control.
2. High grade mental retardates having good control exhibit greater recovery from the effects of frustration than high grade mental retardates having poor control.

Method

Subjects

A pool of subjects who were high grade mental retardates from an institution for the mentally retarded were selected who had Binet I.Q.'s between 55-75, were institutionalized for at least one year, were in good physical health and were between the ages of 13-22 years of age. No patients with suspicion of organic or neurological conditions were used.

From this pool, S's were selected to demonstrate differing degrees of behavioral control by attendants and supervisory personnel on the basis of a rating scale. The descriptive statement comprising this scale referred to the individual's behavior in terms of his ability to withstand the pressures and frustrations of living in an institutional dormitory housing more than one hundred patients.

Conceptually, good behavioral control was seen as manifest in a patient who, for example, showed the ability to handle everyday pressures and frustrations in the institution with no discernable difficulty. This tolerance for frustration was seen as capable of being turned toward either good or poor social adjustment to the institution. In the former instance, the patient is apt to be well behaved while in the latter case the individual is apt to be anti-social. We sought in this study to distinguish the parameter of behavioral control from the "use" to which this ability is turned; i.e., toward or against the institution.

Poor behavioral control was defined as the inability to handle the everyday pressures and frustrations of living in the

institutional dormitory. Poor control can be manifested behaviorally as the tendency to give up easily and withdraw under pressure or to lose control and act up under pressure. In the former instance, the patient obeys the rules and does not get into trouble; i.e., has good adjustment. In the latter instance, poor control results in breaking institutional rules and in poor adjustment to the institution.

Four groups of patients were selected according to behavioral control and social adjustment in the institution. Descriptive statements of these four categories were arranged into a "Rating Scale for Behavior" as follows:

A. A Well Behaved Child Who Has Good Control Under Pressure.

A secure, happy child who gets along well with the other children and is no particular trouble to the staff. He (she) is able to take most things in stride without becoming overly upset. He (she) complies within reason with institutional rules and is cooperative and reliable when depended upon to do something. When the going gets rough, he (she) usually doesn't blow up or quit but remains calm, within reason, and tries to get through as best he (she) can.

B. A Well Behaved Child Who Tends to Withdraw or Give Up Under Pressure.

A good child who gets along with the other children and the staff but appears to do so largely because he (she) is afraid. He (she) complies with the institutional rules but when problems come up he (she) tends to give up easily or function below capacity. He (she) will sometimes tend to stop trying because of

the fear of failing. He (she) often becomes easily discouraged and reacts to this discouragement by giving up easily or, in extreme cases, by being afraid to even start a given task.

C. A Child Who Sometimes Acts Up and Gets into Trouble Because He Loses Control Under Pressure.

A child who is easily upset and when under pressure may fail to control his (her) temper. He (she) cannot face disappointments or discouragements and is easily upset by failures and may react to this by "blowing off steam" or by "going to pieces". Sometimes when he (she) gets angry or upset he (she) may throw objects or yell at the other children or staff. At times, he (she) may get so upset that he (she) has to be isolated for a time to "cool off" before someone can talk with him (her). In summary then, he (she) is a child who becomes easily frustrated and acts up when under pressure.

D. A Troublemaker whether Under Pressure or Not.

A child who is frequently a troublemaker but does not appear to be particularly insecure. He (she) often tries to look and act like a tough kid. He (she) frequently starts trouble and often fights and argues with the other children, and staff, but usually knows what he's (she's) about. For example, he (she) may get others to help fight his (her) battles or sometimes incite others to break rules and/or institutional equipment, etc. He (she) generally behaves as if he (she) has a chip on his (her) shoulder.

Supervisors and attendants were supplied with the "Rating Scale for Behavior" containing these four statements describing various

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types of behavioral control. They were asked to study these statements carefully. On the following day the E returned and answered any questions concerning these statements. At this time, the individual raters were given the list of S's whose behavior they were familiar with and were instructed to place the letter of the statement which best described the child's typical behavior before the name of the child. If none of the statements described the child, they were instructed to write the word NONE next to the child's name. A particular individual was included in a group only when he received at least two out of three nominations to that group.

Forty S's were selected based upon their classification into one of the four specific categories of behavioral control. Each group contained ten S's, five males and five females.

Table 1 presents descriptive data for the four groups with regard to age, I.Q. and length of institutionalization. The means, ranges, and standard deviations are presented. Analyses of variance indicated that there were no significant differences among groups with regard to age, I.Q. or length of institutionalization.

Materials

It was necessary to select a task that would serve to reflect changes in performance as a function of frustration and various conditions relating to the effects of frustration. In order for a task to be selected, it had to meet several criteria. It should be a task capable of reflecting behavioral disorganization. It had to be a task which could be presented under conditions designed to create frustration in the subject. The task itself had to be capable of

Table 1

Characteristics of the Four Groups

Group	Age		I.Q.		Length of Institutionalization (in months)	
	M	Range	M	Range	M	SD
Good Control - Good Adjustment (A)	19.00	9.00	1.96	64.90	15.00	6.52
Poor Control - Good Adjustment (B)	17.90	8.00	2.17	62.30	15.00	4.92
Poor Control - Poor Adjustment (C)	17.30	6.00	2.00	64.80	15.00	5.18
Good Control - Poor Adjustment (D)	16.60	9.00	2.23	63.10	17.00	4.95

reflecting a decrement in performance as a consequence of the frustration, yet be of sufficiently simple design so as to avoid rejection by the subject. Finally, it had to yield quantitative scores. On the basis of these criteria, the Crawford Small Parts Dexterity Test was selected.

Secondly, a task had to be selected which would be capable of producing sufficient frustration within a relatively short period of time, yet be of sufficiently simple design so as to avoid rejection by the subject. On the basis of these criteria, the Mirror Drawing Test was selected.

Task number one, the Crawford Small Parts Dexterity Test (CSPDT), is a "performance test designed to measure fine eye-hand coordination". For the purposes of this study only part I of two parts was used. "Part I, Pins and Collars, measures dexterity in using tweezers to insert small pins in close fitting holes in a plate and to place small collars over the protruding pins." (Crawford and Crawford, 1956). This task was selected, in addition to fulfilling all the criteria, because it is easily affected by conditions of frustration. There is no relevant research on the CSPDT.

Task number two, the Mirror Drawing Test, is a visual motor test "which is relatively brief, not closely correlated with intelligence, easily comprehended, and likely to bring out the emotional side of a subject in the form of overt responses". (Peters, 1946). The standard apparatus was maintained with the exception of modifying the usual five point star in which the double lines are $1/4$ inch apart to a six point star in which the double lines are $1/8$ inch apart in order to increase the difficulty level of the task and thereby increase

the frustration (see Appendix B). Beside fulfilling the criteria, this task was selected for the fact that, at first glance, it looks rather easy, but in actuality it is quite difficult and requires much practice in order to become proficient. This surprise element, in addition to the fact that there is visible evidence for the subject that he is not succeeding every time he crosses the boundary, all served to increase the frustration. Relevant research using this task all suggest that it is well suited for our intended purposes as a highly frustrating behavioral task (Lipman, 1959; Foreman, 1962).

Procedure

All tests were individually administered in a single session. The order of presentation and administrative procedure was as follows:

Task 1 - Pre-frustration

The S sat opposite the E and the materials were placed on a table in front of the S. The standard instructions for the CSPDT were administered with the addition that the S was told to complete the six rows of pins and collars at his own speed but should try and work carefully. These six rows constituted one complete trial. There were two criteria of performance. One was the number of times the pin and/or collar missed the hole or fell from the tweezer while S was attempting to place it in the hole. The second criteria was the time required, in seconds, to complete the task. The E recorded the elapsed time and number of errors as inconspicuously as possible. During this pre-frustration period, the E maintained as neutral an attitude as possible, neither encouraging nor discouraging the S in his

performance. This trial was considered as the pre-frustration condition and, as such, yielded a base line against which to compare the S's subsequent performance on this task.

