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Frustration

This important work is a report of an experimental program of research on frustration conducted in the author's laboratory during the past ten years. The volume presents the evidence which leads to a new interpretation of behavior expressed when an individual is in a state of frustration. The author departs from the usual approach to abnormal behavior, which seeks to discover how the behavior solves a problem for the individual. Instead, the approach in this book is to indicate that searching for the solution of a problem in the symptom is misleading; rather, according to Professor Maier, symptoms are determined by the end they serve.

The treatment in this text may be described as experimental, theoretical, and applied. The applied aspects concern child rearing, educational psychology, clinical psychology, problems in delinquency, and human relations in industry. Since the applications go counter to so much of present practice, it is first necessary to give the experimental findings and the theoretical conclusions in detail.

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FRUSTRATION

The Study of Behavior without a Goal

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FRUSTRATION

The Study of Behavior without a Goal

BY

NORMAN R. F. MAIER

University of Michigan

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FRUSTRATION

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To Emma Cramer Maier
My Mother

PREFACE

The present volume is a report of an experimental program of research on frustration conducted in the author's laboratory during the past ten years. Most of the experiments have already been reported as separate studies. An attempt is now made to integrate these findings and orient them toward a theory of frustration. Throughout the progress of this program of research the aim has been to develop a theory of frustration on the basis of experimental findings and to avoid being influenced by concepts developed from case studies. This seemed to be a desirable alternate approach since an adequate theory should be approachable from different directions. Thus a good theory of frustration should be consistent both with experimental findings and case studies. If the two approaches when carried on independently lead to similar theoretical concepts, there is assurance that the concepts are basically sound.

If, however, the experimental and the clinical approaches do not agree in the conceptual formulations, the discrepancy must be explained. Since the present studies largely have utilized subhuman forms one may expect to find certain differences due to the type of organism studied. The type of difference obtained from human studies and from studies of animals below man, however, should be limited to their biological differences. Thus basic principles are found to hold consistently throughout the animal kingdom, and variations only in degree and in functional achievements are obtained from comparative studies. For example, the basic principles of instinct, learning, motivation, and perception are not specific for a species, but quantitative differences, differences

resulting from structural variation, and differences caused by the impact of culture, the family, and religion must be expected when man and subhuman forms are compared. Since the investigations here reported are directed toward the analysis of fundamental concepts it seems that the findings from animal studies may be relevant to higher forms, at least in their basic respects. Further, an attempt has been made to test some of the conclusions by comparable experiments with human subjects; in other instances data from experimental studies of human subjects obtained from other laboratories have been utilized and reinterpreted in the light of the findings obtained from subhuman forms. With proper tests made for the validity of generalizing from one species to another, it is possible to study frustration as a phenomenon and utilize the specific animal merely as the receptacle that contains the subject matter investigated. In studying frustration in the rat it has been the author's purpose to analyze frustration, not to compare the behavior of rats with that of human beings. In so far as frustration can be investigated in animals certain advantages are obtained. The use of animals permits more rigid controls of the many variables that may become part of a frustrating experience, and it permits the investigator to set up experimental designs that could not be used with human subjects. The utilization of animals, therefore, has advantages that, in some instances, more than offset the disadvantages.

An examination of the various treatments of the subject of frustration reveals very few basic principles used to account for the types of disturbances found. Whereas books on normal psychology deal with behavior principles, books on the subject of abnormal behavior frequently find it necessary to describe case histories in detail and present these histories not only to illustrate a principle but to explain and present clinical material. It appears that the student is required to learn the fundamentals of clinical psychology by becoming

familiar with a large amount of case material. This indicates either that there is a large gap between known principles or that the prevailing principles are inadequate for permitting generalizations. In either instance experience with cases becomes a substitute for scientific analysis, and the practicing psychologist is forced to resort to impressions in order to compensate for the inadequacies in his science. To the extent that the clinician's impressions become a part of the diagnosis, the study of abnormal behavior becomes an art as well as a science. This does not mean that clinical psychologists and psychiatrists are ineffective, but rather that they are made to utilize the sum total of their many unclassified observations in order to operate during the period in which the scientific aspects are being developed.

Frequently one hears that the organism as a whole must be considered when dealing with personality disorders. This position can be defended on a number of grounds, and it can also be claimed that the principles of Gestalt psychology support this approach. However, Gestalt psychology represented an attempt to determine the principles of organization, whereas in many instances the insistence on the necessity of studying the organism as a whole becomes a mere justification for an impressionistic interpretation of a problem case. It would seem that the scientific approach is evidenced only in so far as opinions and interpretations can be supported by verified principles. When adequate principles are not used in formulating an interpretation of a case, disagreement among experts is more common than when principles can be found to support the interpretations. This condition makes it difficult to distinguish the competent from the incompetent clinician, and often permits the latter to find safety from exposure because there is not sufficient evidence to indicate that certain basic principles in science have been overlooked. To the extent that any field permits a general subjective impression to dominate judgments, it al-

lows for public exploitation since no one can prove that his impressions are more sound than those of another person. The only way to rule on the excellence of impressions is to set up an authority to decide such matters, and authority often hinders rather than stimulates progress. No pretense is made that the present volume will make it possible to solve the problems of abnormal behavior in a scientific way, but it is hoped that the concepts and principles developed may serve to introduce an added approach to the field and may contribute something toward greater objectivity.

For the reader not interested in the technical details of the experiments, Chap. 2 may be omitted without losing the thread of the discussion, since Chap. 3 recapitulates the essential conclusions.

The author is indebted to a number of colleagues for reading and critically examining his views. Professor Donald G. Marquis has been most kind in carefully examining the whole manuscript and in raising provocative questions. Professor Theodore M. Newcomb has examined a good portion of the manuscript also and has served as a kind and sympathetic critic. Professors E. Lowell Kelly and Martha G. Colby have critically examined certain parts of the manuscript and have given the author the benefit of their thinking and knowledge. The present volume is greatly improved because of the time and thought these sympathetic and critical psychologists have given these attempts to interpret the results of frustration studies.

The author owes much to his students who have worked with him on various phases of the experiments. They include Nathan M. Glaser, Barbara J. Sherbourne, James B. Klee, Robert W. Kleemeier, Seymour Wapner, Joan Usher Longhurst, Dorothy I. Marquart, and Robert S. Feldman.

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Psychology, Journal of Psychology, and *Behavior Monographs.* The original source is indicated in each case.

The following presentation reflects the contributions of Ayesha Ali Maier, the author's wife, whose taste, critical judgment, and patience have been of great value.

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NORMAN R. F. MAIER

ANN ARBOR, MICH.
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Part One

EXPERIMENTAL AND THEORETICAL CONSIDERATIONS

Chapter 1

INTRODUCTION

Learning and Therapy

The problem of therapy is closely associated with behavior change. If an individual is badly adjusted to a situation, either the situation that elicits the behavior must be altered or the individual's reactions to the situation must be changed. The first approach implies that the environmental factors are subject to proper modification and that it is this aspect which is out of adjustment. Thus maladjustments caused by a housing shortage may be corrected by furnishing adequate housing. The second approach implies that the individual is subject to modifications. Techniques in therapy usually deal with this aspect of the problem since the clients rather than the situations present themselves to the therapist. Changes in an individual imply learning, and in this sense therapy becomes closely associated with learning.

Problems of learning, however, are very complex and many variables influence learning progress. Hence the association of therapy with learning does not simplify the views on therapy. Rather confusion may be created because varying learning theories have given clinical theory as well as clinical practice different types of emphasis. As a matter of fact the term *learning* is so general and inclusive that it is applied to noncorrelated activities. Thus Commins,

McNemar, and Stone (11) found no significant correlation between the learning of a platform problem box, a light discrimination problem, and a maze problem. Conditioning and trial and error learning scores likewise are unrelated, but the difference in these two functions is not clearly recognized in clinical theory.

A further complication arises because of the manner in which motivation affects learning. Motivation is treated both as a factor which is essential to learning and as a factor which selects the learning that will be expressed.

The way a situation is perceived may also explain what is learned under a given set of conditions. For example, Kuo (38), in attempting to condition cats to fear rats, found that the same training caused some cats to fear rats, others to fear the training situation, and still others to fear rats when they appeared in the training situation. Thus differences in learning sometimes are more a matter of individual differences in perception than of individual variations in the rate of association formation.

Finally, problem solving is frequently considered to be a form of learning. In some instances problem solving is considered to be a form of trial-and-error learning; in other instances writers speak of insightful learning. Whether or not insight operates in all learning or whether the appearance of insight introduces another variable becomes a basic question.

Types of Behavior Modification Applied to Therapy

In order to make these aspects of behavior modification more clear let us examine the type of situations in which each receives its emphasis.

One basic concept in learning is the extension of a response (conditioning) so that it will be expressed in a variety of situations. Thus a puff of air applied to the eyeball may

produce a wink response in a given organism. If the sound of the air is present when the puff of air is applied, the wink response may be extended so that the auditory sensation as well as the tactual sensation produces the wink. This type of behavior change illustrates the process of association formation in which sensations occurring side by side or in succession tend to become related in their behavior effects. The number of exposures to this situation is an important factor in determining the strength of the association formed.

This type of learning situation has developed such principles as extinction, secondary conditioning and reconditioning. On the basis of these principles one would attempt to remove a child's fear of water by substituting a pleasant association with water for the unpleasant one, and the problem would merely be one of making the new association the stronger one by frequent repetitions. Another approach would be to extinguish the fear association by placing the child repeatedly in water but without the presence of the original unconditioned stimulus.

A second method of altering behavior is to change the consequence of an action. For example, an animal runs up one path and finds food, but when it runs up another path it finds no food. In such a situation the consequence of the behavior is associated with the path chosen, and the nature of this consequence becomes a relatively important determiner of future behavior or choices at the choice-point. Under these conditions the principle of frequency becomes a minor factor. The animal may have chosen the food path many times, but if the food is moved to the other path the behavior changes to the selection of the new path, even though it has previously been traveled less frequently than the original food path. Thus the consequence of the behavior rather than the frequency of expression or the degree of contiguity between stimuli is the important determiner of such behavior.

This type of learning is not always clearly distinguished from the conditioning type of learning, so that confusion in learning theory often arises when attempts are made to integrate results from learning data obtained from the two types of situations. To make the distinction more clear we may refer to the two types of learning as *associative learning* and *selective learning* (75, Maier and Schneirla). Although similarities are present, the evidence indicates that a basic difference must be recognized.

Selective learning is always present when the consequence of the behavior is the predominant factor. The term *trial and error* is frequently used to describe learning under these conditions because the individual may express a variety of behaviors in a situation and eventually settle on the one that leads to the most desirable consequences. This does not mean that other alternatives have not been learned as well as the one selected. The animal may have associated one path with the "no food" consequence and the other path with the "food" consequence so that both paths have consequences associated with them. The response chosen is in terms of the type of consequence, however, and in this sense such behavior represents a choice of two activities. Although association formation is required in learning situations of this sort, the factor that finally determines the choice is the type of consequence. For this reason such behavior may be described as goal oriented, or motivation determined.

In applying therapy in accordance with this type of learning, the nature of the consequences rather than the strength of the competing associations becomes important. A child who fears water may be punished each time the fear is expressed or he may be rewarded whenever fear is not expressed. The implication is that the use of reward and punishment will cause the child to choose the more desirable of alternate responses. Although this type of treatment would not be recommended in the above case, it is a method that is fre-

quently used to correct less intense reactions such as stealing, crossing streets, speaking rudely to parents, etc.

A third common factor in behavior change is due to a change in perception or stimulus interpretation. The appearance of a snake may produce a fear reaction, but the same behavior may occur if a stick of wood is experienced as a

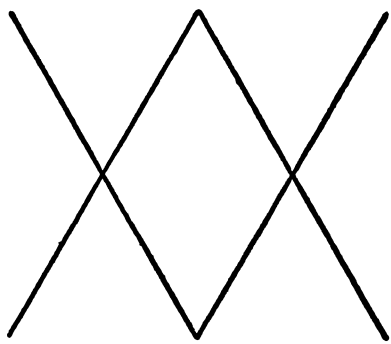


FIG. 1. This diagram illustrates the factor of perception in behavior. A variety of interpretations are possible. One may see 2 *X*'s; 2 or more *V*'s; a *W* on top of an *M*; or a diamond. The way one responds depends upon the perceptual organization, and the principles describing the perceptual organization are different from those of motivation and learning. Only one organization can be experienced at one time, and in experiencing a given organization one excludes the other possibilities. Thus misunderstandings can readily occur. When a given person experiences his organization he is unable to experience a different one, which may be the obvious interpretation experienced by another person. To every individual, his own organization is the obvious one and this makes him feel he alone is right. Perception not only determines the way one will organize a given set of data, but it also determines his selection of data.

snake. However a closer view of the object may cause the perception to change from the "snake" interpretation to the "stick" interpretation. Although consequences may influence such changes in interpretation, the change may occur even if the consequences remain the same. The stimulus shown in Fig. 1 may be seen in many ways. If seeing an *X* is unpleasant and seeing a *W* is pleasant, either experience may be initiated by the stimulus. On the other hand, a *V* may be seen, which may elicit neither pleasant nor unpleasant associations. Thus the type of reaction to a stimulus depends on the way it is perceived, and unusual perceptions may produce atypical reactions despite the fact that the associations with various interpretations are typical.

Differences in interpretation are a matter of sensory organization, and although learning is a factor in such organization it is but one of many factors influencing perception. Even suggestion may alter perception and produce an interpretation which is contrary to one that is well learned. If it is suggested that there are snakes about, the mental set thus established influences the perception and, in turn, the behaviors associated with the given perception. The more familiar reactions to sticks thus become replaced by reactions occurring when snakes are perceived. Likewise, Fig. 1 may be seen as a diamond when this is suggested, although the perceptual principle of good continuity fails to support this interpretation. Attitude is an important source of influence for mental sets, and even though attitudes are acquired and hence learned, the behavior effect is mediated by the individual's perception rather than by a choice that is made or the nature of the associations previously established. If, for example, a person's attitude toward Negroes changed from an unfavorable one to a favorable one, the person's view of a given sample of Negro behavior (*e.g.*, refusal to accept a menial position) might change from an interpretation of arrogance to an interpretation of self-respect. It is clear that these two interpretations would arouse different associations and behaviors in the person. Similarly, in the above illustration the individual does not show a fear reaction to the stick merely because of an association between the snake and fear responses or because his previous experience with snakes led to undesirable consequences, but also because he perceives a stick as a snake. Alteration of such behavior would therefore be more a matter of changing the interpretation than of altering associative connections or giving a demonstration showing that sticks have no undesirable consequences. When applying this aspect of behavior change to behavior problems one does not attempt to alter associative connections already formed or

to use the tools of reward or punishment; rather one attempts to influence the client's interpretations by changes in his frame of reference. This is frequently accomplished by having the client relive an early experience or by having him play the role of another person. Psychoanalysis, play therapy, and nondirective counseling, therefore, frequently achieve changes in perception.

A fourth type of behavior change occurs in connection with problem solving. Behavior is blocked because a difficulty has arisen in connection with progress toward a goal. Trial-and-error behavior solves some problems of this sort, but in other cases the person suddenly perceives the solution. He may have an experience of insight after struggling with the problem for some time and then suddenly the obstacle is overcome. This type of behavior is goal oriented, and the behavior changes because a method of reaching the goal is discovered in the problem situation. In insightful problem solving the goal influences the nature of the insight and resulting behavior. In trial-and-error problem solving the goal has a different function because a solution is selected out of past experience. Thus it influences the behavior selected but does not play a part in creating the behavior. In productive thinking or reasoning the solution is manufactured by a new combination or integration of parts of old experiences. Since the combination in reasoning is a new one it cannot be based upon mere selection and must be considered as a fourth type of influence on behavior (46, 47, 49, 51, 52, 59, 72, 109). The behavior change can readily be recognized when a problem is solved creatively because random activity is replaced by positive action. In animals direct action toward a goal replaces face washing, etc.; in human beings the moment of insight is followed by directive activity. Before insight is experienced the person is puzzled, confused, and often on the verge of giving up.