Task 2 - Frustration

The Mirror Drawing Test immediately followed the pre-frustration condition of task 1. The new materials were placed before the S and the standard instructions administered. Following the administration of the standard instructions, the following additional instructions were administered:

"All you have to do is trace around the star without touching the lines. Don't touch the lines either on the inside here (E points) or the outside here (E points). Every time you touch the line that will be a mistake and I'm going to count your mistakes, so be very careful. I'm going to time you and you have very little time so work very quickly. Remember, you have to work as fast as you can, but be very sure you don't touch the lines or that will be a mistake. Do you have any questions?"

The purpose of this task was to create a high degree of frustration and to this end the impression was conveyed to the S that his errors were being counted for some purpose, although no indication of an actual reason was given. This, in addition to the visible evidence to the S that he is crossing the boundary of the star, all served to increase frustration to a high level. All S's were allowed to complete the star up to the fifth point, at which time they were told that their time had run out. In this manner the frustration level of the task was maintained by not allowing the S to complete the task.

Task 1 - Post frustration

Immediately following this period of frustration, Task 1

was readministered under the identical conditions set forth in the pre-frustration period. This trial was considered as the post frustration condition and, as such, yielded a measure of the effect of frustration upon S's performance.

Rest Period - Reassurance

Following the post frustration period there was a brief rest period. During this period, E attempted to undo the effects of frustration. This was accomplished by the E making comments designed to calm the S, reassuring him that he hadn't done as badly as he may have thought, that he needn't be upset for, after all, it is a very difficult task, etc. General conversation was also carried on in order to take the S's mind off the situation temporarily. While this was the general tone of the reassurance, no specific remarks are presented here since the specific type and amount of reassurance was adjusted to meet the needs of the particular S at the time. The purpose of this rest period was to calm the S, reassure and encourage him, and to try and have him relax as much as possible. As much reassurance as necessary to meet these conditions was given. In general, a period of approximately ten minutes was sufficient to meet these conditions.

Task 1 - Recovery

Following this period of reassurance, Task 1 was readministered under the identical conditions as set forth in the pre-frustration period. This trial was considered as the recovery condition and, as such, yielded a measure of the S's ability to

recover from the effects of frustration.

Following a complete series of tasks with each S, the E attempted to comfort the S and again reassure him. All efforts were made to try and have the S leave the situation without a feeling of failure.

Results

Although the major concern was with the variable of behavioral control since we had divided S's on social adjustment in the institution, it was possible to independently evaluate its effect as well. Analyses of variance were used to compare the performance of the good control and poor control groups (those individuals assigned ratings A or D versus those rated B or C) as well as the performance of the good adjustment and poor adjustment groups (those individuals rated A or B versus those rated C or D). The variables of Level of Social Adjustment in the Institution and Level of Control were treated as between S's variables. Sex was also included in the analysis as a between S's variable and thus made it possible to determine whether there were any sex differences among mental retardates with regard to the ability to tolerate frustration and recover from its effects. The within S's variable was treatment condition (pre-frustration, post frustration and recovery) and made it possible to determine to what extent each of the between S's variables interacted with the frustration conditions.

Prior to testing the hypothesis that behavioral control in the institution is related to reaction to laboratory frustration, it was necessary to establish that the groups did not differ in the pre-frustration condition. Analyses of variance were carried out on the

pre-frustration condition for number of errors (see Appendix C-1) and time in seconds to complete the task (see Appendix C-2). There were no significant differences in the main effects or the interactions during the pre-frustration condition with regard to both measures, eliminating the possibility that a differential response to frustration was a function of initial level of performance during the pre-frustration period.

The hypothesis stated that high grade mental retardates having good behavioral control exhibit less decrement in performance following frustration and greater recovery from the effects of frustration than high grade mental retardates having poor behavioral control. Analysis of variance of errors is presented in Table 2. The crucial test of the hypothesis is the Level of Behavioral Control x Treatment (C x T) interaction. This is the source of variance which indicates whether the two groups differentiated by level of control react differently in response to frustration in the post frustration and in the recovery period. The interaction is statistically significant with an F ratio of 12.88 ($P < .001$). Mean error scores for the good control group in the pre-frustration, post frustration and recovery conditions are, respectively, 32.85, 29.90 and 22.45. Corresponding means for the poor control group are 31.70, 42.25 and 37.30. The means are plotted in Figure 1 where it can be seen that, while the poor control group shows an increased number of errors in the post frustration condition, the good control group shows a decrease. In the recovery period both groups show a similar increment in performance. These results indicate that the performance

Table 2
Analysis of Variance of Error Scores

Source of Variance	df	MS	F
Between <u>S</u> 's	39	511.08	
Adjustment (A)	1	1755.68	3.72
Sex (B)	1	118.01	.25
Control (C)	1	2262.01	4.79*
A x B	1	336.67	.71
A x C	1	249.41	.53
B x C	1	99.01	.21
A x B x C	1	1.01	.02
error (b)	32	472.20	
Within <u>S</u> 's	80	101.68	
Treatment (T)	2	390.95	6.80**
A x T	2	605.10	8.96***
B x T	2	16.24	.28
C x T	2	740.84	12.88***
A x B x T	2	41.20	.72
A x C x T	2	205.73	3.58*
B x C x T	2	196.93	3.42*
A x B x C x T	2	29.64	.52
error (w)	64	57.52	

* Significant at .05 level
 ** Significant at .01 level
 *** Significant at .001 level