Therapy that used problem solving as an aid to adjustment

would frequently be directed toward improving the situation in which the client found himself. However, a client's insights into his own situation and a recognition of his own contributions to the situation must also be recognized as a factor in therapy. This phase of behavior change has been given special emphasis by Rogers (93).

The Effect of a Goal on Behavior Modification

Two of the four types of behavior discussed above may be said to be primarily stabilized, determined, and maintained by the goal and will hereafter be called *goal oriented.* In trial-and-error learning the goal achieved on random trials acts as a selective factor in the future expression of behavior. Unless the behavior continues to accomplish a goal, its future expression is weakened. Thus the activity that is repeatedly expressed in such situations is influenced by the attainment of the goal.

In problem-solving behavior the goal serves not only as a selective factor, but it may also influence the nature of the integration or the restructuring of past experience. Thus a child may have used tables and chairs in a certain way in the past, but with jam on the top shelf of the cupboard this furniture may be combined in a particular manner and constitute a route to the jam. In such case the goal serves as an important determiner of the combination of elements used.

Thus goal-oriented behavior is always a *means to an end* rather than an *end* in itself. When the end is changed the behavior in question loses its dominance, and other behavior takes its place. The new behavior may be random, *i.e.*, selected because of its chance success, or it may be an insightful restructuring of past experience, but its survival depends on the *end* it serves.

A knowledge of the goal toward which behavior is oriented makes such behavior understandable. Thus the discovery of a dead body may reveal murder, but this fact does not

explain why a person was murdered. The behavior of killing is understandable, however, as soon as it is learned that the victim has been robbed. Likewise a man's running down the street makes sense to us if we see the train at the station, and a child's stealing makes sense if the object stolen satisfies a need within the child. To the extent that behavior is goal oriented it may be thought of as the person's solution to the problem of reaching a goal. Thus much of the familiar behavior represents an individual's solutions to problems. Even where routine habits are involved there is evidence that the habit was established and is maintained because it either is successful in achieving desirable objectives or does not achieve undesirable ones. If undesirable ends are reached by habits a new problem is presented, and the new solution to the problem involves a habit change.

Perception as a Separate Influence on Behavior

Perception may influence the behavior in a problem situation to the extent that a problem may have different appearances or interpretations for various individuals. Suppose two children develop a strong need for blocks in their play. One of them may rummage in the basement for short pieces of wood; the other may see the blocks as parts of a chair and proceed to saw up the chair into blocks. Discounting any inhibitions either might have, such differences in perception would become reflected in problem-solving behavior so that a study of problem solving reveals both the nature of goals as well as perceptions.

Although perceptions are influenced by certain principles dealing with sensory organization and the nature of the organism, learning also plays a part in so far as association formation is involved. For example, a child may obtain a suspended banana with a pole by using it to knock down the banana, but a chimpanzee may place the pole under the banana and climb the pole to the banana. In both cases the

pole bridges the gap between the individual and the banana, but the pole is perceived as having different values by the chimpanzee and the child because chimpanzees and children have not had the same kind of past experiences with poles.

Adequacy of Behavior Modification Principles for Therapy

Normal and Abnormal Behavior

Can these concepts from learning, perceiving, and problem solving explain all behavior modifications? Books on abnormal psychology find it necessary to postulate additional concepts to explain therapy. Such terms as compulsion, regression, and aggression are frequently used in descriptions of behavior found in neurotic and frustrated persons. Are these additional concepts or are they mere extensions of the concepts described above? Is so-called "abnormal" behavior different in degree or in kind from so-called "normal" behavior? A difference in degree implies that the same laws and principles operate with consistency in both normal and abnormal behavior. A difference in kind implies that a different set of laws and principles operate in the two conditions and the implications of governing principles may actually be in contradiction to each other.

Behavior Modification Principles Applied to Phobias

In order to highlight the problem more clearly, let us examine some examples of abnormal behavior and see how the basic principles of normal behavior apply. First let us take the case of a phobia for snakes. The individual shows a terror in response to the sight of a snake or even a picture of a snake. The anticipation of dangerous consequences due to previous association with snakes obviously is not the determining factor since a picture of a snake will also arouse fear. At the same time the person will be aware of the fact that the harmful consequences are not present when the picture

is seen. In this respect the phobic fear of a snake is different from that of a person who fears punishment or pain if a certain choice is made. Because the anticipated consequence seems not to be a major factor in a persisting fear, it is more common to explain a phobic fear by assuming that the stimulus of a snake arouses the fear reaction because of a strong association that connects the snake with fear. Thus the fear reaction becomes a conditioned response to a snake. Such an association may have been established by previously experiencing the conditioned stimulus "snake" in conjunction with an unconditioned stimulus that elicited fear. For example, let us suppose that a parent showed fear of a snake and the parent's scream caused the child to express fear. Since the snake was also present at the time, the snake may have become a stimulus for the child's fear thereafter. The weakness in this explanation resides in the fact that a single repetition does not ordinarily produce such a strong and stable association, but it can be argued that the emotional factors involved were very strong and this reinforcement may have formed rapid conditioning. A second weakness resides in the fact that phobias cannot be readily altered by the usual method of extinction. The typical conditioned response is weakened if the original stimulus (seeing the mother show fear, in our illustration) fails to accompany the stimulus that was connected with it (seeing the snake), but in the case of strong phobias such extinction does not occur. Associating pleasant stimuli with snakes likewise seems not to alter phobias although it is an effective method for altering habits and conditioned responses.

In approaching the problem of phobias the psychiatrist is more inclined to have the patient relive certain experiences than to attempt what might be called a program to untrain an inconvenient habit. He finds that when certain memories connected with the situation are recalled the fear disappears. What must be added to learning theory to explain why a

new repetition of a traumatic situation weakens rather than strengthens learning?

Behavior Modification Principles Applied to Enuresis

As a second illustration let us consider the problem of enuresis. Children who are insecure or rejected by their parents show this type of behavior more frequently than well-adjusted children. What is the origin of such a response? If we assume that the insecurity poses a problem for the child in which his goal is obtaining attention, then bed-wetting may be considered to be his solution to the problem. However, one must regard this solution as inadequate because the consequence of bed-wetting may be undesirable attention, such as punishment and other forms of degradation. If these are the consequences, the child should abandon his solution, yet this is known not to be the case in many instances. Why then does the response persist? Does bed-wetting solve some other problem and obtain a satisfaction for the child, the nature of which we (or perhaps he himself) are unaware? In explaining the failure of such behavior to solve an obvious problem must we seek goals that are not apparent on the surface, or must we assume that such behavior is not goal oriented?

Of interest also is the fact that if the insecure enuretic child is given excessive love and attention and his bed-wetting is overlooked, he is more likely to be cured than if a direct approach is made to correct the enuresis. If the child's goal is to achieve attention and if he now receives it after wetting the bed a few times, it would seem to follow that this solution would be encouraged; yet the response disappears.

Behavior Modification Principles Applied to a School Bully

Finally let us consider the child who is unable to learn to read and becomes a school bully, abusing other children on

the way home from school. If we say his goal is to learn to read, then abusing smaller children does not solve his problem. However, if we say that inability to learn to read has made him feel inferior, then it follows that dominating other children might give him an experience of superiority. In such case his behavior solves a problem. The cure for the boy's behavior, however, is to teach him to read. When he learns to read he is not superior to other children, yet he stops abusing children. Can we use both goals as explanations, one to explain his bullying behavior and one to explain why his behavior changes when he learns to read? Is the boy's desire for prestige in his group his major objective? If so, why does he settle for the lesser goal of learning to read? Perhaps his behavior is merely a way of avoiding shame and in this sense is purely protective.

Relation Between Symptom and Goal

A commonly accepted approach to the study of behavior expressed under frustration is to study the symptoms in the light of the individual's goal striving. When this is done it is assumed that the symptoms expressed represent the patient's attempt at a solution of a problem. Thus Symonds (103) expresses the generally accepted view when he states that "aggression has two main functions: first to wrest satisfaction from the outside world; and second, to destroy the source of pain. Both functions are related to the *need* of the organism to maintain itself in an environment where the process of nourishment requires effort, and to protect itself from harm or destruction in an environment full of potential dangers or enemies" (page 83). According to this view an act of aggression can be understood in terms of what it is directed to accomplish.

Similarly, regressive behavior is defined by Symonds as a "step taken by the individual in order to avoid meeting and solving some difficult or frustrating present problem. It is

an escape from reality" (page 204). The fact that the behavior is described by the term "in order" to accomplish something implies that it is a means to an end or an objective or goal. In defining fixation, Symonds states that it operates "as a defense against anxiety by stopping the process of development" (page 192). Thus the implication of three types of behavior commonly found in frustrated individuals is that the behavior represents the organism's solution to a frustrating problem. This then represents an attitude toward the diagnosis of a patient's behavior.

Suppose a woman patient develops hysterical blindness. If the case history reveals guilt feelings associated with seeing and desiring a married man, the explanation is simple. The blindness may be regarded as the woman's way of avoiding the guilt experience. When the case history does not reveal a problem that can be solved by blindness the explanation develops many ramifications and subgoals must be found, but in general the final analysis of the case makes the symptom a solution to the problem, but from the patient's point of view.

To the extent that theories of abnormal behavior make a symptom a solution to a problem, they are consistent with the concepts described at the outset of this chapter. In recognizing the fact that the behavior solves the problem "from the patient's point of view" the analysis of abnormal behavior utilizes the concepts of perception. In many instances, however, the need that is supposedly satisfied is not recognized by the patient, and then it has been found necessary to discover needs that are in the form of unconscious desires. Thus a group of needs (libido) that aid in the survival of the species are postulated. In this sense the survival responses become solutions to problems even though changes in the mode of living may have made such responses appear unadaptive. In such cases the patient may be unaware that his behavior solves a problem since his personal needs

(ego) may be secondary to his needs that make for race survival. Thus a need whether conscious or unconscious supposedly underlies the expression of abnormal behavior and when the need is located the behavior is explained.

Difficulties Encountered

In accounting for the persistence of nonadaptive solutions to life's problems differences in opinion are more common, and in explanation the theories of learning are also less adequate. In this area there seems to be a need for more clarifying concepts.

In order to solve the problem of the persistence of an unadaptive mode of behavior, one may seek for ways in which the symptom may serve as a relief for the patient. Relief, rather than the satisfaction of a need, becomes a goal in such instances. Thus if an act of aggression makes a person feel better it may be assumed that the desire to feel better has become the disturbed person's goal. Through trial-and-error learning such relief-giving behaviors may be discovered and later used. However, this analysis implies that aggression, for example, is a learned response rather than a primitive reaction to frustration. Does the development of aggressive behavior support this implication?

In other instances the desire to obtain relief is not claimed, but it is believed that a deep-seated need is present. Symonds, for example, states (page 90) that behavior such as enuresis may be a weapon of resistance, revenge, or retaliation, and that the behavior is a means for satisfying an unconscious desire to hurt the parents. This explanation assumes that injury or harm to another is a goal and that a need in the individual is thereby satisfied. Is this an adequate explanation of need-satisfying behavior or is it an explanation that one uses as a last resort? Symonds finds it also necessary to regard enuresis as a regressive act and then the need that is satisfied is one of avoiding the problem (page 211).

Another approach to making an unadaptive response appear goal oriented is to assume that the response served a satisfactory function on previous occasions and therefore became learned. Thus a child may have once obtained desired toys by aggressive action and he now expresses similar behavior when another desired object is withheld. Although the aggressive action may fail on a given occasion, the explanation of the behavior goes back to its previous success. This explanation, however, fails to account for the first appearance of a hostile act.

This approach is perhaps more applicable to regressive behavior since it can be claimed that the act was practised in childhood. Thus Symonds (page 204) describes regression as follows: "Regression represents a backward step in development, a returning to older modes of thought, feeling, and behavior which were of service at an earlier time and are being retried in the hope that by some miracle they can be equally serviceable in the present." Are we ready to assume that a regressive response such as enuresis is chosen by the child and that bed-wetting once was a service to the child? It is true that the above description may be apt in some instances, but the fact that many exceptions arise makes it lack the character of a behavior principle.

The major weakness of the approach that makes past learning an explanation of present unadaptive behavior, however, resides in the fact that it fails to account for the persistence of such a learned response despite its repeated failure on later occasions. Learned behavior is subject to change when it ceases to be adequate for obtaining a goal, yet frustrated behavior shows resistance to change. Finally, it may be supposed that an unadaptive act persists regardless of failure because the individual seeks to punish himself. Self-aggression thus becomes a type of behavior, but in such cases the need to destroy oneself is postulated beside the need to protect oneself. This rather free postulation of needs

may reasonably raise doubts as to the inadequacy of such an approach.

Prediction versus After-the-fact Analysis

When behavior is analyzed in terms of the many needs described above it becomes almost completely individualistic. The many differences in experience, in goals, and in the ways in which goals may be substituted for each other so complicate the picture that the most that can be expected is a satisfactory after-the-fact analysis. Under such conditions it is almost hopeless to make psychology a predictive science. Of course one can continue to state probabilities, but when the final explanation of behavior contains more individual or personal characterizing features than general principles one may question the importance of principles. When this occurs there is a tendency to substitute description for analysis in case studies.

General principles at least should serve as a guide in the selection of what is important. A case history contains many details and one's theory may be important in determining both which details are observed and fit into a pattern and which points are useful in effecting a cure. For example, the arrival of a new baby may be a factor in causing an older child to wet the bed, become more independent, assume responsibilities around the home, become a problem in school, or steal. Can all of these behaviors be linked with the older child's problem? Are these behavior differences important and if so, which ones? Can the list be simplified by certain groupings of the characteristics? Are all of them examples of problem-solving behavior? Answers to these questions depend upon theory, and to say that everything is important is to beg the question.

A good theory should help one to recognize equivalent behaviors, discount irrelevant items, and probe for details which will decide the diagnosis. Whether a child wets the bed or

steals would be unimportant if both had the same cause and the same cure, but what a child does with what he steals would be of utmost importance if this detail influences proper diagnosis and therapy. If a theory assumes that all of the behaviors listed above represent goal striving, then the differences become matters of the individual's personality structure and differences in behavior must be attributed to this factor, rather than to general principles of behavior. How much a case history pictures personality and how much of it follows basic concepts? Does the search for goals in behavior needlessly force one to pay too much attention to personality differences?

A Case Study

In order to illustrate the difficulty of relating behavior symptoms to the striving for goals or the achieving of solutions to problems, the many behaviors expressed by a problem child may be examined. For this purpose a case cited by Baruch (6) is in point.

"Raymond was four and one-half when he came into the preschool. He remained for three semesters. On entrance he was extremely withdrawn. He did not talk. He seemed impervious to what went on about him. There was no gross abnormality in physical health according to the pediatrician. His mother reported that at home he would sit for hours without moving and that he seemed to be within a shell that no one could penetrate. She was worried about his lack of speech.

"Chief among the items that might have caused such maladjustment was the fact that the parents were in extreme tension in their relationship to each other. To the worker they avowed hatred of each other. They claimed, however, that they did not fight openly, that instead they 'held things in.' The mother drank for relief and thrashed the child, letting out onto him the antagonism she held against her husband.

"To the worker the parents in their own separate conferences expressed their hostilities. They talked, they got mad, they ranted against each other. To her they let out their ranklings. And as they let out, they apparently gained enough relief so that within approximately six months' time they were able to accept each other on a different basis—without such a weight of piled-up resentment.