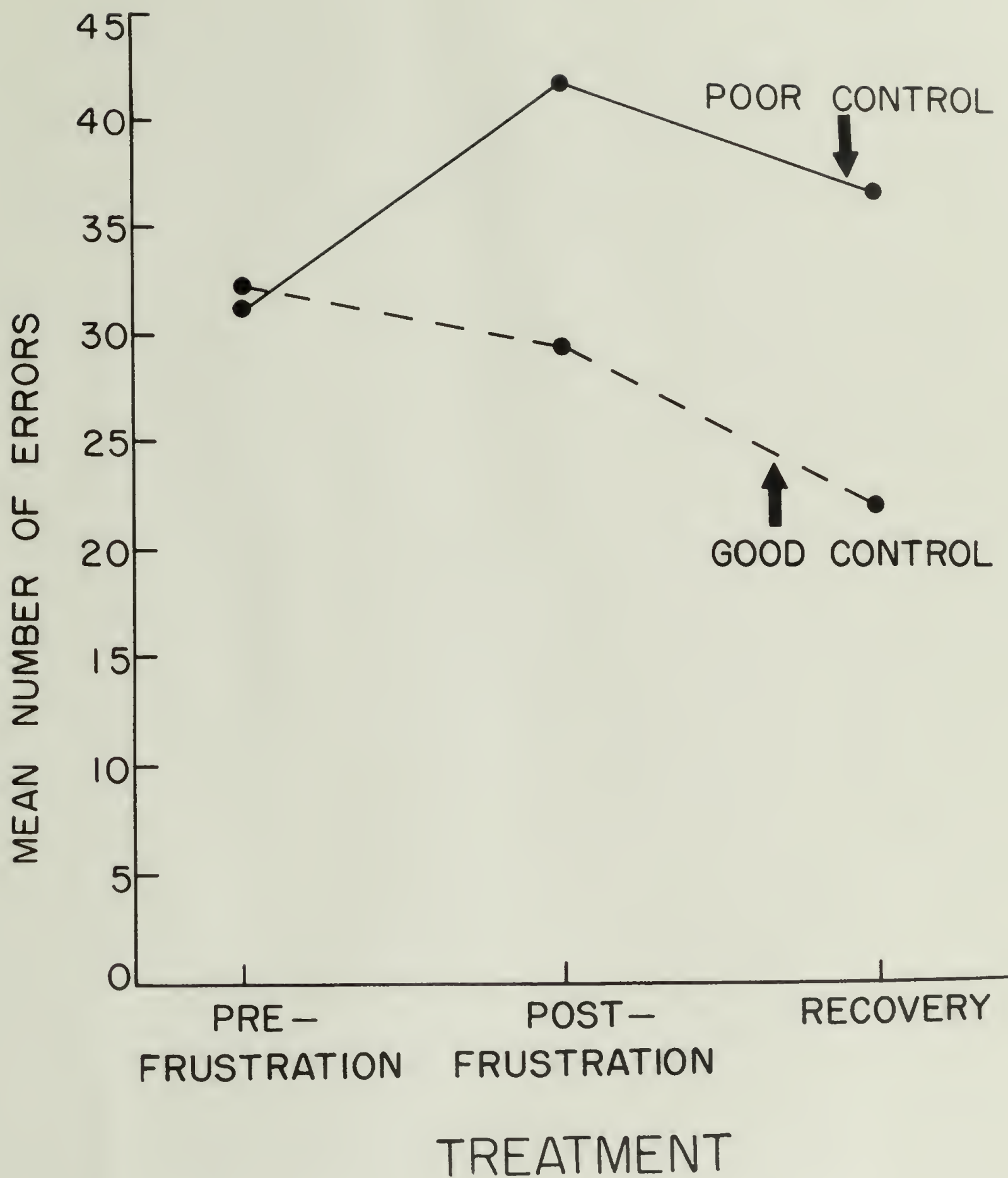


Fig. 1. Mean Number of errors over treatment conditions as a function of level of control.

level of retardates having good control was not adversely affected by frustration, while the performance level of retardates having poor control was reduced following exposure to frustration. It might also be noted that retardates having poor control do not show later recovery to the level of their initial performance, while the performance of retardates having good control continues to improve through the recovery period.

An analysis of variance of the time required, in seconds, to complete the motor task indicates (Table 3) that the Level of Control x Treatment interaction ($C \times T$) is significant at the .05 level (F ratio = 3.49). The means obtained for the pre-frustration, post frustration and recovery conditions are, respectively, 420.40, 384.60 and 335.70 for the good control group, and 429.25, 430.45 and 387.45 for the poor control group. In Figure 2, which presents this interaction, it can be seen that the poor control group takes about the same time to complete the experimental task in the post frustration and pre-frustration condition, while the good control group shows improvement. In the recovery period both groups require less time than in the post frustration condition with the good control group requiring the least amount of time. These results are similar to those reported for errors, and indicate that the performance of retardates having good control is not adversely affected by frustration.

In considering the main effect for Level of Behavioral Control for the measure of errors, analysis of variance (see Table 2) indicates that this effect is statistically significant with an F ratio of 4.79 ($P < .05$). Mean error scores for the good control group and

Table 3

Analysis of Variance of Time Required
to Complete the Motor Task
(in seconds)

Source of Variance	df	MS	F
Between <u>S</u> 's	39	26682.88	
Adjustment (A)	1	118252.40	5.17*
Sex (B)	1	9738.00	.43
Control (C)	1	37772.00	1.65
A x B	1	11940.16	.52
A x C	1	10584.50	.46
B x C	1	40516.96	1.77
A x B x C	1	80445.24	3.52
error (b)	32	22855.72	
Within <u>S</u> 's	80	3021.91	
Treatment (T)	2	42741.79	27.56***
A x T	2	10794.55	6.96**
B x T	2	1232.46	.79
C x T	2	5407.04	3.49*
A x B x T	2	3879.94	2.50
A x C x T	2	5312.48	3.43*
B x C x T	2	307.24	.20
A x B x C x T	2	1574.61	1.02
error (w)	64	1550.82	

* Significant at .05 level

** Significant at .01 level

*** Significant at .001 level

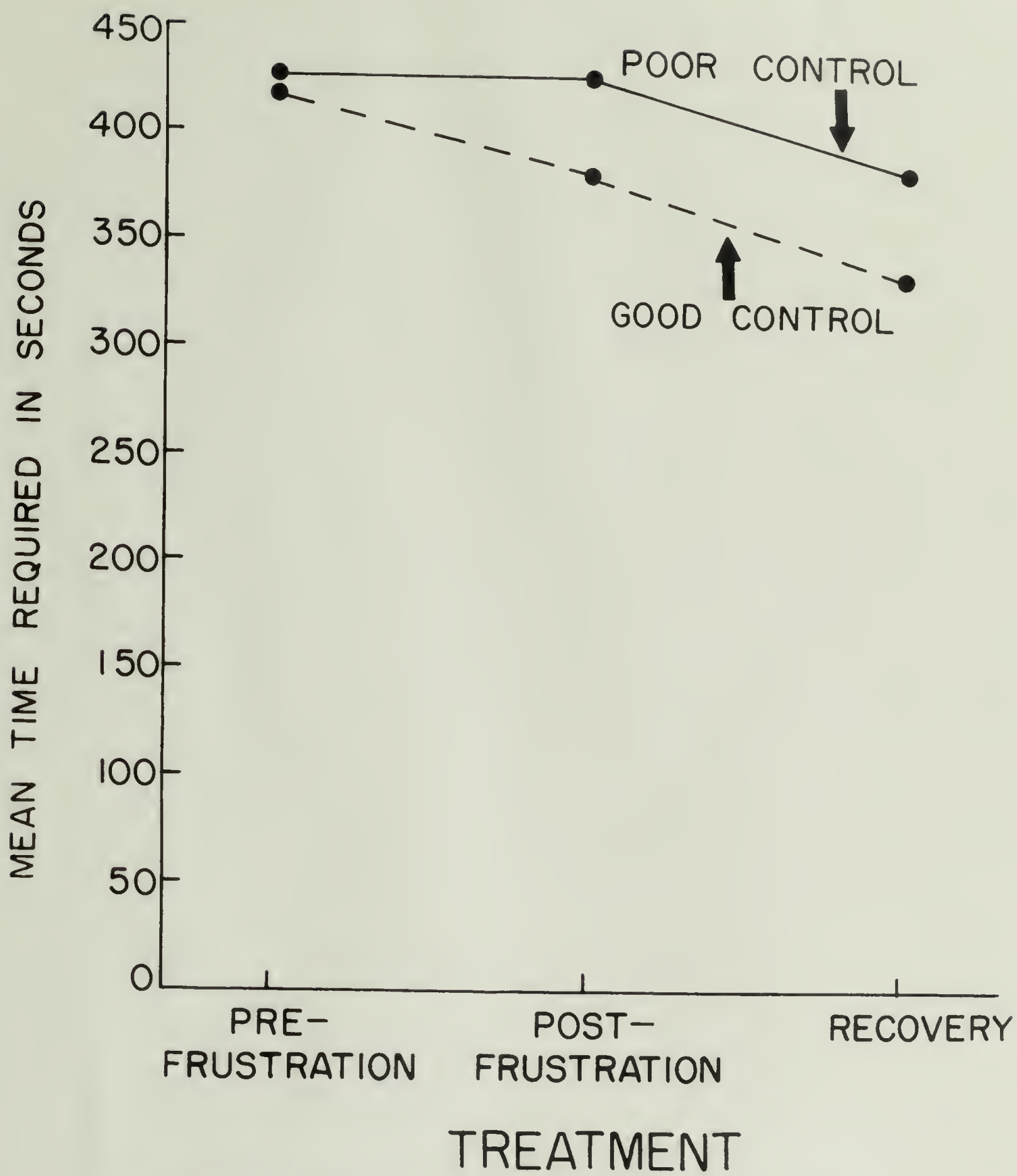


Fig. 2. Mean time required (in seconds) over treatment conditions as a function of level of control.

poor control group are 28.40 and 37.08, respectively. However, it was already noted that the groups did not differ in initial performance (pre-frustration condition), and it appears that this main effect is completely a result of the significant interaction with treatment, and, as such, has no interpretive significance. No significant Level of Control main effect was found for the measure of elapsed time (see Table 3). (The F ratio was 1.65, with mean elapsed time scores in seconds for the good control and poor control group of 380.23 and 415.72, respectively.)

In Table 2 it can be seen that the Sex x Level of Control x Treatment interaction (B x C x T) is statistically significant with an F ratio of 3.42 ($P < .05$). Table 4 and Figure 3 present the mean error scores. In Figure 3 it can be seen that, for the poor control group, females show greater impairment in performance than males following frustration, and, while the females recover following encouragement, the males do not. An additional analysis of variance (see Appendix C-3) indicates that this difference in performance between males and females having poor control is significant at the .05 level (F ratio = 4.75). Sex differences are much less pronounced, and are not significant (see Appendix C-4), for the good controls. Both groups show similar improvement following frustration and encouragement.

No significant Sex x Level of Control x Treatment interaction (B x C x T) is found with the measure of elapsed time in seconds to complete the task (see Table 3).

These results suggest that reaction to frustration and ability to recover from the effects of frustration may be a function of the

Table 4

Mean Number of Errors Over Treatment Conditions
as a Function of Level of Control and Sex

Group	<u>Treatment Condition</u>		
	Pre- frustration	Post frustration	Recovery
Males			
Good Control	32.00	29.10	18.40
Poor Control	31.40	39.60	40.00
Females			
Good Control	33.70	30.70	26.50
Poor Control	32.00	44.90	34.60

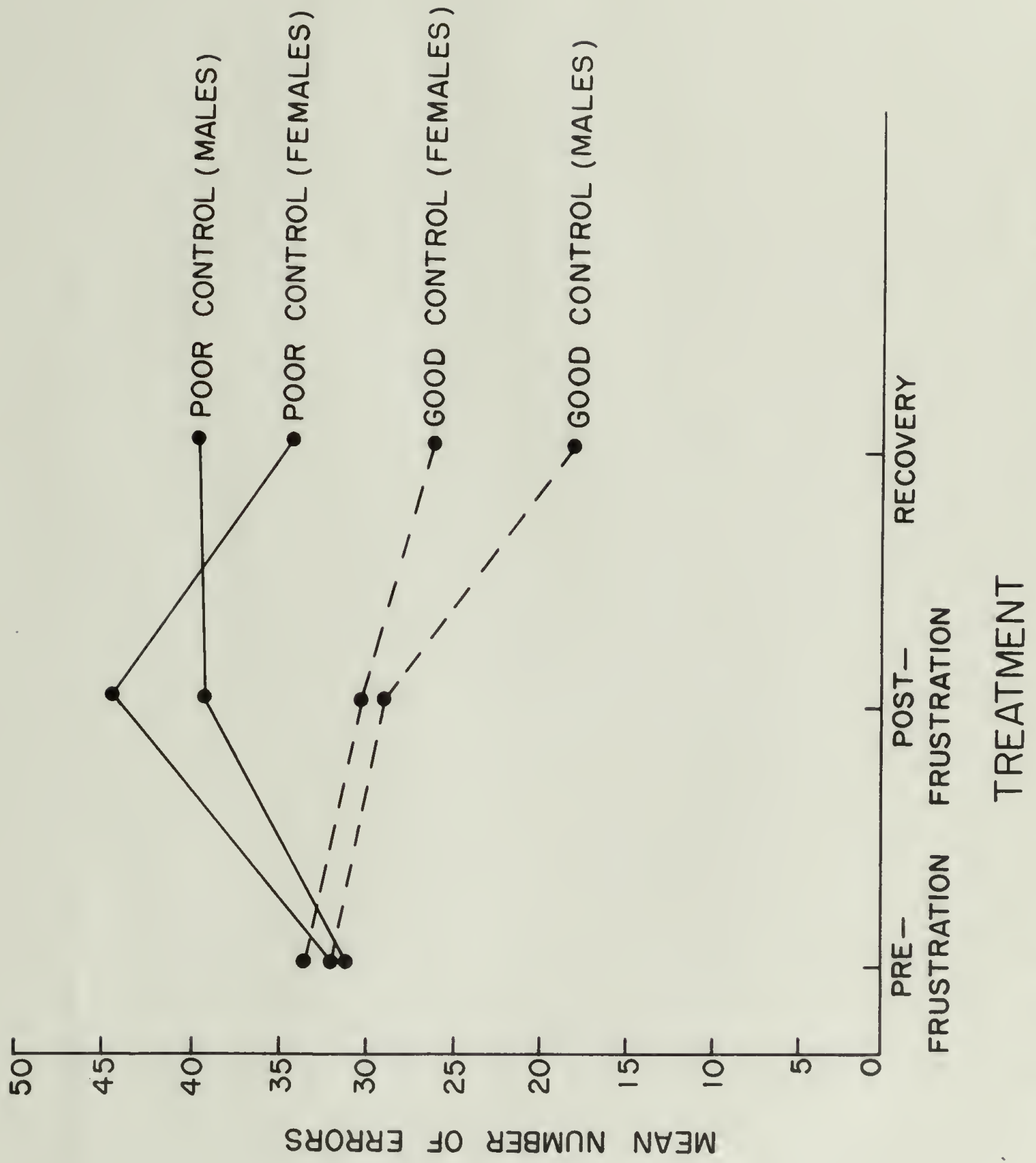


Fig. 3. Mean number of errors over treatment conditions as a function of level of control and sex.

interaction of sex and level of behavioral control. However, as the results are not consistent for both measures of performance, further research will be necessary to verify this interaction.

In Table 2 it can be seen that the Level of Social Adjustment main effect failed to reach significance (F ratio = 3.72, with mean error scores for the good adjustment and poor adjustment groups of 28.92 and 36.57, respectively). An analysis of variance for the measure of time required in seconds to complete the task (see Table 3) indicates that the Level of Social Adjustment main effect is statistically significant, with an F ratio of 5.17 ($P < .05$). Mean elapsed time scores for the good adjustment and poor adjustment groups were 366.58 and 429.37, respectively. Since the groups did not differ in initial performance (pre-frustration condition), this main effect can be attributed to the significant interaction of Level of Adjustment with the treatment conditions and, as such, has no interpretive significance in itself.