"They were able, too, to accept the child on a different basis. The mother no longer felt 'red anger' against him. She could be more acceptant and have greater patience. But the child introjected so much of her old emotion that he could not accept the new.

"From the beginning he was given extra chances for contact within the group situation. But for the first months he was fearful of any but casual approaches. Releasing experiences were obviously impossible for him when he was not utilizing materials. However, the fact that demands were few and restrictions fewer may have given him some sense of ease. Slowly observable trust in one of the teachers came, but this was deep enough to permit release in her presence only after he was in his third semester. Only then would he leave the group without near panic at being alone with an adult.

"He was the child who began tapping a key of his teacher's typewriter, saying 'pee-pee, pee-pee,' with sly looks and great silliness, and a shade of defiance.

"He ran the gamut of several distinct types of activity during his subsequent periods with her. He expressed aggression through bowel movements of clay. He even defecated actually on the linoleum floor several times in the room where these periods took place. He became exhibitionistic, showing his penis repeatedly to the teacher and masturbating in front of her. Finally he attempted to make a very crude clay figure and demanded her help.

"The figure became his mother to him. He would pound

her, trample on her, urinate on her, poke his penis at her, pull her arms and legs and head off.

"The teacher remained acceptant. She reiterated that children often do feel mean and mad to their mothers, that she understood how he felt, and that he could keep on telling her and showing her about it. A couple of times he attempted to hit her and smear clay on her, but here she erected limitations, feeling that the relationship would be jeopardized if she permitted him to do to her what to him would symbolize harm. Hurting the one person whom he could thoroughly trust might lead into too great fear of desertion and into too great anxiety and guilt.

"Finally one day, after an extreme orgy of biting and cutting and mashing of the mother figure, he became suddenly relaxed. For the first time, his voice carries in it a sympathetic note. 'Oh, she died, poor old nasty.'

"He then picks up the mutilated clay mother and very softly whispers. 'Poor thing. She got runned over. Call the ambulance. Poor old nasty thing. She's dead all right.' He pats the figure gently . . . 'Let's see what she has inside her.' He scratches the clay figure open. 'Oh, there's blood. Blood is coming out. Put her in the ambulance.' He picks her up again. 'I don't want to hit you, Mother.' Then turning to the teacher he asks her to 'fix the mother all right again.'

"She repairs the clay figure. Calls it his new, good mother. One of the legs that the teacher had put hastily on falls off. He picks it up and himself makes another leg and carefully moulds it back on. These are the first tender, caring-for, positive expressions toward his mother ever evidenced in his play. A short while later, when his time finishes, instead of demolishing his mother as on previous days, he places her carefully in the clay can, covers her gently with the oil cloth, saying gently, 'There you are.'

"Apparently, through having let out hostility against the

old mother, he has at last become able to accept a new mother. Great changes are apparent in his behavior. He no longer stutters. He begins to defend his own rights. He becomes overly aggressive to other children as a swing from earlier withdrawal and submission. He is less frequently silly or shrill, and more capable of demanding response through affectionate approaches. All in all, he is much less tense and a much more open, natural person.

"As a side comment, the child's intelligence test rating moved from an IQ of 76 to one of 106. This does not, of course, mean that intelligence increased, but that the child was no longer as blocked emotionally from showing and using what intelligence he had" (pages 170–172).

To explain the many behaviors of this child in terms of goals he wished to achieve would indeed challenge the imagination. One might say that he did everything to make himself obnoxious, yet this was obviously not his goal. At one point only in the case history is a goal suggested and this is supplied by the teacher when she referred to the repaired clay figure as a new mother whom the child wants. Was this actually his objective in repairing the clay figure? It is true that the child accepts the suggestion. Did he do so because the suggestion corresponded with his unconscious desires or had he reached a stage when a motive could be supplied?

It seems that there are many activities in the child's sequence that have questionable goal orientation and that there is little evidence to support even the extent of motivation that is implied. The behavior actually seems to be more satisfactorily explained by saying the child hated his mother. Was it then his desire to destroy her? Many of his activities showed contempt (*e.g.*, urinating on the clay figure of his mother), but they were not always injurious to his mother and certainly not when directed toward the teacher or the clay model. Yet this is the kind of evidence clinical psychol-

ogy must work with and the types of goals that must be postulated if it wishes to make its findings consistent with problem-solving behavior.

The Exploration for New Concepts in Abnormal Behavior

The purpose of the present volume is to describe what seems to be a new type of behavior, a type that occurs under conditions of frustration. A number of studies have been conducted by the author and his students to analyze this behavior and to describe the principles upon which it depends. These principles suggest a different approach to the analysis of behavior expressed under conditions of stress and offer additional concepts in the study of frustrated behavior. Most of this work, however, has been based upon experimentation with rats, and one may question the adequacy of concepts derived from the studies of animal behavior at this level. Nevertheless, the concepts may be used as hypotheses in the analysis of human behavior. If analysis based upon these hypotheses integrates the known facts in human behavior more effectively than other hypotheses or if the hypotheses explain some behaviors that are inconsistent with present theory, then the concepts derived from animal work have their value.

The plan of this monograph is first to present the experimental evidence for the new behavior principles, then to integrate them with other known principles in frustration, next to show the impact of the combined principles of frustration on psychological theory, and finally to test the theory by indicating how it affects our practical approach to problems of behavior.

Chapter 2

EXPERIMENTAL EVIDENCE OF ABNORMAL BEHAVIOR FIXATIONS

General Method and Procedure

In most of the experiments reported in this survey, the Lashley jumping apparatus was used. It has been found to be the most effectual tool for training animals in discrimination problems. Figure 2 shows the front view of the apparatus and the position of the animal in relation to the cards it must learn to discriminate. An animal can readily be trained by this method to develop a preference for one of a pair of cards placed in front of it. The animal expresses its preference by jumping at and striking one of the cards. If the correct card is struck by the animal, the card falls over and the animal lands on a feeding platform where it may eat (reward); if the incorrect card is struck, the card, being securely latched, remains in place and the animal receives a bump on the nose and falls in a net below (punishment). Figure 3 is a view of the back of the apparatus and shows the feeding platform and the mechanism for locking cards in place.

When one of the cards is consistently locked and is changed to both the right and left positions on different trials, the animal may be trained to develop a preference for one of the pair of cards so that it consistently chooses the card that leads to reward and avoids the card that leads to punishment,

regardless of the side (right or left) on which the reward card is placed. Thus if the black card with the white circle is consistently locked and the white card with the black circle is consistently unlocked the rat learns to choose the latter. The choice of responses is determined by the association of a symbol (appearance of the cards) and the consequence of choices, and responses thus developed will hereafter be called *symbol-reward responses.* This is a common type of selective learning and requires the use of motivation as well as association formation. If the consequences of the choices are reversed, so that the previously rewarded choice is punished and the previously punished choice is rewarded, then we may expect the preference to become reversed.

When the cards are changed from side to side and either the left or right card is consistently made correct, the animal is trained to disregard the symbols and to choose in terms of position. Thus if a choice of the card on the right leads to reward and a choice of the card on the left leads to punishment, (regardless of which card appears in the right and left positions) the rat is trained to choose the card in the right position. Responses of this type are commonly called position habits but in order to distinguish them from similar responses to be described later we shall hereafter refer to them as *position-reward responses.*

Both symbol-reward responses and position-reward responses are learned preferences. The selective use of reward and punishment has made one way of behaving more attractive than the other and as long as the reward and punishment remain the same the preference continues. Since the consequence of the response determines the preference, we may speak of such responses as *goal oriented* or *goal motivated.* Position responses are readily formed particularly if the animal's natural position preference is rewarded.

If, however, the cards are latched in no regular order, (*i.e.*, neither a particular card nor a particular position is

consistently rewarded or punished) then there is no response that will permit escape from punishment. In such case the animal normally shows a stage of variability in its choices and soon thereafter it refuses to jump. This resistance to jumping may be overcome by giving the animal an electric shock at the jumping stand, prodding with a stick, or blowing a blast of air on it. Under these conditions the animal can be forced to jump. We speak of this situation as the *insoluble* or *no-solution problem* and regard it as frustrating both because it is a problem that cannot be solved and because pressure is applied to the animal to force a response.

After a short while in the insoluble problem situation and with pressure applied to force behavior, the animal develops a response to the situation that has no adaptive value in the sense that it is adequate to the situation or in the sense that it is superior to any number of other possible responses. Nevertheless, the appearance of the behavior is associated with a decline in resistance to jumping. Thus an animal that is forced to respond in the insoluble problem situation may always choose the card on its right, despite the fact that this choice is punished on half the trials. This type of response is not selected by the method with which reward and punishment are used. At the same time it is not a mere random response but is consistently expressed and so must be considered as a response to the situation.

To distinguish this response from the position-reward responses we shall hereafter refer to it as a *position stereotype*. *Symbol stereotypes* may also appear under these conditions. To the casual observer position and symbol stereotypes have the same appearance as position- and symbol-reward responses.

Position and symbol stereotypes are the animal's way of responding to insoluble problems when force is applied. Whether or not such responses differ from the reward-determined responses remains to be demonstrated. If such responses

follow the principles of reward learning, then one may assume that the animal is responding to some goal that is not under the experimenters' control. If such responses follow different principles, however, they must be studied as separate phenomena. It is the purpose of the remainder of this chapter to describe the principles that govern the behavior developed through reward training and in the frustrating insoluble problem situation.

The Specific Nature of Responses Developed during Frustration

In most rats the response to the insoluble problem is a position stereotype. More than 80 per cent of the rats eventually settle on a right or left position stereotype and the remainder ordinarily form a symbol stereotype. If efforts were not made to prevent them, abortive responses[1] might occur with considerable frequency. An example of abortive response is shown in Fig. 4. These abortive responses also have the characteristics of stereotyped behavior and may be called *abortive stereotypes*. Our present method eliminates the majority of these responses, however, so that this type of response is kept at a minimum.

The stereotyped responses developed in the no-solution problem situation are highly specific in nature. The stereotype adopted by any given animal will be repeated without variation for at least several hundred trials, without the animal's once attempting an alternative, despite the fact that the response is punished half the time in the no-solution

[1] The abortive responses (56, 67) observed include (*a*) jumping above the cards so that all four feet of the animal strike the screen; (*b*) jumping to the extreme right or left of the card; (*c*) jumping at a card and striking it with the side of the body; and (*d*) jumping to the ledge of the screen just below the card and grasping the ledge with the fore paws. The abortive responses have been reduced by placing screens above the cards, having the animal jump from a box rather than a platform, and retraining animals with unlatched windows when they fail to jump at the cards.

problem (67). Punishment if given on every trial likewise causes no deviation in the stereotyped response expressed.

To illustrate the loss in behavior variability that accompanies the frustrating situation, one part of a study by Maier and Klee (69) may be cited. A group of 60 rats had been put through various experiences to establish position- and symbol-reward responses as well as position and symbol stereotypes. All animals were then trained to form either a symbol-reward or a position-reward response, the character of which was different from the first response. Thus all animals were alike in that each had a rewarded response as a second response, but they differed in that part of them had stereotypes as their first responses and part had rewarded responses as their initial responses. After the second response was learned, all rats were treated alike in that the second response that had previously been rewarded was now punished on half the trials. Since the punishment was random it was impossible for the animal to learn a response that was adaptive in nature (*i.e.*, a response that always led to reward and never to punishment). This is the condition which produces stereotypes.

During the 160 trials (10 trials per day) in this situation, 54 rats persisted in the second response that they had been trained to make, despite the fact that the reward aspect had been changed. Not only did these rats fail to alter their response, but 47 of them never made a single deviation in 160 trials. The remaining 7 rats made one deviation each in 160 trials.

Of the 6 animals that abandoned their response, 2 showed a period of variation, which is what one typically expects if the reward is withheld. The other 4 rats developed stereotypes; in 2 cases the stereotype corresponded with the first response developed and in 2 cases the stereotypes were new.

Thus the typical behavior in the no-solution problem

situation is a loss in variability and a tendency to execute some response repeatedly. When the animal enters the situation with a response, this response is the one that is likely to be maintained. In other words, the reward response becomes transformed into a stereotype and the reward ceases to have its effect in determining the choice made. However, not all reward responses have the same value in becoming stereotypes. Of the 60 animals, 31 had position-reward responses and all were maintained. The other 29 had symbol-reward responses and only 23 of them were maintained. In 4 cases the symbol-reward responses were replaced by a stereotype that differed from the reward response, and the two remaining animals showed variability, one during the whole experiment and one for a period of 30 trials.

Lack of variability in behavior in insoluble problems is not confined to the type of choice made, however. Even the manner of jumping and types of escape behavior become highly specific. In one instance an animal escaped from the jumping platform by jumping out of the right side of the jumping box to the floor. Platforms were then built so that the animal landed on an electric grill when it jumped to the right. The animal persisted in the same type of escape, however, never once attempting escape to the left.

In general the type of response made, the manner of execution, and the type of abortive behavior that may appear under conditions of frustration show lack of variation and a degree of stereotypy that perhaps exceeds in specificity the execution of responses developed or maintained under ordinary learning conditions where reward is given in connection with the response. This occurs despite the fact that there is nothing in the punishing situation that demands or encourages highly specific behavior.

The demonstration that variability disappears under conditions of stress is not new or confined to animals. Hamilton (24) perhaps was the first to point it out as an interference to

problem solving. Patrick (90) verified Hamilton's conclusions in a study in which he demonstrated that college students become less rational and more random and stereotyped in their behavior during emotional excitement. These studies, however, have emphasized the disappearance of a type of behavior under stress rather than the emergence of a different kind of behavior. The present studies will attempt to show that frustration introduces a type of behavior (*i.e.*, it makes a positive contribution) rather than functions as an inhibitor of some other behaviors.

A Comparison of the Persistence of Responses Developed Through Frustration and with the Use of Reward

Animals that have previously developed stereotypes in a given situation are less likely to learn a simple reward response than animals that have previously acquired a reward response and must then learn another. Thus it seems to be more difficult to substitute a reward response for a stereotype than to substitute one reward response for another.

The persistence of these two types of responses has been measured in a number of studies (34, 67, 69, 70) by comparing the ease with which they could be replaced by a new response that offered reward. Since most animals form position stereotypes in the insoluble problem, this response was matched by training control groups into position-reward responses. After both groups practiced their respective types of position responses for approximately 160 trials, attempts were made to alter them. Thus both groups were required to form a symbol-reward response (choosing one member of the pair of cards regardless of whether it appeared on the right or left side) and to abandon a position response.

In one study (67) it was found that 4 out of 11 rats in the group that acquired stereotypes were able to change from a

position stereotype to a symbol-reward response within 200 trials, whereas 9 out of 10 rats in the group that was trained to develop position-reward responses changed over to symbol-reward responses. A similar condition in a second study (69) showed that 5 out of 10 rats developing position stereotypes in the no-solution problem were able to change to symbol-reward responses, and that 9 out of 10 rats that were trained to develop position-reward responses changed to a symbol-reward response when this type of response was rewarded. In a third study (70), a similar comparison can also be made. In this case 1 out of 13 rats with position stereotypes changed to the symbol-reward response in the symbol-discrimination problem and 8 out of 15 with position-reward responses changed from position-reward to symbol-reward responses.

Combining the three studies, we find that of the 34 rats that developed position stereotypes in the no-solution problem only 10 (29.4 per cent) were able to abandon this response and adopt a symbol-reward response in 200 trials or less. However, among the 35 rats that acquired a position-reward response, 26 (74.3 per cent) were able to change to a symbol-reward response when conditions favored it. From this comparison we may conclude that, in general, the stereotyped response developed in the insoluble problem situation is more stable than a similar response acquired through systematic reward. This greater persistence of a response developed in the insoluble problem occurs despite the fact that under this condition the assumed response is one that is punished as frequently as it is rewarded. Responses formed under ordinary conditions of learning are consistently rewarded (reinforced), and on the basis of learning theory one would expect them to have more stability than unrewarded responses. This reasoning does not apply to response stereotypes however.

The tendency for behavior stereotypes to persist is not confined to position stereotypes. Symbol stereotypes and abortive stereotypes likewise show striking resistance to change. However, not all stereotypes show the same resistance to change. This raises the question of whether a distinction must be made between stereotypes that are specific responses developed in an insoluble problem and stereotypes that resist alteration.

The Criterion of Abnormal Fixation

More important than the reduced ability to assume a new response after developing a stereotype in the insoluble problem situation is the fact that a measurement of the ability to form a new response divides the animals into two widely separate populations: those which can learn a new response at a normal rate and those which cannot learn a new response at all. When we allow a rat 200 trials to learn a new response (*e.g.*, a symbol-reward) we are permitting it more than an adequate number of trials for learning. The average number of trials required to substitute a symbol-reward response for a position-reward response is about 80 trials, and the need for 150 trials is rare. Animals that do not change in 200 trials do not appear to benefit by many more additional trials. The maximum number of trials thus far allowed for a change in response has been 630 trials (67). Since no signs of change occurred, there seemed little reason for continuing beyond this point. We concluded from these observations that if an animal cannot solve the problem by giving up a stereotype and adopting an adaptive symbol-reward response in 200 trials, it is unable to do so with more trials. The persistence of an unadaptive response for 200 trials when an adaptive one is possible, therefore, has been chosen as a criterion of *abnormal fixation* in behavior. Using this criterion we find that among the animals that develop

position stereotypes in the no-solution problem, 70.6 per cent have *position fixations* and 29.4 per cent have mere position stereotypes.

The term *fixation* is here used to designate a strong and persisting response. Fixation has been used as a concept in learning to designate a high degree of stability. Since the fixations described in our studies are more persistent than those formed under the usual methods and learning (contiguity and reward) and since they do not conform with learning principles, the qualifying term *abnormal* has been used. It should also be emphasized that the term *fixation* is not to be confused with object fixation as used in psychiatry. Although similarities may be present, there is no intent to interpret the abnormal fixations obtained in rats in terms of psychiatric concepts.

The appearance of abnormal fixations is not confined to changes in behavior stereotypes. Reward responses likewise may be transformed into abnormal fixations. If animals are trained to form position-reward responses and if then the situation is changed so that reward accompanies the symbol, a bimodal distribution for the learning of the new response likewise occurs. The combined studies show that 25.7 per cent of the animals with position rewards cannot or do not abandon the position response in 200 trials, whereas the other 74.3 per cent abandon the position-reward response in less than 100 trials. (In one study the average was 55 trials.)

The studies demonstrate, therefore, that about one-fourth of the position-reward responses and about 70 per cent of the position stereotypes show the property of position fixation when attempts are made to alter them. The fact that the number of position fixations is greater when position stereotypes are formed in the unsoluble problem than when position-reward responses are produced by selective learning indicates that abnormal fixations are not only a characteristic of certain animals but also are influenced by the situation.

To account for this separation in ability to abandon a mode of behavior we have postulated that frustration tends to fixate or freeze a sample of behavior. Behavior fixation thus becomes a product of frustration. Whenever animals are placed in the insoluble problem situation and are driven to make a choice, a certain percentage are frustrated and as a consequence a sample of their behavior is fixated. The behavior fixated seems to be the stereotype they have practiced. These are the rats that are unable to solve a simple trial and error learning problem. Since the insoluble problem is likely to frustrate many animals, a high percentage fail to solve the trial-and-error problem. Highly stable animals also form stereotypes, but they abandon them when an opportunity for adaptive behavior is given. On the other hand, animals that at the outset have the opportunity to form an adaptive response tend not to be frustrated and successfully vary their behavior until learning occurs. When they are required to learn a new response, however, some of them apparently become frustrated and fixate the initially rewarded response. It is these animals that make up the small group that cannot form a second reward response, despite the fact that frustration was not purposely introduced.

It is also found that animals trained in position-reward responses that correspond to their natural preference are more able thereafter to acquire a symbol-reward response than animals trained to a position-reward response opposed to their expressed natural preference. Thus it was found (67) that only 1 out of 10 rats trained in a position-reward response that was the same as the natural preference fixated the position response when required to learn a symbol-reward response, whereas 5 out of 10 rats trained in a position-reward response opposite the natural preference fixated the position response when required to learn the second response. This observation supports the view expressed above that frustration may be experienced by some rats in the usual learning

situations. Ordinarily, one would suppose that a rewarded preferred response would be stronger or less subject to alteration than an equally rewarded response that was opposite to the natural preferences. The fact that the contrary is found indicates that we are not merely dealing with a problem of learning when we alter habits. Instead we must recognize the fact that in learning a position-reward response opposite the natural preference more animals are frustrated than when the situation demands a position-reward response that corresponds to the natural preference. Thus from the point of view of frustration effects, responses acquired under difficulty tend to be less subject to change than responses acquired with ease. When frustration enters the picture, plasticity is replaced by rigidity in behavior. Thus it may be concluded that stereotypes are more likely to be fixated than rewarded responses because our no-solution problem situation is more likely to produce frustration than an ordinary learning situation.

The Effects of Punishment on Response Alteration

From the point of view of the effects of reward and punishment on learning one would suppose that punishment given each time a response is expressed (condition of 100 per cent punishment) would result in a more effective abandonment of a response than would punishment on half the trials and reward on the other half (condition of 50 per cent punishment and 50 per cent reward, given in a random order). From the point of view of the effects of frustration on behavior, however, one might postulate that punishment aggravates frustration and hence more consistent punishment would produce more fixations than an irregular application of punishment.

To test this hypothesis Maier and Klee (69) compared the effects of these two punishment procedures on the alteration

of both symbol stereotypes and position stereotypes (responses acquired in the insoluble problem) and symbol rewards and position rewards (corresponding responses acquired under ordinary learning conditions). In half the cases 100 per cent punishment for the expression of the response acquired under the two conditions was used and in such cases the animal was required to reverse its response (*i.e.*, respond to the opposite position or the alternate symbol). In the other half of the cases, 50 per cent punishment was used and in such cases the animal was required to change from a position to a symbol response, or vice versa. Controls were introduced to check differences in difficulty in acquiring position and symbol responses.

As already pointed out, animals that acquired stereotyped responses in the no-solution problem were less able under all conditions to change their response than animals that acquired responses through reward. Let us now disregard the method of training and compare the effectiveness of 100 per cent punishment for a given response with a mixture of 50 per cent reward and 50 per cent punishment as techniques for altering behavior (*i.e.*, substituting a response that leads to reward for one that is unadaptive.) On the one hand, it was found that 100 per cent punishment for 200 trials caused 17 out of 30 rats, or 56.7 per cent, to persist in their old response and take punishment, and trained only 13, (43.3 per cent) to adopt the new response and avoid punishment. On the other hand, 50 per cent mixture of reward and punishment caused only 6 out of 30 rats (5 of which were from the frustrated group), or 20 per cent, to persist in their old responses, and trained 80 per cent to adopt the new response. It is clear that punishment on 100 per cent of the trials causes fewer animals to abandon a response than does punishment on 50 per cent of the trials.

If we consider only the animals that were able to learn the new response in the 200 trials allotted, however, we find

that the 24 rats that learned with 50 per cent punishment had abandoned their old response after an average of 37.5 trials; whereas the 13 rats that learned with 100 per cent punishment abandoned their response after an average of 22.2 trials. From this analysis it appears that 100 per cent punishment makes for more rapid learning than does 50 per cent punishment.

When these apparently contradictory results are combined we may say that 100 per cent punishment makes either for fairly rapid response alteration or no alteration at all, whereas 50 per cent punishment makes for slower but surer learning. From the point of view already expressed this makes sense if we merely assume that punishment may frustrate as well as serve as a negative incentive. In mild doses it functions longer as a negative incentive, and many animals learn to avoid punishment before they become frustrated. However, if learning proceeds too slowly, frustration may occur with less punishment both because of failure to learn and because of the accumulated punishment. For one or both of these reasons, a number of fixations appear under conditions of 50 per cent punishment merely because individual differences exist.

When punishment is consistent there is a strong incentive for abandoning the punished response, but fewer than half the animals learn before their frustration threshold is exceeded. Consequently, many animals fixate their initial response rather than change their behavior. Animals that learn quickly thus have the best chance of escaping frustration and the subsequent fixating effects. Whether the more rapid learning in 100 per cent punishment than in 50 per cent punishment is due solely to this selective factor or whether the rate of learning is also hastened during the prefrustration period is a question that remains to be investigated. The prevalent learning theories would demand more rapid learning with 100 per cent punishment than with 50

per cent punishment, but they cannot explain fewer cases of learning under the former than under the latter condition.

The Compulsive Nature of Abnormal Fixations

If it is granted that abnormal behavior fixation is a product of frustration and that a fixated response is qualitatively different from a response formed by reward association, we may become concerned with certain of its other properties since these cannot be inferred from our knowledge of learning. It has been shown that the animal with a behavior fixation is incapable of adopting a new response. Does this failure to change occur because the animal is incapable of learning, or because the fixated response is so strong that it blocks the expression of other responses? The answer to this question has an important bearing on the nature of behavior fixation.

In the intitial study of Maier, Glaser, and Klee (67), animals that had acquired position-reward responses and animals that had acquired position stereotypes were compared in their ability to substitute symbol-reward responses. In training the animals to form a symbol-reward response, card *A* (black circle on a white background) was made positive and the animal was rewarded whenever this card was chosen, whereas card *B* (white circle on a black background) was made negative and the animal was punished whenever this card was chosen. As long as the animal adhered to its position response, it would receive reward only when the positive card happened to be on the side to which it responded, and punishment each time the negative card appeared on the side of the position preference. With this arrangement, the animal was punished on 50 per cent of its trials. However, the punishment followed a pattern in that punishment always occurred in connection with the negative card. In the no-solution problem, punishment was administered on 50 per cent of the trials, but it followed no pattern

since it was given in connection with either of the cards. Thus for the rat with a position stereotype, the frequency of punishment could remain at the 50 per cent level as the situation changed from the no-solution to the symbol-reward problem, but the pattern of punishment would change from one of being unrelated to the cards to one of being orderly and given in connection with the same card. For rats with position-reward responses the punishment would change from no punishment for a position response to 50 per cent punishment for a position response when the symbol-reward problem was introduced.

As already stated, animals with position stereotypes are less likely to adopt the symbol-reward response than animals with position-reward responses. However, this difference is not due to the fact that the symbol-reward problem causes a greater change in the punishment pattern for the position-reward group than for the position-stereotype group. We have already seen that, for animals with position stereotypes, a change from 50 per cent random punishment to 100 per cent orderly punishment is even less effective for response alteration than a change from 50 per cent random to 50 per cent orderly punishment. We also find that a change in the pattern of punishment from 0 to 50 per cent does not cause all animals with position rewards to adopt the new response. Finally, it has been pointed out that when punishment changes from 0 to 50 per cent, animals with position rewards that correspond to their natural preferences are more likely to adopt symbol-reward responses than animals with position rewards that are opposite their natural preference. It will also be seen that the following analysis further substantiates the interpretation that failure to adopt the symbol response is due to the appearance of position fixations and not a function of the degree of change in the pattern of punishment.

To test the animal's response to the change from random to orderly punishment in the group induced to form position

stereotypes, resistance to jumping to both the positive and negative cards was measured. It has already been pointed out that the animal must be driven to make a response under these conditions. In this experiment an air blast was used to drive the animal into making a jump. The following units were used to measure resistance: rating 0, no air for 30 seconds; rating 1, mild air blast from 31 to 35 seconds; rating 2, mild air blast from 36 to 60 seconds; rating 3, medium air blast for 61 to 90 seconds; rating 4, full air blast for 91 to 120 seconds; and rating 5, full air blast from 120 to 150 seconds. Each jump to a card was given a rating according to the above schedule and these ratings were used to indicate the degree of resistance.

When first confronted with the symbol-reward learning problem, the resistance to jumping was the same when either the negative or the positive card appeared on the side to which the animal showed its position preference. For all animals that retained their position responses, resistance to jumping to the positive card gradually declined, whereas resistance to jumping to the negative card increased. For animals that learned the symbol-reward discrimination problem, alteration in response (from position stereotype to symbol reward) occurred as soon as a differential resistance became evident. The fact that all animals reacted differently to the positive and negative cards shows that the change in the pattern of punishment was sufficient to permit learning to occur.

Thus we find that all animals showed a differential response to the positive and negative cards in the form of resistance, but in 7 out of 11 animals this differential response failed to be expressed in the form of a choice of the positive card. In the other 4 animals the change in response occurred as soon as the differential resistance to the card occurred. For those 4 animals, the position stereotype was abandoned after from 85 to 117 trials; for the other 7, no evidence of change

appeared after 300 trials. Animals failing to change are regarded as having position fixations and these persisted in their position responses despite the fact that the animals had learned the symbol-reward problem by reacting differently to the positive and negative cards.

Animals with position rewards likewise showed a differential reaction to the positive and negative cards in terms of resistance to jumping. Of these animals 14 abandoned the position-reward response and then adopted the symbol-reward response as soon as a differential resistance to the positive and negative cards appeared. These animals gave up their position-reward responses after from 21 to 80 trials. However, 6 animals failed to give up their position-reward responses in 300 trials, despite the fact that they showed differential resistance reactions as soon as the others. These animals also are regarded as having developed position fixations. Thus the differential reaction to the positive and negative cards has one of two extreme effects: (*a*) it either is associated with an immediate change from an ineffective position response to an adaptive symbol response, or (*b*) it has no effect on the initial response even though an unlimited number of further trials may be given. This separation of the rats into two nonoverlapping distributions supports the qualitative distinction we have already made between fixations and other responses, such as position rewards and position stereotypes.

Another method for comparing the reactions to the positive and negative cards was the manner of jumping. Normally the animal strikes the card with its nose and forefeet. In other cases it learns to strike the card with the side of its body or its rump, or it may even jump to the side of the cards. Records were kept of the frequency of these abortive jumps.

When first placed in the discrimination situation, the frequency of abortive responses was approximately the same

for the positive and negative cards. For animals failing to alter their position responses (7 with position stereotypes and 6 with position rewards), the abortive responses practically disappeared for the positive card, but they continued to increase for the negative card until over half the responses were abortive in nature. In animals that learned the problem (4 with position stereotypes and 14 with position rewards), the position response changed to a symbol reward almost as soon as the frequency of abortive jumps to the positive and negative cards showed a difference.

The differential reactions to the negative and positive cards, shown both by the degree of resistance and the frequency of abortive jumps, reveal that the fixated animal actually has learned which card punishes and which does not. In other words, the animal has made the required differentiation but is unable to practice the required response. This property of the fixation makes it appear as a form of compulsion. The animal executes an unadapted response even though it knows better.

The compulsive nature of the fixation is also apparent when one places the negative card on the side to which the animal is fixated and the other window is left open (without a card) with a dish of food placed near the opening so that it is in plain view. In this case the animal orients itself toward the open window and sniffs toward the food as shown in Fig. 5*a;* then it turns and jumps forcibly at the locked card on the position side as in Fig. 5*b*. Note that in jumping to the locked window the rat is not going to strike the card head on but has turned sidewise and will strike the card with the side of its body.

The Permanent Nature of Abnormal Fixations

The retention of habits is primarily a function of the extent of interference with the habit from subsequent experiences. If training on the habit is withdrawn and other

activities are performed over a period of time, relearning is required to bring the habit to its original strength and accuracy. Does the retention of fixations follow a similar course?