We were also interested in determining whether the groups that differ in social adjustment react differently to frustration. Table 2 indicates that the Adjustment x Treatment interaction ($A \times T$) is statistically significant at the .001 level (F ratio = 8.96). Mean error scores for the good adjustment group in the pre-frustration, post frustration and recovery conditions are 32.90, 30.55 and 23.30, respectively. Corresponding means for the poor adjustment group are 31.65, 41.60 and 36.45. Inspection of Figure 4 indicates that the poor adjustment group shows an increased number of errors from the pre-frustration to the post frustration condition, while the good adjustment group shows a decrease. Both groups show a similar

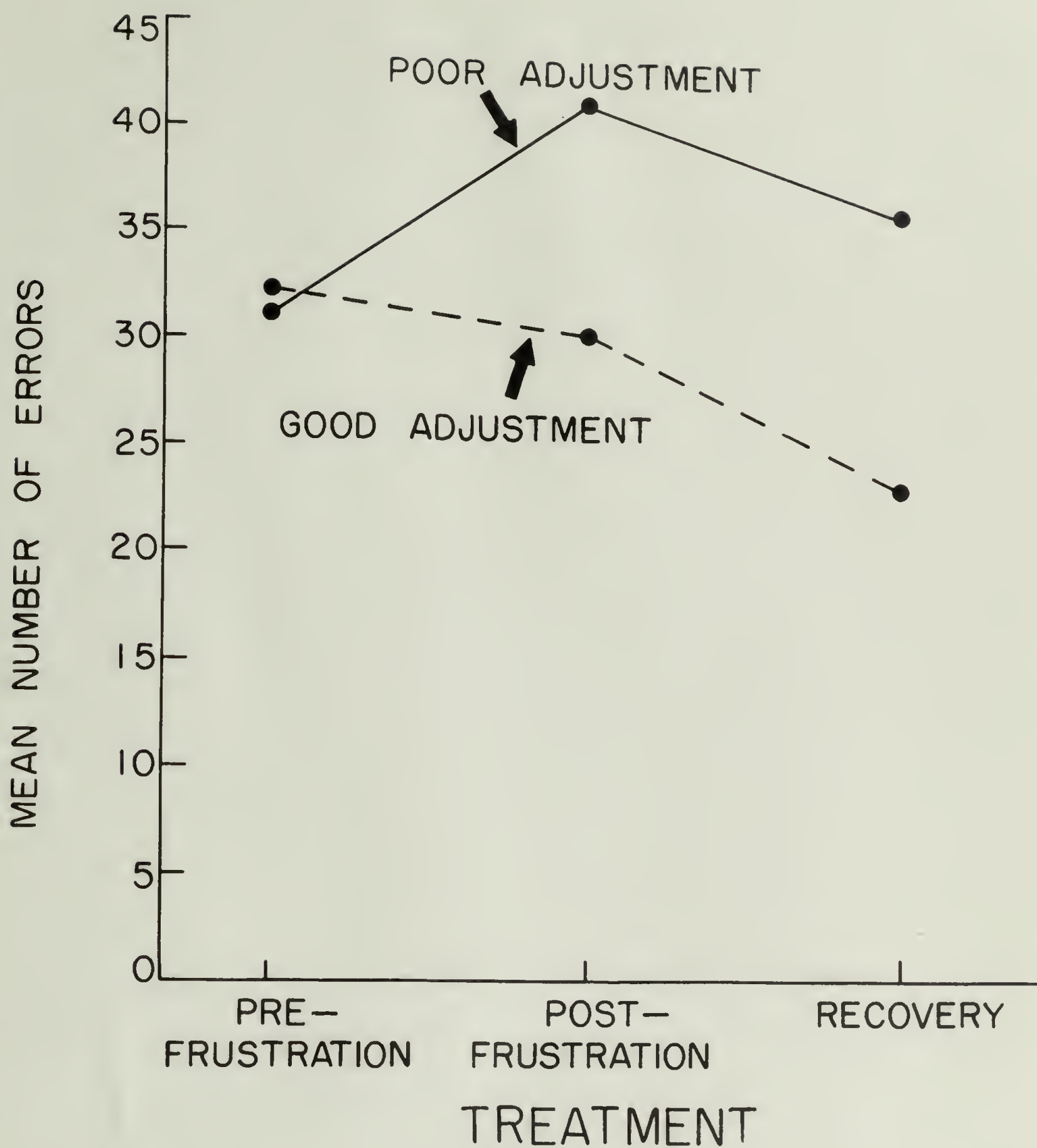


Fig. 4. Mean number of errors over treatment conditions as a function of level of adjustment.

decrease in number of errors from post frustration to recovery condition. These results indicate that the number of errors of retardates having good adjustment, unlike retardates having poor adjustment, does not increase as a result of frustration but, rather, tends to decrease.

This result was confirmed by analysis of variance of performance in terms of time to complete the task. The Adjustment x Treatment interaction ($A \times T$) here is significant at the .01 level (see Table 3). The mean elapsed time scores for the pre-frustration, post frustration and recovery conditions are, respectively, 412.40, 366.90 and 320.45 for the good adjustment group and 437.25, 448.15 and 492.70 for the poor adjustment group. In Figure 5 it can be seen that the poor adjustment group shows an increase in time to complete the task from the pre-frustration to the post frustration condition, while the good adjustment group shows a decrease. Both groups show similar improvement from the post frustration to the recovery condition. These results are identical with those reported for errors and indicate that, while the performance of retardates having good control is not adversely affected by frustration, the performance of retardates having poor control shows a decrement.

In Table 2 it can be seen that the Adjustment x Control x Treatment interaction ($A \times C \times T$) is statistically significant with an F ratio of 3.58 ($P < .05$). Table 5 and Figure 6 present the mean error scores. From inspection of Figure 6 it can be seen that three groups (poor control-good adjustment, good control-poor adjustment and poor control-poor adjustment) show a similar increase in number of errors from