In order to determine the persistence of retention of fixated responses, Maier and Klee (68) used a group of rats that had completed another experiment and put them through a sequence of varied experiences. Out of 31 rats, 21 survived this period of testing. Of these 21 rats, 10 previously had developed position fixations in the insoluble problem and were found to be unable to learn the symbol-reward problem; 6 failed to develop fixations in the insoluble problem and successfully learned the symbol-reward response; and 5 previously had acquired position rewards through training, and all of them abandoned their position responses and successfully adopted the symbol-reward response when this was made the correct response. Thus the surviving group consisted of 16 animals that had been frustrated in the insoluble problem and 5 that had been trained by reward. However, since 6 of the frustrated animals adequately learned the symbol-reward problem, a total of 11 surviving animals came to this experiment with symbol-reward responses and 10 came to this experiment with position fixations.

The experiences to which the animals were subjected were as follows:

1. *Vacation,* 4 months or more. The animals remained in their cages and received no tests of any kind.

2. *Symbol-reward learning problem,* 10 days with 10 trials per day. The problem was the same as used in the earlier experiment. All nonfixated animals had previously learned this problem and all fixated animals had responded on the basis of their position fixation so had never previously practiced this response.

3. *One-window situation,* 10 days with 10 trials per day.

For this test the discrimination apparatus was modified by replacing the two-window screen with a one-window screen (see Fig. 6). This situation contains an element of conflict since only one card is presented on each trial and the animal is forced to respond to it regardless of whether it is the positive or the negative card.

4. *Vacation,* 12 days. (Procedure as in condition 1.)

5. *One-window situation,* 5 days. (Procedure as in condition 3.)

6. *Mixed series,* 30 days with 10 trials per day. In this series the three following test conditions were utilized: first day, the symbol-reward discrimination problem; the next day, a two-window situation with identical cards in place (either two negative or two positive cards); and the third day, the one-window problem. During the 30 days each of the above procedures was used for a total of 10 days.

7. *Test period and metrazol injections,* 32 to 49 days. Daily tests were made on the symbol-reward discrimination problem in the case of fixated rats and the one-window problem in the case of nonfixated rats. The behavior tests were made during the afternoon, whereas the metrazol injections, administered intraperitoneally (for details, see 73, Maier and Sacks), were given on the mornings of certain days. Until the convulsive threshold was determined the injections were given at weekly intervals (to avoid the development of tolerance) and thereafter on alternate days. The number of injections per rat varied from 4 to 13 because some of the animals died during convulsions. An average of 9.6 injections was given and these produced an average of 5.7 convulsions (range 1 to 10).

Of the 10 fixated rats, 7 completely retained their position-response fixations and their specific patterns of abortive jumping throughout the testing program, despite convulsive experience produced by metrazol and by other factors in the situation; whereas 3 rats lost their position fixations, 2 during

the first symbol-reward discrimination period (condition 2) and 1 during the mixed series of tests (condition 6). Of the 3 rats that lost the position fixation, 2 did so permanently. The other rat formed a symbol-reward response during condition 2, reverted to the former position response during condition 6, continued the position response for 90 trials, and returned to the symbol-reward response at the beginning of condition 7.

Despite the fact that the battery of tests favored the formation of a symbol-reward response, this group as a whole tended to continue to execute the unadaptive position response. The results therefore demonstrate the strikingly permanent nature of position fixations.

All the 11 nonfixated rats regained their former symbol-reward responses during condition 2 and made an average of 5.2 errors before again attaining perfect discrimination. Only 1 rat abandoned this mode of response by developing a position stereotype during the mixed series (condition 6). This positional response was retained for 90 successive trials and was then displaced by the former symbol-reward response.

Since the symbol-reward response was never punished more often than any other type of response and since in part of the series of tests it was the only response that permitted the avoidance of punishment (condition 2 and part of condition 6), the persistence of this response during the complete series might be anticipated. However, it is of interest to note that the stressful factors encountered failed to develop even temporary changes in the behavior tendencies of 10 of the 11 animals. It is quite probable that these 10 animals had developed symbol fixations.

Thus it may be concluded that, despite the rather strenuous and varied experiences, the majority of animals tended to express the same behavior patterns that they had expressed during the first investigation. Animals with position fixations received only punishment for their responses, and despite

metrazol shock 7 out of 10 failed to alter their mode of behaving. Animals that showed adaptability during their previous training now showed a lack of variability even though a good part of the test series made their symbol responses a frustrating experience. This lack of variability in previously adaptive animals indicates that they fixated the response they previously had found adaptive.

Other previously unreported observations are consistent with the above findings, which show that fixated responses are not lost either through time or with changes in the problem situation.

Fixated Responses Limited to Specific Aspects of the Test Situation

If an animal has developed fixated position responses, it may be assumed that these position preferences may transfer to other situations. Thus an animal with a right position fixation might be expected to have an increased tendency to make the right turns in another apparatus. However, tests made on the Maier three-table reasoning problem (50), in which a right- or left-going response was required on each test, showed that there was no tendency for animals with right or left position fixations to take the path that corresponded to the fixation and thereby make persistent types of errors. Thus 14 rats with position fixations made an average of 3.3 incorrect responses in 12 tests. Of these errors 1.8 were on the side of the position fixation and 1.5 were opposite to the side of the position fixation. Compared with these findings, 6 nonfixated rats made an average of 3.2 errors. If these errors are separated in terms of the preference an animal might have for one side as against the other (expression of natural preferences for right or left positions), it is found that 2.5 errors were made on the preferred side as against .7 errors on the nonpreferred side. Thus the nonfixated animals were more likely to show a position preference in the reasoning test than the fixated animals. These data

clearly show that position fixations developed on the frustrating apparatus do not determine the position choices made on the reasoning test. (Data are from an unpublished study.)

The fact that both groups of animals showed approximately equal performance on the reasoning test (averages of 3.3 errors and 3.2 errors) indicates that previous frustrations in the insoluble problem has not resulted in a deterioration of ability. Rather the fixated rat is handicapped in the discrimination problem because after frustration this situation elicits a compulsive response and because this compulsive response tends to be stubbornly retained.

Mr. Robert Feldman is at present testing the degree to which the fixation is confined to the jumping situation. In some situations paths are placed so that the animal can walk from the jumping platform to the card. He finds that a rat may have a fixated jumping response and at the same time develop a fixated walking response that is different from the jumping response. Thus an animal may have a symbol fixation for walking and a position fixation for jumping, or vice versa. In other cases the walking and jumping fixations may be to opposite sides. Further, an animal may learn a symbol-reward discrimination for walking and retain the position fixation for jumping. These findings strongly indicate that a fixation applies to a specific response and not to an object.

The degrees to which the fixated response is attached to the test situation, the structure of the apparatus, the type of cards, etc., remains to be investigated. The method of equivalent stimuli developed by Klüver (36) must be used to investigate this aspect of the problem.

The Abnormal Behavior Fixation as an Adjustment

Some of the 21 animals discussed on pages 44 to 47 had seizures during the long period of strenuous testing, although

none of them had seizures during the initial tests with the insoluble problem and the symbol-reward learning problem. The appearance of seizures in the subsequent series may be due, at least in part, to the fact that an enclosed jumping platform was used after the initial tests. Maier and Glaser (64) found this to be a factor in inducing seizures when compressed air was used for driving animals to make a response on the jumping apparatus.

TABLE 1. RELATIONS BETWEEN SEIZURES AND FIXATION BEHAVIOR

Test situation	10 fixated rats		11 nonfixated rats	
	Attacks per day	Number of rats having one or more attacks	Attacks per day	Number of rats having one or more attacks
2. Symbol-reward discrimination (after vacation) ...	1.6	5	2.1	4
3. One-window.....	.6	3	2.3	5
5. One-window (after vacation).....	2.0	5	3.6	5
6. Mixed series:				
S-R discrimination.....	.2	1	.5	3
One-window.....	.4	2	2.8	6
Two identical cards....	.2	1	2.8	4
Average.....	.47	2.8	2.4	4.5

The series of tests listed above produced seizures in 5 of the 10 fixated rats and in 6 of the 11 nonfixated rats. Since the number of seizure-susceptible individuals is approximately equal in the two groups, it appears that the predisposition to develop fixations and the tendency to show seizures are unrelated factors.

However, the groups also show certain differences. In Table 1 the number of attacks per day and the number of rats having attacks are given for each of the test conditions. It will be seen that the average number of rats having seizures in each test condition is 2.8 for the fixated group and

4.5 for the nonfixated group. The frequency with which the susceptible animals react is also different in the two groups. In all test situations the 5 susceptible rats in the fixated group showed a total of 40 seizures (an average of 8 per rat) or an average of .47 attacks per test day, whereas the 6 susceptible animals of the nonfixated group showed a total of 125 seizures (an average of 20.8 per rat) or an average of 2.4 attacks per test day. The difference in the two groups is largely due to the fact that the fixated group showed a falling off in seizures as the testing period continued, whereas the nonfixated group showed no such trend. It appears that the fixated group develops some kind of adjustment to the test situation and thereby is able to prevent emotional tensions that terminate in a seizure. It seems that the persistent position response gives the animal a mode of behaving in a conflict situation. The fact that resistance to jumping in the insoluble problem declines when consistent position responses appear supports this view.

That a vacation period is a factor of some importance in influencing seizures can be seen by comparing conditions 3 and 5. After a vacation period the one-window situation produced more attacks per day than before, for each of the groups. This fact can be explained by supposing that a period of no testing causes a loss in adjustment. It is perhaps the vacation that caused the first symbol-reward discrimination period (condition 2) to be so much more effective in inducing seizures than the second (first part of condition 6).

In the mixed series the vacation factor is excluded and the effectiveness of the three test conditions may be compared under like circumstances. For the nonfixated rats the symbol-discrimination problem produced only .5 attacks per day, whereas the one-window and the two identical card tests produced an average of 2.8 attacks each per test day. It is also of interest to note that the symbol-reward discrimination problem produced attacks in only 3 rats whereas the

one-window situation produced them in 6 animals. Both the one-window and the identical card situations may be expected to be disturbing to nonfixated rats since both require the animal to choose the negative card when it is presented.

In the mixed series, none of the situations is very effective for producing attacks in the fixated rats although the one-window situation is somewhat more effective than the other two. It is in this situation only that a positional response cannot be expressed. However, the symbol-discrimination situation as well as the other two situations contains an element of conflict for these rats since the negative card is on the side of position preference in half the trials. On such trials the two-window problem is functionally a one-window situation for rats with position fixations. This may explain why the type of situation is less of a differentiating factor in this group than in the nonfixated group.

It appears that the mixed series interferes with the development of adjustments for the nonfixated group. The animals of this group react differentially to the two stimulus cards and therefore they have difficulty in developing a consistent mode of behaving. The fixated rats, however, react less to the card symbols and more to position. This latter mode of behaving is not greatly disrupted when the series is mixed, and as a consequence, the adjustment can proceed. In such cases the one-window situation would be the most disturbing of the three conditions, but even in these cases the animal may respond on a position basis by jumping to the right or the left of the stimulus card. One rat showed this very clearly. Whenever one card was exposed, this rat showed exactly the same kind of right position response as when two windows were present, thus causing him to miss the window entirely.

To analyze further the part played by the situation, one may determine whether the seizures were associated with occasions when the rats were forced to jump to the negative

card or whether they occurred just as frequently when the animals were required to jump to the positive card. Since the fixated group always responded on the basis of position (despite the fact that they differentiated the cards) we may use the data from all the test situations, but since the nonfixated group usually chose the positive card in the symbol-discrimination problem we shall use only the data from the test situations that forced the rats to choose either the positive or negative card (one-window and two identical card tests).

TABLE 2. DISTRIBUTION OF SEIZURES

Type of situation	Total number of attacks	
	Fixated rats	Nonfixated rats
Forced to jump to negative card	31	85
Forced to jump to positive card	9	12
Ratio $\frac{\text{negative card}}{\text{positive card}}$	3.4	7.1

The results of this analysis are shown in Table 2. It will be seen that the fixated group had 3.4 times as many attacks when circumstances forced the rats to jump to the negative card as when circumstances forced them to jump to the positive card. For the nonfixated group the ratio is 7.1, or more than twice as great. Even when the total data for the nonfixated group are used the ratio is 3.3. (Despite the fact that the negative card is seldom chosen in the symbol-reward discrimination situation by the nonfixated group, it is associated with as many seizures as is the positive card. As a matter of fact nearly all the jumps to the negative card were associated with attacks.)

These findings suggest that the abnormal fixation gives the animal a way of responding to insoluble problem situations—a way without which such situations would have remained highly stressful. It must not be supposed, however, that this adjustment value of fixations is a factor in deter-

mining the appearance of fixations. Any adjustment accomplished must be regarded as purely incidental and not as a factor that contributes to the development of fixations. This conclusion is supported by the fact that seizure-prone animals are no more likely to develop fixations than stable animals.

Guidance as a Method for Altering Fixations

Maier, Glaser, and Klee (67) found that animals that were unable to form a symbol-reward discrimination response because of fixated position responses developed in the insoluble problem could readily form this response if they were given a few guided trials. Two fixated animals unable to adopt the symbol-reward response in 460 trials were presented with an open window on the side opposite the fixated position preference and the negative card on the side of the position preference. The experimenter then prevented them from jumping to the negative card as shown in Fig. 7 and instead pushed them toward the open window. At first it was almost necessary to carry them to the open window, but gradually the experimenter was required to use less and less interference. By the end of 20 trials the rats chose the open window themselves. The positive card was then placed in the open window and it was chosen by both rats. Thereafter, the positive card was chosen regardless of its position. The position fixation had been successfully broken.

In other studies guidance has been used extensively for breaking fixated responses and the benefits also may be accomplished without the use of the open window. The method of guidance merely requires that the animal be prevented from expressing its fixated response and be induced to practice an alternative.

In one study Maier and Klee (69) found that 23 rats with position fixations could not execute a symbol-reward discrimination response in 200 trials but shifted to a perfect discrimination after a few trials of guidance. In the majority

of instances 7 guidance trials were adequate. The fact that the shift from a position response to a symbol response can occur almost immediately shows that the symbol differentiation has been thoroughly learned previously but that the rats are unable to express their discrimination learning because of the dominant nature of the position response. Guidance removes the compulsive nature of the fixation and permits the rat to respond in terms of what it has learned about the two cards.

A special study was made by Maier and Klee (70) to determine the nature of guidance training on response alteration. In the first part of the experiment, litters were split into Groups I and II. In Group I, position stereotypes were formed by the frustrating no-solution technique and in Group II position rewards were formed by rewarding the animal for responses made to the right (or left) card. Each animal practiced the position response approximately 160 trials (the criterion being 95 per cent responses to the same side in the last 160 trials).

The animals were then required to learn a symbol-reward discrimination problem. The halves of each of the two groups (Subgroups I*A* and II*A*) were permitted to learn by being given 200 trials in the ordinary trial-and-error procedure; the other halves of each group (Subgroups I*B* and II*B*) were given 30 trials of guidance so that each of these animals escaped punishment for the 30 trials by being induced to choose both the right and left positions. The side to which the animals were guided was always the side on which the positive (reward) card appeared. The guided animals were then tested for 70 trials with both windows unlatched. Following this test situation, the rats were allowed to learn the symbol-reward discrimination problem by receiving 170 trials of the ordinary trial-and-error procedure. If we count the 30 guidance trials as learning trials, this makes a total of 200 learning trials. It may be supposed,

however, that the 70 free trials should also be counted as trials even though they had no training value and were given to test the value of guidance as a training method. To avoid this criticism results are tabulated for 100 trials of trial-and-error learning as well as for 170 trials.

TABLE 3. BEHAVIOR DATA ON LEARNING SYMBOL-REWARD DISCRIMINATION RESPONSE

Groups	Frustrating insoluble problem		Position-reward learning problem	
	IA (Trial and error)	*IB* (Guidance plus trial and error)	*IIA* (Trial and error alone)	*IIB* (Guidance plus trial and error)
Number of rats	13	13	15	15
Number of rats fixating.....	12	3	7	0
Number of rats solving within 200 trials...	1	6(9)*	8	15
Mean number of trials to reach a solution	140.0	160.0(115.6)*	81.3	144.7(84.0)*
Range.....	140	140-180(70-170)*	50-150	30-200(30-130)*

* Values in parentheses show the results obtained when the 70 free trials given Groups *IB* and *IIB* are not included in the 200 trials. In this case the 200 trials are considered to consist of 30 guidance trials and 170 trial-and-error trials. One animal failed to fall into the classification of learning or persisting. It abandoned its position-stereotyped response but never learned the symbol-reward discrimination even with 200 trial-and-error trials.

Only 2 out of 28 guided animals (both from Group *IIB*) learned the symbol-reward discrimination response by guidance alone. Thus as a training technique guidance may be considered to be of questionable value. The animals that received guidance, however, were more likely eventually to learn the symbol-reward discrimination problem than those not receiving the guidance. This was true even if we count the 30 guidance and the 70 free trials as 100 learning trials. The learning results for each of the groups are shown in Table 3.

In the frustrated group, 12 out of 13 rats failed to learn the symbol-reward response in 200 ordinary trials of the trial-and-error type of learning procedure and instead persisted in their fixated position responses. However, only 3 out of 13 rats continued to persist in their position fixations when the guidance procedure was used, whereas 6 of them learned the symbol-reward problem within the 200 trials if the 70 free trials are included and 9 learned within 200 trials if the free trials are excluded. One rat failed to persist in its position response but also failed to adopt the symbol-reward response. In the group that was trained to learn the position response by the use of reward (Subgroup II*A*), 7 out of 15 failed to adopt the symbol-reward response by trial and error, but none of the 15 failed in 200 trials (Subgroup II*B*) when guidance was first given as described above. Guidance thus seems to have prevented the appearance of fixations although it was not very effective for teaching the animal the symbol-reward response.

In the second part of the experiment, Maier and Klee compared the method of trial and error alone (200 trials) and the method of guidance alternated with trial and error (100 trials of each). These results are summarized in Table 4.

In this case it was found that guidance completely prevented the appearance of fixations both in the group of 16 rats that had developed position stereotypes in the frustrating insoluble problem (I*B*) and in the group of 15 rats that had learned a position-reward response through training (II*B*). Trial and error alone, however, did not cause the abandonment of the position fixations in 9 out of 15 rats in the frustrated group (I*A*) or in 2 out of 14 rats in the rewarded group (II*A*). Here again we find that guidance was associated with the disappearance of fixations.

In rats that were able to abandon the position response, however, the use of guidance did not decrease the number of trials required to adopt the symbol-reward discrimination

response (see last lines of Table 4). Guidance did, however, cause the animals to abandon the position response sooner

TABLE 4. EFFECT OF GUIDANCE ON BEHAVIOR ALTERATION

Groups	Frustrating insoluble problem		Position-reward learning problem	
	IA (Trial and error alone)	*IB* (Guidance alternated with trial and error)	*IIA* (Trial and error alone)	*IIB* (Guidance alternated with trial and error)
Number of rats	15	16	14	15
Number of rats fixating.....	9	0	2	0
Number of rats solving within 200 trials.....	6	15	11	14
Total number of rats solving.....	6	16	11*	15
Average number of trials to abandon position responses.	90.3	32.7	48.4	29.8
Range	53–140	1–113	18–99	14–51
Average number of additional trials before symbol-reward discrimination response is formed.....	13.0	69.2	21.2*	54.9
Range.....	3–21	3–210	0–52	9–182
Average of total number of trials to learn symbol-reward discrimination response.....	103.3	101.9	71.8*	84.7
Range.	60–160	30–310	30–130	30–230

* One additional rat abandoned the position response but failed to learn the symbol-reward discrimination habit. Training was discontinued because its abortive behavior made further training useless. Data for this rat are not included in the averages that refer to this footnote.

than did trial and error alone. In the frustrated group the position fixation was abandoned by all rats after an average

of 32.7 trials, half of which were guidance trials, whereas only 6 out of 15 rats successfully abandoned their position fixations when trial and error was used alone, and these 6 rats required an average of 90.3 trials. In the group trained to form position rewards, the average numbers of trials required to abandon the position responses by the above two methods were 29.8 and 48.4, respectively.

When we consider the interval between abandoning the position response and adopting the symbol-reward response, however, the two methods show the reverse trend. More trials are now required by the guidance groups than by the groups not receiving guidance. Thus when guidance was used, the rats tended to abandon their position response before they learned the discrimination response; when trial and error was used, the position response disappeared about the same time that the symbol-reward discrimination response appeared. For the frustrated group there was an interval of only 13 trials between the disappearance of the position-fixated response and the appearance of the symbol-reward discrimination response when trial and error alone was used, but when guidance also was used the interval was 69.2 trials. For the animals that were trained to learn the position response by reward the corresponding intervals were 21.2 and 54.9 trials.

The evidence points to the conclusion that the method of guidance weakens the response the animal practices, but it does not materially aid in the learning of an alternative. For this reason it is an excellent procedure for altering fixations since these maintain themselves because they are strong and not because alternative modes of behaving are absent. We therefore must distinguish between responses that persist because of their own compelling nature and responses that are maintained because they possess greater excitatory values than alternatives. The latter can be removed by building up stronger alternatives; the former cannot. This

difference in response persistence is another reason for distinguishing between abnormal fixations and strong reward-learned habits.

Variations in the Strength of Behavior Fixations

We have already found that a sharp difference in the strength of position fixations and position rewards becomes apparent when attempts are made to break them by substituting alternative responses, such as symbol-reward responses. Since certain responses are not altered at all by trial and error methods of retraining, these responses have been called *fixations* to distinguish them from responses that are subject to change under ordinary learning conditions. Even when the insoluble problem is used and position stereotypes are formed, some of the stereotypes change much as position rewards change, but the majority of them fail to change even when many more trials are allowed. The fact that the population splits into two distinct groups justifies the qualitative distinction between stereotypes and fixations. When position rewards are subjected to alternation, most of them change as would be expected, but in a few animals position rewards become persistent and must also be considered fixations. Thus the process of response fixation seems to take on an all-or-nothing function. Either it affects a response and makes it unalterable by the method of reward and punishment, or it does not affect the response at all. Whether or not fixation occurs is largely a function of the type of situation used. The insoluble problem produces fixations in most of the animals, and these appear to be the ones that have been frustrated. An ordinary learning problem produces fixations in a few animals only, and this seems to be due to the fact that this situation frustrates only a small number of rats.

However, we have also seen that guidance is very effective

for weakening both rewarded responses and fixated responses, and when this method of alteration is used the gap between rewarded responses and fixated responses is almost eliminated. Thus one method of modification makes all fixations appear equally strong, and another makes them appear almost equally weak and similar to responses established through reward.

When guidance and trial-and-error training methods are alternated the modification of behavior fixations is distributed over a greater number of trials. This suggests a method for measuring the possible existence of different degrees of fixation. A study by Maier and Feldman (63) was designed to determine whether different amounts of frustration would establish fixations that varied in strength.

Litters were divided into three groups; the first group was subjected to the insoluble problem for 8 days, the second for 16 days, and the third for 24 days. Each group contained 37 animals, after animals that failed to develop position stereotypes during the frustration period had been excluded. As controls, three other groups, made up of divided litters, were trained by reward and punishment to form position responses. One group received 8 days of practice, the second 16 days of practice, and the third 24 days of practice. There were 14 animals in each of these groups.

After the position responses were established in both the experimental and control groups, the problem was changed so that the animals were required to learn the symbol-reward discrimination problem. The positive card was free to fall over when struck whereas the negative card was always latched. The cards were changed from side to side in an irregular order. Guidance and trial and error were alternated.

The learning data for the animals that were required to abandon position rewards for symbol rewards are shown in Table 5. It will be seen that each of the groups shows very similar performance. The fourth column shows the number

of trials required to abandon the position-reward response. This measure is the best criterion for indicating the strength of the old response. It will be seen that the 8-day group required 22.2 trials (half guidance) before deviating from the position response; the 16-day group required 20.2 trials; and the 24-day group required 19.8 trials. None of the differences in average scores is significant, but it is of interest to note that increasing the number of days of training has not

TABLE 5. ACQUISITION OF SYMBOL-REWARD RESPONSES BY ANIMALS WITH POSITION REWARDS

Days of training on position-reward responses for three groups	Number of rats	Average number of trials position reward is practiced	Average number of trials required to abandon position response	Additional trials required to adopt symbol-reward response	Total trials to learn symbol-reward response
8	14	79 1	22.2	44 4	66.6
16	14	159 0	20.2	43.6	63.8
24	14	239.0	19.8	42.1	61.9
All groups	42		20.7	43.4	64.1

increased the strength of the position-reward response. This may indicate that the physiological limit in learning had been reached in all groups or that the method of guidance is so effective for weakening responses that any differences in strength due to frequency is lost. Because all the groups are similar they may be combined for comparisons with the experimental groups. The data for the combined groups are shown in the last line of Table 5.

The results for the animals trained in position stereotypes are shown in Table 6. The number of trials required to abandon the position stereotypes and any fixations that were present is 30.1 trials for the 8-day group, 49.0 trials for the 16-day group, and 44.4 trials for the 24-day group. Both the 16-day and 24-day groups are different from the 8-day

group (the significance of the differences is at the 2 per cent level) but the 16-day and 24-day groups are not significantly different from each other. All groups are also significantly different from the groups trained in position rewards; the difference in the combined experimental and control groups yielding a critical ratio in excess of 6.

Since the frustrated groups show a greater tendency to persist in their position responses when the period of frustration is 16 or 24 days than when the period of frustration is

TABLE 6. ACQUISITION OF SYMBOL-REWARD RESPONSES BY ANIMALS WITH POSITION STEREOTYPES

Days exposure to insoluble problem for three groups	Number of rats	Average number of trials position stereotype is practiced	Average number of trials required to abandon position stereotype	Additional trials required to adopt symbol-reward response	Total trials to learn symbol-reward response
8	37	70.2	30 1	32.8	62.9
16	37	146 2	49.0	30.8	79.8
24	37	230 1	44 4	22.9	67.3
All groups .	111		41.2	28.8	70.0

8 days, it remains to determine whether the difference is due to more animals developing fixations when the period of frustration is continued, or whether longer periods of frustration increase the strength of fixations.

Let us assume that the rats that were trained to learn the position by reward and then were trained with the aid of guidance to form the symbol reward escaped frustration and the resulting fixation. It then follows that the maximum number of trials required to abandon the position-reward response is sufficient for any rat not having a fixation. In the position-reward group it will be seen from Table 7 that the highest number of trials required to give up a position reward was between 50 and 60 trials (actually 59). If we

take 60 trials as a maximum, we find that 3 rats in the 8-day frustration group exceeded this number of trials, 10 animals in the 16-day group exceeded it, and 10 animals in the 24-day group exceeded it. Thus it appears that the number of animals

TABLE 7. GROUP DIFFERENCES IN THE NUMBER OF TRIALS REQUIRED TO ABANDON POSITION RESPONSES

Trials	All reward-trained groups	8-day frustrated group	16-day frustrated group	24-day frustrated group
0–10	1	5	1	1
11–20	23	7	7	8
21–30	14	10	5	7
31–40	2	5	6	5
41–50	1	6	2	5
51–60	1	1	6	1
61–70	0	2	4	4
71–80	0	0	0	1
81–90	0	0	1	3
91–100	0	1	0	0
101–110	0	0	3	1
111–120	0	0	0	0
121–130	0	0	0	0
131–140	0	0	0	0
141–150	0	0	1	0
151–160	0	0	0	0
161–170	0	0	0	1
171–180	0	0	0	0
181–190	0	0	0	0
191–200	0	0	1	0
Per cent of rats requiring more than 60 trials to abandon position response	0	8.1	27 0	27.0

with persistent position responses increases with the introduction of frustration and that the number of such animals is greater for 16 days of frustration than for 8 days of frustration. Inspection of Table 7 also reveals that the number of trials required to break the position response shows an increased spread as we go from the 8-day frustrated group to the 16- and 24-day groups.

This difference in the spread of scores may be quantified by selecting all the animals in each group whose score exceeds the average of the group with position rewards. By determining the average score of these individuals we can determine how much it deviates from the average of the group with position rewards. This method will then permit a comparison of the extent to which the high-scoring rats in each group show rigidity. In other words, we shall determine

TABLE 8. DEGREE TO WHICH SCORES OF SLOW LEARNERS IN EACH GROUP EXCEED THE AVERAGE OF NORMAL LEARNERS

Group	Number of rats	Mean of scores in excess of average of reward-trained group
Position-reward trained	18	8.3
8-day frustrated	25	18 1
16-day frustrated	27	40.9
24-day frustrated	28	33 1

how much the scores of certain rats in the frustrated groups exceed 20.7 trials, or the average number of trials required by the rewarded group to abandon a position-reward response when the problem is changed to a symbol-reward situation.

This analysis is shown in Table 8. It will be seen that 18 of the 42 rats that were trained to form position-reward responses needed more than 20.7 trials to abandon the position response when required to learn the symbol-reward problem. These 18 rats scored an average of 8.3 trials above 20.7 trials. In the three frustrated groups from 25 to 28 of the 37 rats in each group required more than 20.7 trials. The excess trials required for abandoning the position response for the 25 rats in the 8-day group averaged 18.1 trials; the excess trials of the 27 rats in the 16-day group averaged 40.9 trials; and the excess trials of the 28 rats in the 24-day group averaged 33.1 trials. It is clear that 16 or 24 days of frustra-

tion produced more rigid responses than did 8 days of frustration.

Thus we find that 16 or more days of frustration not only causes more animals to develop rigid responses but also that the longer period of frustration causes an increase in the rigidity of responses acquired during frustration.

It has previously been shown that a frustrating situation produces a separation in animals (those which become frustrated and those which do not) when fixation is measured in terms of resistance to change by trial and error learning. Guidance tends to remove this difference because it is so effective for breaking responses. When frustration is extended, however, we find an increase in the degree of resistance to change, so that it appears that fixations, although qualitatively different from reward-learned habits, are not equal to each other in strength. It appears that once a response is fixated, further frustration can make it even more fixated. The strength of a fixation, therefore, seems not to be an all-or-nothing function except in so far as its initial appearance causes such responses to be different from reward-learned responses in resistance to change. Thereafter further frustration may produce additional increments of rigidity.

We have already seen (pages 36 to 39) that punishment on all trials is more likely to transform a position response into a fixation than punishment on every other trial. The consequence of this finding is that it is dangerous to punish a response frequently because this technique may introduce fixations and so actually strengthen the response. If our conclusions regarding the variations in strength of fixations are correct, it also follows that once a fixation occurs, further frustration may aggravate the condition. In punishing a stubborn, undesirable response, one may not only fail to alter it but may actually increase its persistence and consequently make future corrections more difficult. Regardless

of whether an undesirable response is produced by selective learning or by frustration, the use of any method of correction that introduces frustration tends to strengthen the condition rather than to correct it.