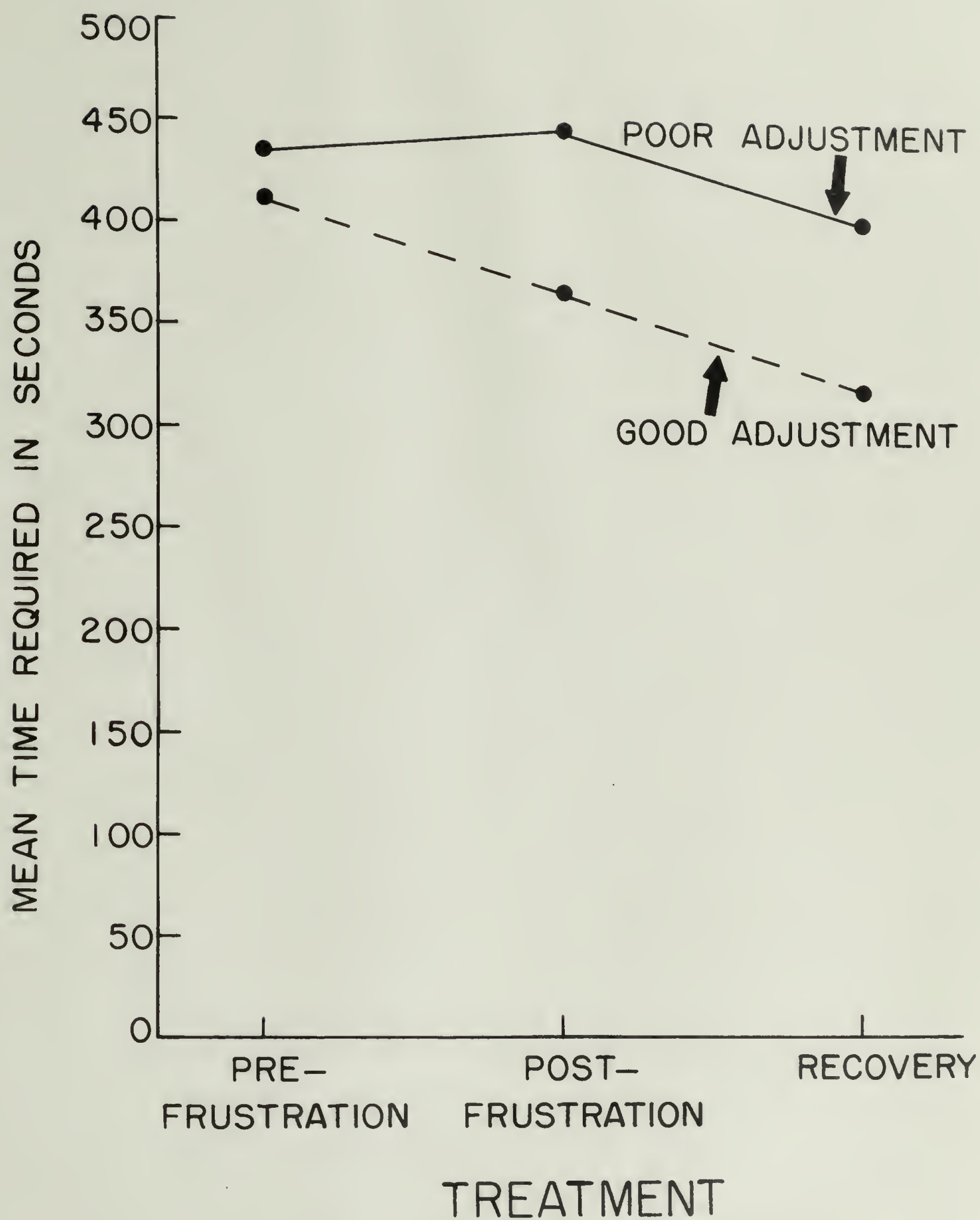
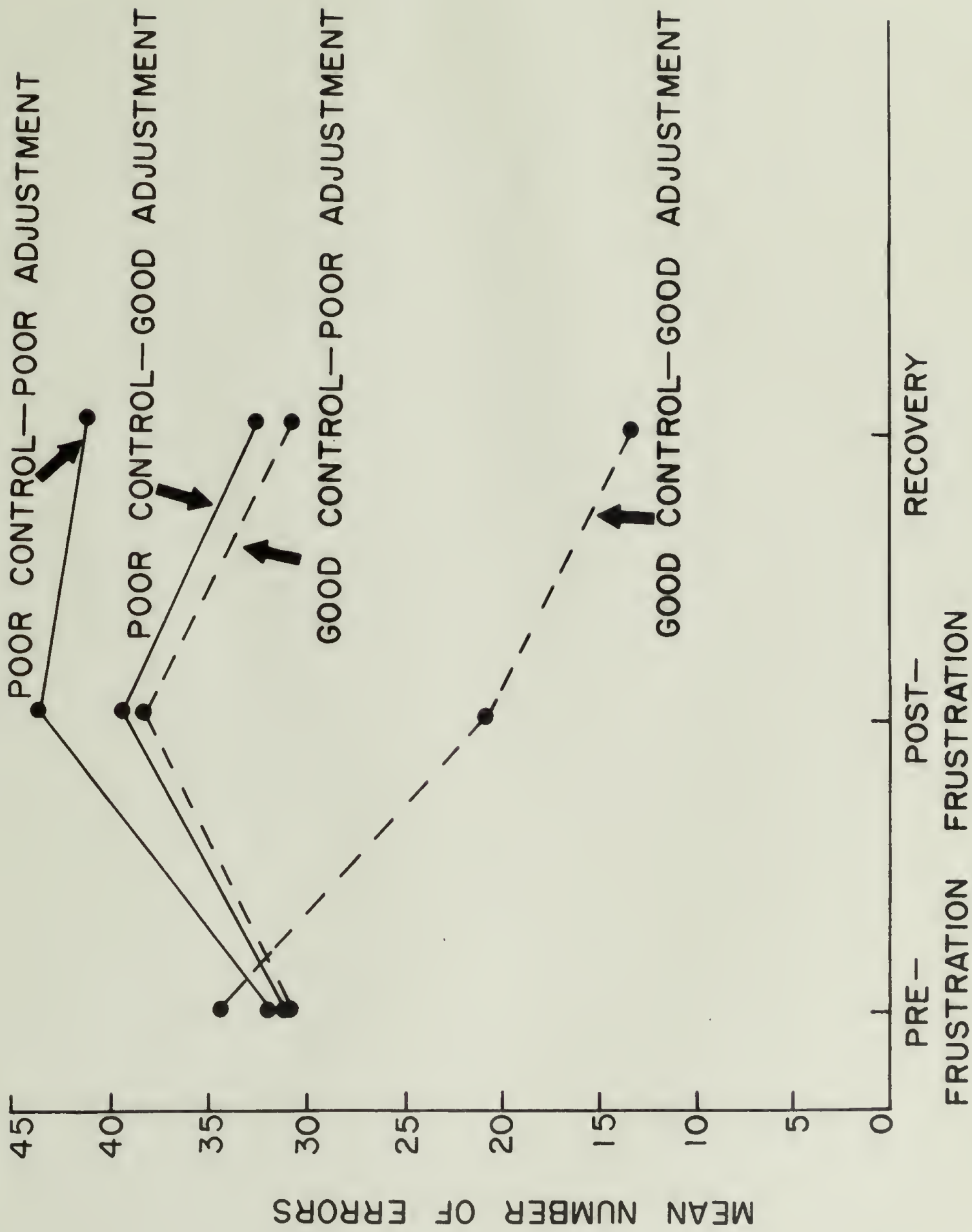


Fig. 5. Mean time required (in seconds) over treatment conditions as a function of level of adjustment.

Table 5

Mean Number of Errors over Treatment Conditions
as a Function of Level of Control
and Level of Adjustment

Group	<u>Treatment Condition</u>		
	Pre- frustration	Post frustration	Recovery
Good Control			
Good Adjustment	34.60	21.20	13.60
Poor Adjustment	31.10	38.60	31.30
Poor Control			
Good Adjustment	31.20	39.90	33.00
Poor Adjustment	32.20	44.60	41.60



TREATMENT

Fig. 6. Mean number of errors over treatment conditions as a function of level of control and level of adjustment.

pre- to post frustration and a similar decrease from post frustration to recovery, while the fourth group (good control-good adjustment) shows a continuing decrease in errors over the three conditions. A reasonable comparison here is between the good control-good adjustment group and the three other groups pooled, since they do not differ significantly from each other (see Table 6). The major difference is found in the pre-frustration to post frustration condition where it appears that frustration serves as a motivator and facilitates performance for the good control-good adjustment group, while its effect on the other groups is to disorganize behavior and lead to a decrement in the level of performance.

An analysis of variance of the time, in seconds, required to complete the motor task indicates (Table 3) that the Adjustment x Control x Treatment interaction ($A \times C \times T$) is significant at the .05 level (F ratio = 3.43). Table 7 and Figure 7 present the mean elapsed time scores. From an inspection of Figure 7 it can be seen that three groups (good control-poor adjustment, poor control-good adjustment and good control-good adjustment) show a similar continuing decrease in elapsed time from the pre-frustration condition through the recovery condition while the fourth group (poor control-poor adjustment) shows an increase in elapsed time from the pre-frustration condition to the post frustration condition and a decrease in elapsed time from the post frustration condition to the recovery condition. A reasonable comparison here is between the poor control-poor adjustment group and the three other groups pooled, since they do not differ significantly from each other (see Table 8). The major difference is found in the change from the pre-frustration to the post

Table 6

Analysis of Variance of Error Scores
(Excluding Good Control - Good Adjustment Group)

Source of Variance	df	MS	F
Between <u>S</u> 's	29	522.25	
Groups (G)	2	287.15	.49
Sex (B)	1	146.50	.25
G x B	2	203.84	.35
error (b)	24	584.04	
Within <u>S</u> 's	60	84.26	
Treatment (T)	2	690.98	11.53***
G x T	4	60.55	1.01
B x T	2	37.91	.63
G x B x T	4	119.58	1.99
error (w)	48	59.94	

*** Significant at .001 level

Table 7

Mean Time Required (in seconds)
over Treatment Conditions as a Function
of Level of Control and Level of Adjustment

Group	<u>Treatment Condition</u>		
	Pre- frustration	Post frustration	Recovery
Good Control			
Good Adjustment	406.30	365.30	303.10
Poor Adjustment	434.50	403.90	368.30
Poor Control			
Good Adjustment	418.50	368.50	337.50
Poor Adjustment	440.00	492.40	437.10