Factors Determining the Response Fixated

Animals that have learned two mutually exclusive habits in succession (such as position-reward and symbol-reward discrimination habits) tend to maintain the second response when the insoluble problem is introduced. Thus Maier and Klee (69) found that in a group of 60 rats, 54 (90 per cent) continued to express the second or prevailing response during 160 trials of 50 per cent punishment. Of these 54 rats only 7 made a response of a different nature and these did so on one occasion each. Of the 6 rats that abandoned their second response, 4 adopted a new response and only 2 reverted to the first response. Thus frustration tended to freeze the response in progress, and when this did not occur, some other response was formed. There was no evidence to indicate that when a different response appeared it tended to be an earlier response. Thus the first of the two habits tended to be an alternative to a punished second response no more often than chance expectancy. Hamilton and Krechevsky (25), Everall (16), Sanders (97), Martin (79), O'Kelly (88), and Mowrer (86) believe that frustration causes a return to a former response (historical regression), but in their studies adequate controls were not present for distinguishing between the return to a former response and the abandoning of the prevailing response for a new one that just happened to correspond to an earlier response. The above authors used punishment for disrupting a prevailing response and demonstrated that some animals persisted in this response whereas others did not. That frustration tends to make animals return to a former response, however, is open to question.

Kleemeier (35) set himself the task of determining the

effect of punishment at a choice-point on subsequent choice behavior. He used a choice apparatus in which a rat could run from the starting alley into one of four alleys. Two of the four alleys required a 90-degree turn to the right or to the left; the other two alleys were between these and required a 30-degree turn to the right or left. The animals were trained to prefer a particular alley by being both denied food and detained if they chose incorrectly. All were trained first to choose one alley and then retrained to prefer a second alley. Each rat thus learned two habits, but the combination of habits was varied so that all combinations of alleys were used with equal frequency.

Kleemeier found that electric shock punishment at the choice-point for 50 trials caused 49 per cent of the rats thereafter to persist in the prevailing response, 24 per cent to choose an alley other than that used in either the first or second response, and 27 per cent to choose the alley used in the first habit.

The predominant effect of this relatively mild frustration seems to be a persistence of the response in progress at the time of frustration. The former habit also had more than chance preference since it was chosen more frequently than the two remaining alternatives. Further he found that, other things being equal, animals tended to choose the central alleys over those having a 90-degree turn. Thus 78 per cent choose one of the two center alleys when chance expectancy was 50 per cent.

If we suppose that frustration results in the appearance of responses that are highly available, then we can understand why the position of the alley, the response in progress, and earlier habits might influence the type of behavior expressed. Of interest too is the fact that the natural preference of the animal (as measured at the outset) did not influence the response chosen after frustration.

In all cases the response chosen after shock was less sub-

ject to further modification than responses formed by the initial training. Control animals (not punished at the choice-point) were trained to substitute one response for another and made only 7.7 errors, on the average, before adopting the second response. Animals punished at the choice-point, however, made an average of 31.8 errors before adopting a second response, and 27.3 of these errors were made because the animals continued to practice the response assumed after punishment. Thus Kleemeier demonstrated a degree of fixation in his experiments by showing a reduction in ability to change responses after punishment.

From the evidence available it appears that frustration tends to freeze or abnormally fixate a sample of behavior. The response thus formed seems to depend primarily upon its availability at the time. The response in progress at the time of frustration has a high degree of availability and consequently it frequently is the one fixated. In our studies, position responses were fixated more often than symbol-discrimination responses, and position responses are perhaps the most simple or primitive responses an animal can make in a discrimination apparatus. Former responses also may be more available to the animal in certain situations than new responses and so may be fixated more often than chance. Perhaps regressive behaviors in frustration are to be understood as the appearance of responses with low thresholds, rather than as returns to former responses. Kleemeier's finding that the forward-going alleys were the most commonly chosen (whether through persistence, a return to a former response, or the appearance of a new response) is perhaps the best evidence for the hypothesis that response availability determines which response becomes fixated during frustration.

Analysis of the Situation That Produces Fixation

It has been shown that abnormal fixations occur when animals are forced to continue responding to an insoluble

problem. Although the punishment is mild, this situation leads to a great deal of resistance and the animal must be driven before it is induced to respond. The nervous behavior of the animal in the jumping stand leaves little doubt but that it is under great stress. The punishment of choosing the wrong card is not enough to account for the stress of the animal since this degree of punishment occurs in any learning problem that utilizes the jumping technique. In addition to the punishment inherent in the technique, we must take into account the fact that in the insoluble problem the animal is confronted with continued failure to adjust, despite the variability it may show in the early stages. It is apparent that the animal reacts to the random order of the punishment that is given in the insoluble problem. This opinion is based upon the fact that if punishment is given in connection with the negative card only, learning to select the positive card takes place in about 80 trials without a fixation first being established; whereas if punishment is given in a chance or random order a position-stereotyped response is established in about 10 trials. Thus the inconsistent administration of punishment is recognized by the rat and cuts short the variability in behavior that normally occurs in a problem situation.

In one study (69) the two methods of punishment were compared and it was found that 6 out of 30 rats (20 per cent) persisted in the response in progress when 50 per cent punishment was applied in an orderly fashion, but 54 out of 60 (90 per cent) persisted when 50 per cent punishment was applied in a chance or random manner. It seems reasonable to suppose, therefore, that the insolubility of the problem is a factor in the frustration.

It has also been pointed out that the degree of punishment is a factor that creates the tendency toward fixation. Thus a change from 50 to 100 per cent punishment increases the incidence of fixation. Kleemeier (35) also has shown that electric shock at the choice-point creates fixations. It may be

concluded, therefore, that the pattern of punishment is one of the factors that makes the insoluble problem frustrating.

Finally, it must be recognized that the driving stimulus places the animal under stress. A blast of air alone makes for nervousness, and in many instances it may induce convulsions (55, Maier; 64, Maier and Glaser; 85, Morgan and Morgan). Consequently our driving stimulus must be regarded as an important aspect of the frustration situation. It may be contended that this factor alone is sufficient to account for the fixations. In the published studies, air has been used to drive the animals because it permitted a better method for measuring resistance. However, we have also used electric shock to drive the animals to make a response and find that fixations occur with about as great a frequency as when an air blast is used, even though electric shock by itself has little tendency to induce convulsions. It seems safe to conclude, therefore, that the production of an abnormal fixation is not purely dependent upon the nature of the driving stimulus.

This raises the question of whether the driving stimulus can be omitted in fixation-producing experiments. To answer this question Klee (34) used only the hunger drive to induce a response in the insoluble problem situation. As may be expected, he found great difficulty in getting the animals to jump, so that he finally had to set an arbitrary time limit of 4 hours for each jump. Animals refusing to jump in the allotted time were given no food and were tested again the following day. With this procedure 5 out of 23 animals starved to death rather than jump in the no-solution problem situation. In order to prevent starvation on a larger scale, Klee finally followed the procedure of retraining the animals that refused to jump. The retraining procedure was the same as the training given naïve animals when they are first trained to jump.

In one part of the experiment, rats driven by air showed a

fixated response in 9 out of 12 cases when the initial response was formed by frustration (position or symbol stereotypes), and in 2 out of 12 cases when the response was formed by reward learning (position and symbol rewards). Rats driven by hunger, however, fixated their responses in only 2 out of 12 cases when the response was formed by frustration and in 0 out of 11 cases when the response was formed by reward learning. In all cases the presence of a fixated response was determined by testing whether the animal would adopt a new response in 200 trials when reward was given in connection with it. Animals with position reward or position stereotypes were tested by rewarding a symbol response and animals with symbol stereotypes and symbol rewards were tested by rewarding a position response. The fact that the air-driven rats fixated more frequently than the hunger-driven rats may be regarded as showing that the air stimulation as such was a fixation producer. However, refusal to jump and other irregularities in jumping, which appeared in connection with the hunger-driven rats, make this conclusion questionable.

In a second part of the experiment the rats were given a good background of jumping experience so that refusal to jump was less common in hunger-driven rats. Klee found that 9 out of 24 rats (37.5 per cent) driven by air in the insoluble problem fixated the response stereotype and 5 out of 18 rats (27.8 per cent) driven by hunger in the insoluble problem fixated similar response stereotypes. This difference was not significant although it favors the air-driven rats. The important fact remains, however, that fixations do occur when no air is used.

Klee's experiments thus show that fixation can be produced in the insoluble problem situation if hunger is used to drive the animals, and under proper conditions the frequency of the appearance of fixations approximates the number produced when an air blast is used to drive the animals.

Therefore, it cannot be claimed that air stimulation alone is the factor producing fixations.

It is also important to recognize that the hunger drive was not very effective for overcoming resistance to jumping, since some animals resisted to the point of starvation. This fact indicates that the insoluble problem with its accompanying punishment is a highly negative situation. This being the case, the use of force to induce a response must place the animal under considerable stress. We feel justified, therefore, in regarding the insolubility of the test situation as another factor that makes the situation frustrating. Because fixations arise frequently in a test situation that has many elements that make it stressful and frustrating to animals, we may consider fixation as the product of frustration.

Behavior Fixation in Human Subjects

It may be supposed that the tendency to develop abnormal fixations is a characteristic reaction to frustration in rats but that this is not a basic reaction in the sense that higher forms may fail to show equivalent reactions to frustration. For this reason it is desirable to test human subjects for possible similar reactions to frustration.

An experimental test of this nature was made by Dorothy Marquart (78). She designed an apparatus for adult human subjects that contained the basic features of the animal experiments. The apparatus exposed a pair of cards that were placed on the doors built into a large black wooden screen. College students were required to choose one of the cards and indicate their choice by turning a knob to open a door upon which the card was mounted. If the choice was erroneous, the knob failed to open the door and instead a high-voltage (low-amperage) electric shock was received from the knob. If the choice was correct the door opened and no shock was received. The high voltage was used to reduce

differences in shock received because of variations in skin resistance.

A total of 27 cards containing geometrical figures was used in this experiment. Each figure was one of three geometric shapes, one of three achromatic colors, and one of three sizes. The three shapes used were circles, triangles, and squares; the colors were white, gray, and black; and the sizes were such as to approximate the areas of circles 1, 2, and 3 inches in diameter. Mounting was on contrasting backgrounds.

An important aspect of the directions given to the subjects was that their problem was to try to discover a basis for choosing between the cards so that they could always select the correct card and avoid shock. In reality no solution was possible since punishment was given according to a prearranged random plan. Later, without warning to the subject, the situation was changed so that it required the formation of a position response. Punishment was then given only for choices on the right (or left) side and not randomly as before. The conditions for the insoluble stage of the problem varied in the four different groups that were used. The 42 members of Group I were arbitrarily punished on 75 per cent of their first 50 trials; the 29 members of Group II received punishment on 25 per cent of their first 150 choices; the 29 members of Group III received punishment on 25 per cent of their first 50 trials; and the 19 members of Group IV received no shocks at all for the first 50 trials. It was believed that these different preliminary conditions represent situations varying in the degree to which they offer frustrating experiences.

After exposure to the frustrating conditions, the groups were compared on the basis of the number of trials required to learn the simple position response. The results obtained are shown in Table 9. It will be seen that the average scores for Groups II, III, and IV show striking similarities. All

their averages fall between 43.9 and 46.2 trials. However, Group I is in a class by itself in that this group required an average of 76.1 trials. That Groups II and III, having 25 per cent punishment, show results similar to those of Group IV, which received no punishment at all, indicates that 25 per cent punishment is not disturbing. This is true even when the total number of shocks (Group II) is the same as that given Group I. The concentration of punishment, therefore, is more important than the total amount of punishment given. The similarity of the results of Groups II, III, and IV,

TABLE 9. NUMBER OF TRIALS REQUIRED BY FOUR GROUPS OF HUMAN SUBJECTS TO LEARN A POSITION RESPONSE

Group	Preliminary experience	Number of subjects	Average number of trials to learn position response
I	75% punishment for 50 trials	42	76.1
II	25% punishment for 150 trials	29	46.2
III	25% punishment for 50 trials	29	46.0
IV	0% punishment for 50 trials..	19	43 9

despite the fact that punishment is different in concentration and in the total number of shocks, indicates that a situation must produce a certain level of disturbance before it becomes frustrating.

This point becomes even more clear when we consider the manner in which the scores are distributed in the different groups. Table 10 gives the number of individuals making scores at the various score intervals. It will be seen that in the case of Group I a bimodal distribution is obtained: 31 cases making scores below 100, 11 cases making scores above 120, and no individuals making scores between 100 and 120. In the other three groups no tendency toward a bimodal distribution is apparent; only 2 cases in the three groups combined make scores in excess of 120 trials.

If we assume that frustration leads to resistance of change,

it follows that frustration interferes with learning a new response. On the basis of this assumption we may interpret the slow learners as individuals whose frustration threshold was exceeded by the concentrated punishment. In 2 of the 11 cases the problem was not solved at all in the allotted 210 trials and these individuals consequently showed behavior similar to the more complete fixation rigidity found in

TABLE 10. DISTRIBUTION OF LEARNING SCORES FOR FOUR DIFFERENT GROUPS OF HUMAN SUBJECTS

Scores	Group I	Group II	Group III	Group IV
1–20	5	5	5	4
21–40	11	10	12	7
41–60	8	7	5	4
61–80	5	3	5	0
81–100	2	3	0	3
101–120	0	1	1	0
121–140	1	0	0	1
141–160	4	0	0	0
161–180	1	0	0	0
181–200	3	0	1	0
Above 200	2	0	0	0
Total number of cases .	42	29	29	19

animals. In calculating averages the scores of these 2 individuals were arbitrarily set at 210 trials. The remaining 31 individuals, however, were apparently not frustrated by the 75 per cent punishment and so showed normal learning scores. If the slow learners are excluded from Group I, the average number of trials for learning becomes 42.3 trials, which approximates the averages of the other three groups. It appears that, except in rare cases, 25 per cent punishment is not frustrating and thus does not introduce the fixation effect. As a consequence, a normal distribution of learning scores is obtained for Groups II, III, IV.

The bimodal distribution obtained when frustration enters the picture supports the finding obtained in rats, which

indicates that behavior resulting from frustration is different in kind from that produced by selective reward and punishment training. When the frustration threshold is exceeded, increments of fixation are produced that impose a degree of rigidity upon certain responses and so interfere with learning that demands a response in terms of goals. Although these increments of fixation are not great enough to abolish the ability to form a new response, they are sufficiently great clearly to separate frustrated from nonfrustrated individuals. Failure to obtain a greater number of clear-cut cases of fixated responses may be attributed to the fact that the human subjects could not be subjected to more intense and prolonged frustration. As a matter of fact it was difficult to get the individuals in Group I to return for completion of the experiments, and several made themselves unavailable.

Chapter 3

THE CHARACTERISTICS OF FRUSTRATION-INSTIGATED BEHAVIOR

The General Nature of Abnormal Fixations

Two Aspects of the Experimental Findings

The experimental evidence presented in Chap. 2 shows two things: (*a*) it describes a type of behavior that has been called an abnormal fixation; and (*b*) it brings out a qualitative distinction between behavior expressed during a state of frustration and behavior that may be described as goal oriented. Because of the complex nature of the evidence it seems desirable to restate the findings in a more general way and organize them around each of the points. In this section we shall recapitulate the evidence supporting the first of these points.

The Property of Persistence

The abnormal fixations produced in animals were responses that were characterized (*a*) by the tendency to be repeated over and over without variation and (*b*) by the property of possessing a degree of resistance to change that is not found in a learned response. It is for this reason that the adjective *abnormal* was used to describe the rigidity of the response. This type of behavior was found to occur primarily under conditions in which the situation was made frustrating. In

some cases fixation also was found to occur under the usual learning conditions, but these cases could readily be explained by postulating that a learning situation may frustrate animals with low thresholds.

Thus animals which were placed in an insoluble trial-and-error learning problem and which were not allowed to escape but were forced to continue responding soon developed a specific mode of behaving in the situation. A common response to a problem requiring discrimination between two cards was to make a choice on the basis of position (right or left) and to continue making this same response regardless of its ineffectiveness.