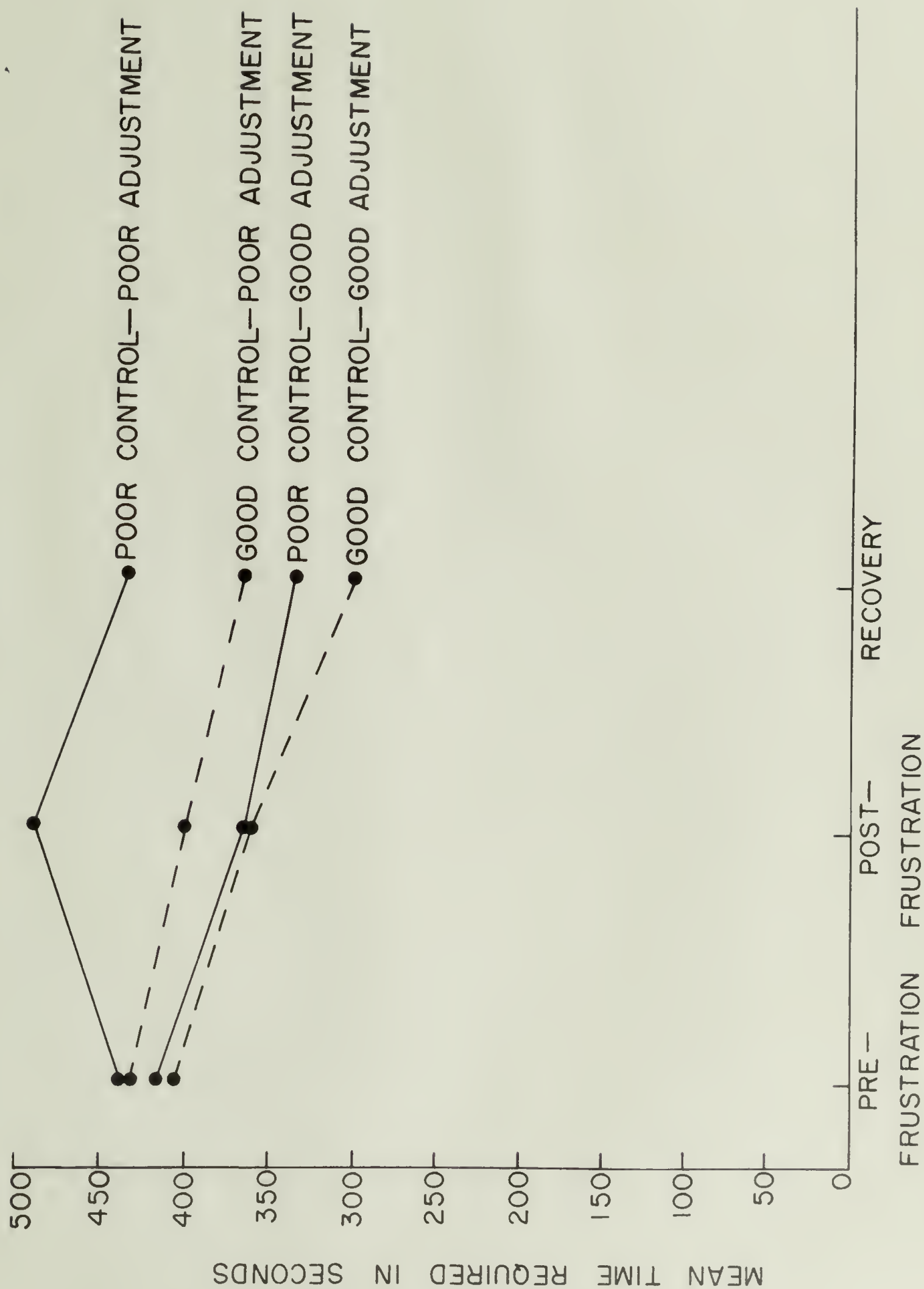


FIG. 7. Mean time required (in seconds) over treatment conditions as a function of level of control and level of adjustment.

Table 8

Analysis of Variance of Time Required
to Complete the Motor Task (in seconds)
(Excluding Poor Control - Poor Adjustment Group)

Source of Variance	df	MS	F
Between <u>S</u> 's	29	19834.72	
Groups (G)	2	14800.90	.77
Sex (B)	1	528.00	.00
G x B	2	42932.83	2.24
error (b)	24	19133.81	
Within <u>S</u> 's	60	3026.26	
Treatment (T)	2	52138.23	39.62***
G x T	4	1215.24	.92
B x T	2	824.04	.63
G x B x T	4	1904.17	1.45
error (w)	48	1316.11	

*** Significant at .001 level

frustration condition, where it appears that frustration serves to disorganize behavior and lead to a decrement in performance for the poor control-poor adjustment group, while it serves as a motivator and facilitates the performance of the other groups.

Although no group shows a consistent significant difference in performance from any other group over both dependent measures, there is a tendency for retardates having both good control and good adjustment to improve in performance on both scores, following frustration, suggesting that their performance is facilitated by exposure to frustration. On the other hand, there is a tendency for retardates having both poor control and poor adjustment to show a decrement in performance on both scores, following frustration, suggesting that their performance is adversely affected by exposure to frustration.

An analysis of variance indicates that the treatment effects (T) are significant both for number of errors and time required to complete the task (see Tables 2 and 3, respectively). However, this simply reflects the significant interactions and adds nothing new to the interpretation.

A comparison of the exposure time to the frustration task, in seconds, was computed for the groups arranged by social adjustment and by behavioral control. The means, ranges and standard deviations for these groups are presented in Tables 9 and 10, respectively. An analysis of variance indicates (Table 11) that there were no differences in length of time of exposure to frustration between the good adjustment and poor adjustment groups and between the good control and poor control groups, eliminating the possibility that level of performance following frustration was a function of differing exposure times to

Table 9

Means, Ranges and S.D.'s

of Exposure Times to Frustration

of Good Adjustment and Poor Adjustment Groups

(in seconds)

Group	Mean	Range	S.D.
Good Adjustment	512.30	755	222.68
Poor Adjustment	452.30	766	194.67

Table 10

Means, Ranges and S.D.'s

of Exposure Times to Frustration

of Good Control and Poor Control Groups

(in seconds)

Group	Mean	Range	S.D.
Good Control	502.00	755	228.46
Poor Control	461.60	710	192.44

Table 11
 Analysis of Variance
 of Exposure Time to the Frustration Task
 (in seconds)

Source of Variance	df	MS	F
Adjustment (A)	1	37210.00	.77
Sex (B)	1	35521.60	.73
Control (C)	1	16321.60	.34
A x B	1	16483.60	.34
A x C	1	409.60	.01
B x C	1	577.60	.01
A x B x C	1	140185.60	2.89
error	32	48568.15	

frustration.

Discussion

The limitation of depending upon the I.Q. score as the principal means of understanding the retardate has been pointed out (Hutt and Gibby, 1961; Sarason, 1953). The implication that mental retardates of similar intellectual levels vary considerably in their personality functioning was supported by the results of this study. As predicted, the level of behavioral control manifested by the mental retardate in the institution was directly related to the ability to tolerate the effects of a laboratory frustration task and to recover from these effects. That is, as ratings of behavioral control became poorer, performance on a simple motor task following exposure to a frustration task became poorer. Further, poorly controlled subjects failed to improve their performances on the motor task even after a period of relaxation.

This is consistent with the findings of Lipman (1959) who reported that frustration tolerance is a key variable in differentiating aggressive and non-aggressive mental retardates. Redl and Wineman (1951), in working with severely delinquent children, maintain that the degree of frustration tolerance is a function of the personality construct, ego-control capacity. The results suggest that ego-control capacity, defined as the ability to tolerate frustration without showing a decrement in performance, is an important construct in considering personality differences among high grade mental retardates.

Further, the results of this study indicate that the extent to

which the retardate is able to obey institutional rules and stay out of trouble is directly related to his ability to tolerate the effects of a laboratory frustration task and to recover from these effects on a simple motor task. This is consistent with Dybwad's (1941) study with institutionalized mentally retarded children. He concluded that the Binet I.Q. score bore no relation to the type of adjustment the individual manifested in the institution; i.e., good or poor adjustment.

The clearest discrimination among groups is found when both behavioral control and social adjustment are considered. Two groups were most clearly differentiated, the good control-good adjustment group and the poor control-poor adjustment group. The performance of the former group consistently improved through the post frustration and recovery periods. By contrast, the latter group showed considerable decrement in performance as a result of exposure to frustration. In summary, retardates having good control and good adjustment were not adversely affected following an exposure to frustration, while retardates having poor control and poor adjustment were adversely affected in their performance following an exposure to frustration.

These results suggest possibilities for further research. To what extent does success on a placement outside the institution depend on a high grade mental retardate's ability to control his behavior in the face of frustration along socially acceptable lines? Do retardates having good control and good adjustment have a better prognosis for success on placement than those evidencing poor control

and poor adjustment to the institution? If this is true, this would suggest that training programs in institutions for the mentally retarded should pay more attention to the emotional development and personality functioning of the retardates.

The results also indicated that female retardates having poor behavioral control showed greater impairment in performance following frustration than males having poor behavioral control but recovered following frustration, while the males did not. This suggests that reaction to frustration and ability to recover from the effects of frustration may be a function of sex. However, future research is needed to verify this finding, as it was significant in only one of the two measures.

Summary

The purpose of this study was to test the hypothesis that, with regard to high grade mental retardates, behavioral control in the institution is related to the ability to tolerate the effects of frustration and to recover from these effects.

Forty S's were selected on the basis of age, I.Q. and length of institutionalization and were assigned to one of four groups of ten S's each according to behavioral ratings of supervisors and attendants. These four groups of S's were then pre-tested on a simple motor task. Following this, they were exposed to a period of frustration immediately after which they were again retested on the motor task. Following this, a period of relaxation was interposed and a subsequent administration of the motor task comprised a recovery period. The results substantiated the hypothesis.

Those S's rated as "good behavioral control" continued to improve in their level of performance following frustration and this improvement continued into the recovery period. Those S's rated as having "poor behavioral control", however, showed a decrement in performance as a result of frustration and less of a recovery from the effects of frustration.

S's were then compared on their social adjustment to the institution. Those S's rated as having "good social adjustment" showed improvement in performance following frustration which continued into a recovery period. Those S's rated as having "poor social adjustment" showed a decrement in performance following exposure to frustration and less of a recovery from the effects of this frustration.

When the interaction of social adjustment and behavioral control was considered, those S's rated as having both good behavioral control and good social adjustment consistently showed an improvement in performance as a result of frustration, while those S's rated as having both poor behavioral control and poor social adjustment showed the greatest decrement in performance. The two other groups (good control-poor adjustment and poor control-good adjustment) were not discriminated by their performances. The results suggest that the construct of ego-control capacity is an important one in considering personality differences among high grade mental retardates and, as such, might be a meaningful way in which to differentiate among high grade mental retardates.

Implications for future research were discussed. It was suggested that tolerance for frustration among high grade mental

retardates may vary as a function of sex, and that the ability to control and maintain socially acceptable behavior in the institution might relate to success on placement in the community.

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APPENDIX A

Rating Scale for Behavior

RATING SCALE FOR BEHAVIOR

Date _____

Rated by _____

DIRECTIONS: Below you will find four statements that describe various types of behavior. Each of these statements has a letter before it. Place the letter of the statement which best describes the child's typical behavior before the name of the child. If none of the statements describe the child then write the word NONE before his name. Please answer without bias for or against the child. Please do not consult with anyone else or tell them what your rating was for any child.

A -- A Well Behaved Child Who Has Good Control Under Pressure

A secure, happy child who gets along well with the other children and is no particular trouble to the staff. He (she) is able to take most things in stride without becoming overly upset. He (she) complies within reason with institutional rules, and is cooperative and reliable when depended upon to do something. When the going gets rough he (she) usually doesn't blow up or quit, but remains calm, within reason, and tries to get through as best he (she) can.

B -- A Well Behaved Child Who Tends To Withdraw Or Give Up Under Pressure.

A good child who gets along with the other patients and the staff but appears to do so largely because he (she) is afraid. He (she) complies with the institutional rules but when problems come up he (she) seems to be afraid to handle them. When the going gets rough he (she) tends to give up easily or function below capacity. He (she) will sometimes tend to stop trying because of the fear he (she) will fail. He (she) often becomes easily discouraged and reacts to this discouragement by giving up easily, or in extreme cases, by being afraid to even start a given task.

C -- A Child Who Acts Up And Sometimes Gets Into Trouble Because He Loses Control Under Pressure.

A child who is easily upset and when under pressure may fail to control his (her) temper. He (she) cannot face disappointments or discouragements and is easily upset by failures and may react to this by "blowing off steam" or by "going to pieces." Sometimes when he (she) gets angry or upset he (she) may throw objects or yell at the other patients or staff. At times he (she) may get so upset that they have to be isolated for a time to "cool off" before someone can talk with them. In summary then, he (she) is a child who becomes easily frustrated and acts up when under pressure.

D -- A Troublemaker, Whether Under Pressure Or Not.

A child who is frequently a troublemaker but does not appear to be particularly insecure. This child tries to look and act like a tough kid. He (she) frequently starts trouble and often fights and argues with the other children and staff but usually knows what he's (she's) about. For example, he (she) may get others to help fight his (her) battles or sometimes incite others to break rules and/or institutional equipment. He (she) generally behaves as if he (she) had a chip on his (her) shoulder.

APPENDIX B

Modified Star Used In The Mirror Drawing Test



APPENDIX C

Additional Analysis of Variance

Table 1
 Analysis of Variance of Error Scores
 (Pre - frustration Condition)

Source of Variance	df	MS	F
Adjustment (A)	1	15.65	.10
Sex (B)	1	13.25	.09
Control (C)	1	13.25	.09
A x B	1	13.20	.09
A x C	1	50.60	.33
B x C	1	3.00	.02
A x B x C	1	11.05	.07
error	32	154.00	

Table 2

Analysis of Variance

of Time Required (in seconds) to Complete the Motor Task
(Pre - frustration Condition)

Source of Variance	df	MS	F
Adjustment (A)	1	6175.25	.79
Sex (B)	1	3705.65	.48
Control (C)	1	783.25	.10
A x B	1	17598.00	2.26
A x C	1	112.00	.01
B x C	1	11323.20	1.46
A x B x C	1	28143.05	3.62
error	32	7769.91	

Table 3

Analysis of Variance of Error Scores
(Comparing Poor Control Males and Females)

Source of Variance	df	MS	F
Between <u>S</u> 's	19	379.67	
Sex (B)	1	.42	.00
error (b)	18	400.73	
Within <u>S</u> 's	40	62.29	
Treatment (T)	2	557.22	18.41***
B x T	2	143.87	4.75*
error (w)	36	30.26	

* Significant at .05 level

*** Significant at .001 level

Table 4

Analysis of Variance of Error Scores
(Comparing Good Control Males and Females)

Source of Variance	df	MS	F
Between <u>S</u> 's	19	576.68	
Sex (B)	1	216.60	.38
error (b)	18	568.90	
Within <u>S</u> 's	40	1393.61	
Treatment (T)	2	574.55	5.17*
B x T	2	69.45	.58
error (w)	36	119.07	

* Significant at .05 level

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Approved by:

W. B. Doyle

L. Epstein

Date:

12/20/62