It was also found that animals which had previously learned to solve a discrimination problem tended to continue this former solution when frustration was introduced although the former solution was now ineffective. Thus frustration causes animals to continue ineffective learned responses.

It may be said, therefore, that the introduction of frustration causes animals to settle on some form of behavior and to cease expressing the variable behavior usually expressed in a trial-and-error learning situation. Further, if sufficient frustration is introduced, they continue expressing behavior that no longer is adaptive. Responses formed or expressed during frustration are more rigid than any that can be established through training or learning. They continue to dominate behavior despite their inadequacy.

The Unique Effect of Punishment on Fixations

Abnormal fixations also were found not to be subject to modification by the persistent use of punishment. Rather, it appears that because abnormal fixations are caused by frustration, punishment actually increases the strength of fixations. This was demonstrated by showing that punishment given each time a response was expressed tended both

to strengthen and to form fixations more readily than if punishment was given on half the trials and reward on the other half.

Fixations as an Experimental Analogue of Compulsions

Abnormal fixations were found to show the property of compulsiveness. It is believed that the animal with an abnormal fixation can no longer be placed in what might be called a *choice situation*, and that he will execute a fixated response even though he has a preference for an alternate response.

This property of the fixated response was demonstrated by showing that animals would continue to express a position response even when it was apparent that they knew the choice they were making led to punishment and that a choice to the opposite position led to reward. Thus it was found that after animals had learned to discriminate between an object that punished and an object that rewarded, they continue nevertheless to choose the object on the position side.

Fixations Can Be Altered by Guidance Therapy

Abnormal fixations were not only found to resist modification through learning methods, but they also remained intact, in most instances, after metrazol shock. However, it was found that they could readily be altered by a form of therapy that we have described as *guidance*. The method of guidance leads the animal through an alternate response and prevents the expression of the fixated response. From 5 to 10 trials with guided responses may completely eliminate a fixated response that resisted modification by punishment for hundreds of trials. As a matter of fact the animal that has expressed its compulsive tendency to choose on the basis of position and has refused to choose the reward object (the

positive card in the discrimination apparatus) will consistently choose the reward card after guidance.

Fixations Are More Specific Than Habits

The fixated response is characterized by a high degree of specificity. It was found that animals with fixated position responses failed to express a position response in a new situation that still permitted position responses but required a choice of one of two paths rather than one of two cards. Further, it was found that even when the same apparatus was used and the same cards were presented, the animal could be caused to retain its fixated position response when jumping to a card but could be caused to respond differently when a path to the cards was introduced and walking to the cards was permitted. Thus the mere introduction of paths might cause the animal to choose on the basis of position, but the position response expressed on these occasions was not fixated and was susceptible to modification. However, any modification achieved with a walking response did not transfer to the jumping response. Thus the fixated response is attached both to elements in the situation as well as to the type of behavior used in expressing the response. In this sense the fixated response may not be too different from a learned response since a learned response also depends upon the proper (equivalent) conditions. However, learned responses are made specific by limiting the goal attainment to a specific aspect of behavior, whereas fixations are specific even when variations in behavior permit the same goal achievement. Thus an animal may learn to depress a lever for food and show a variety of ways of depressing the lever (*e.g.*, right foot, left foot, head, etc.). To prevent such variation the experimental procedure must be rigidly controlled. In fixated behavior specific manners of manipulating the environment seem to be the rule rather than the exception.

Fixations Relieve Tensions, But Relief Is Not a Selective Factor

The experiments also furnish some evidence in support of the statement that the fixated response serves as an adjustment to the animal. Once a fixated response appears the animal responds more readily and appears less nervous. The reduction in resistance to choosing thus seems to be an indication of improved adaptation to a stressful situation.

Another indication of adjustment is suggested by the fact that the incidence of seizures in a given animal declines when fixations appear. Comparisons between fixated and non-fixated groups of animals point in the same direction. It should be pointed out, however, that the need for adjustment seems not to be the reason why the fixated response is selected. A stereotyped response or a decreased decision time would serve the same purpose; nevertheless, the response that appears under frustration is one of fixation. Further, the fixated response persists when any adaptive value it may have is removed. For this and other reasons it is believed that the adaptive value of a fixation is purely an incidental by-product.

Fixation Has an All-or-nothing Character, Yet There Can Be Variation in Strength

Although the fixated response is strikingly different from a habit in its persistence, it cannot be concluded that all fixations are equal in strength because most learning situations fail to alter them. Since fixations can be altered by guidance methods, differences in the persistence of fixations may be observed by comparing the rate at which the guidance procedure alters them. It was found that individual differences existed and that 8 days of frustration produced fixations of lesser persistence than either 16 or 24 days of frustration. The experiments bearing on this question

demonstrated that the duration of the period of frustratio not only affected the strengths of fixations but also cause more animals to develop fixations.

Availability as a Selective Factor in Fixation

In general the experiments do not fully explain why som responses become fixated and others do not. Thus th experiments show that frustration leads to fixation, but the do not explain why one particular response rather tha another is fixated. However, some evidence does bear on thi point. It seems that the response fixated is one that is highl available to the animal. Position responses are simple an highly available. In one study in which alleys were used i was found that runs into forward-going alleys were mor likely to be fixated than runs into alleys that required a turr It was also found that the fixated response was likely to b one that the animal was expressing during the period o fixation. These facts point to the principle of *availability* as factor in determining the particular response that is fixated

This principle of availability may also be used to explai why certain infantile responses in human beings sho rigidity. It is unlikely that availability is the only determin ing factor, however, although it may explain individua differences as well as the effect of culture in determinin differences in the mode of reacting to frustration.

Fixations Induced in Human Subjects

Finally it should be pointed out that the frustration-fixa tion hypothesis is not confined to studies with rats. Huma subjects were similarly caused to develop a degree of rigidit to change. This rigidity in behavior was measured by greatly retarded ability to learn in a situation that previousl had been frustrating. Thus after frustration human being have difficulty in learning simple discrimination problems Since learning a new response requires the giving up of ol

responses and the exercising of trial and error (variability), fixation becomes an interference to learning.

Types of Behavior That Appear to Be Forms of Abnormal Fixations

Fixated Behavior Not Previously Recognized

In describing the abnormal behavior fixations that have been experimentally produced, the reader may have gained the impression that abnormal fixations are highly specific and unusual types of behavior. However, the demands of experimental controls made it necessary to select a specific response and investigate it thoroughly. Once there is acceptance of the fact that such behaviors can be developed, other behavior phenomena may be reexamined in a new perspective. To what extent have we been dealing with cases of unusual rigidity in the past and to what extent is the understanding enhanced if such behaviors can be classified as fixations?

Hamilton's Studies of Perseverance

Hamilton (24) described the tendency of several animal forms to repeat an unsuccessful response in a difficult multiple-choice situation and attempted to analyze the behavior expressed in terms of frequency and recency. He found that much of the behavior could not be reduced to accepted principles of learning. He made the observation, however, that under excitement repetitive behavior is favored. His observation of gopher behavior is particularly pertinent and is given below in full.

"A much clearer example of gopher persistence in the face of disadvantage was obtained when I put 12 gophers into a large cage in which there were 12 small nests. Each gopher was driven into a nest and I hoped to avoid the slaughter that usually follows any effort to keep a number of these animals in a common cage. It was soon observed, however,

that if a gopher left his own nest to secure food, invaded another nest after his cheek pockets were filled with grain and bits of carrot, a battle would ensue which would terminate only when one of the combatants was either dead or a helpless cripple. No matter how large and powerful the occupant of the invaded nest might be, nor how small the disputant of his occupancy, the invader did not seem to be deterred by the disadvantageous consequences of his persistence. He would dart into the nest, only to reappear in a moment, thrust out by its rightful occupant, reenter and suffer a second expulsion, and so on until exhaustion or death terminated his stupidly persistent repetition of the nest-seeking reaction. A little variation of reaction would have led him to his own nest or, at least, to one less well defended. Within a fortnight, all but two of the 12 gophers were slain in this manner. The survivors were two large males who occupied nests at opposite ends of the cage" (page 29).

Although Hamilton believed this behavior to be characteristically primitive, he pointed out that even the average human being "if trapped and badly frightened in a burning hotel, will rush madly again and again to a part of the building which obviously will not afford escape from the building, thereby diverting time and effort from as yet untried possibilities of escape which would readily occur to him if he were not excited" (page 31).

Hamilton thus recognized that behavior under excitement is unadaptive, but he regarded excitement as the inhibition of rational processes rather than as a positive mechanism that introduces stereotypy.

Patrick's Studies of Irrational Behavior

Patrick (90) found that human subjects in a multiple-choice situation showed a predominance of responses that were of the rational inference tendency. However, when

emotional stimuli, such as electric shock or the turning on of a shower, were introduced these behaviors disappeared and were replaced by useless and repetitious responses. Although the responses were classified into five types, ranging from the most adaptive to the least adaptive, it was found that there was little tendency to take responses of intermediate value when emotion was introduced. Thus under normal conditions the most adaptive responses predominated and under emotional excitement the purely repetitious responses predominated. This reversal from highly variable to highly stereotyped behavior is exactly what one would expect if one reads the frustration-fixation hypothesis into the situation.

A Case of Nail Biting in a Rat

Sampson and Schneirla (96) report a case of nail biting in a rat. This behavior occurred spontaneously in a difficult discrimination problem when an air blast was used to force a response. One rat showed nail biting on 362 out of 430 trials and two others showed it for shorter periods. The authors regard the persistent nail biting as a behavior fixation induced by frustration.

Evidence That Stubborn Attitudes Are Fixations

Another type of behavior that becomes clarified when viewed as abnormal fixation is the stubborn attitude that resists alteration. These stubborn or persistent attitudes, like repetitious actions, also seem to be linked with emotion. Certainly, it is on the emotionally loaded topics such as race, religion, and politics that one most frequently encounters marked prejudice.

Newcomb (87), for example, studied changes in political and social attitudes in a student population. He found that the first-year students were subject to social pressures and that the attitudes developed at home tended to change to conform with those of the college group. Some students,

however, changed more than others, and he attempted to analyze these differences in terms of personality differences. When his case histories are analyzed from the point of view of home frustrations, we find that among students who readily changed their attitudes 15 per cent had a background of frustration, whereas among those who failed to change, 37 per cent had backgrounds revealing frustration. If we assume that frustration tends to fixate the attitudes prevailing at the time of frustration (principle of availability) we can see why there was a higher percentage of frustrated individuals in the group that did not change attitudes under social pressure than in the group that did change. Thus, the phenomenon of fixation may explain stubborn attitudes as well as persistent segments of behavior.

Certain Abnormal Behaviors Appear to Be Fixations

The various types of compulsions, ritualistic acts, and obsessions described in the abnormal literature clearly conform to the concept of abnormal fixation developed in this study. Compulsive mannerisms are associated with neurotics. Likewise kleptomania, dipsomania, drug addiction, and sex perversions may be regarded as fixations rather than mere compelling habits. There is little question but that frustration is associated with these abnormalities. Of course, the frustration-fixation concept alone is inadequate to account for the above abnormalities since conditions which determine the form that the fixation will take must also be taken into account. However, because of the manner in which they resist correction, it seems more reasonable to consider these abnormal forms of behavior as fixations rather than as strong habits formed by learning. Certainly, threats of punishment and repeated punishment have entirely failed to correct them, and correction reasonably would be expected if we were dealing with the usual concepts of learning and choice behavior.

Phobias Viewed as Fixations

The many phobias, likewise, appear to be forms of abnormal fixation. At present, one must regard them as either innate fears or cases of emotional conditioning in one or no previous trials. No one has successfully demonstrated that highly specific conditioning can take place with one trial and at the same time show such resistance to change. Phobias are retained in full force despite lack of reinforcement and they resist reconditioning. Learning theory seems entirely inadequate for explaining them and it is improbable that heredity can account for them. Psychoanalytic theory considers phobias to be internal conflicts that have been projected outward and to be attempts on the part of the organism to protect itself against anxiety (9, Brown, page 364). In this case the explanation is highly speculative and incomplete. It represents an attempt, however, to explain in terms of goals by making the goal an unconscious need.

Since phobias appear under emotional stress and can be traced to traumatic experience or conflict, one can regard them as associated with the frustration mechanisms. May not the phobia then be a fear that has become fixated? Phobias are often successfully treated when the traumatic experience that gave rise to the phobia is located and analyzed for the patient. Frequently the patient has forgotten (repressed) the details of the traumatic experience and retains only the fear reaction to some part of the total situation. Thus the therapy may be difficult because of the problem of discovering the pertinent experience. However, the successful recalling of the incident is an important aspect of the therapy.

If we consider that frustration freezes a sample of behavior, it is to be expected that retention will only apply to that content which is fixated. Since fear behavior may predominate in a traumatic experience, it is a highly available response and could become rigidly attached to any aspect of

the situation that is perceived at the time. This response, being very strong, would tend to blot out other details and so make them less conscious than the predominant fear reaction. Reliving the experience under favorable attitudes for recall, however, permits new perceptions to occur, particularly if a period of years has changed the meanings of elements in the situation. These new perceptions change the meanings of the releasing stimulus; with a changed stimulus the fixated response is no longer initiated, since a fixated response is released only by the original meaning of the stimulus.

Criminal Behavior Viewed as Fixated

The fact that punishment has been unsuccessful in correcting hardened criminals as well as delinquents likewise suggests that many forms of behavior seen in maladjusted individuals are not choice behavior, but behavior which the organism cannot resist. The behaviors under consideration may or may not be stereotyped, however. In so far as stereotypy appears the mechanism of fixation is apparent. If fixations are absent, the compulsive behavior still may be present since, as we shall see later, frustration may instigate behavior other than fixation. We have seen that responsiveness to goals is not present in frustration, and behavior so elicited appears compulsive since it is unaltered by consequences. The fact that punishment fails to correct the maladjusted individual's behavior links his actions with the frustration process and takes them out of the area of choice behaviors that are reactions to goals.

German Leaders' Behavior Viewed as Fixated

Failure to make an obvious choice was clearly shown by the German leadership when it continued to fight to the point of inability to fight. In this sense the German leaders

behaved like Hamilton's gophers. When defeat was obvious, it might seem reasonable to expect the leadership to end the struggle before cities could be destroyed without opposition. Yet the reasonable choice was not made. Unless we abandon the assumption that the German leaders were in a choice situation, their actions cannot be satisfactorily explained psychologically. If, however, we consider their condition as one of frustration and their behavior as fixation, then their refusal to consider alternatives makes sense.

Therefore, one might expect the bombing of cities to influence choice behavior only up to a certain point. Beyond this point, further bombing no longer affects morale and choice behavior but instead is effective in warfare because it serves to reduce the ability to fight. This observation is verified by the bombing surveys made after the war, according to the author's conversations with T. M. Newcomb, a member of the survey group.

The Qualitative Distinction between Fixations and Habits

A Population May Be Split by Introducing Frustration

The evidence presented in Chap. 2 brings out a number of qualitative differences between learned responses and frustration-induced fixations. The mere fact that fixations are more rigid than habits may be regarded as a difference in degree. However, it was found that if a group of animals is subjected to frustration, a bimodal distribution curve is formed when attempts are made to alter the stereotyped responses developed under the frustrating conditions. Thus animals that resorted to position responses when frustrated fell into two distinct groups with respect to the rigidity of these position responses: (*a*) those whose position responses were modified in an average of 80 trials when an opportunity

to learn was given and (*b*) those whose position responses were unmodified after 200 trials. When given a chance to assume an adaptive response, practically no animals modified their responses between 100 and 200 trials and those which failed to change in 200 trials rarely changed if many more trials were given (*e.g.*, some animals have been given more than 600 trials without benefit). A similar bimodal distribution curve was obtained when frustrated human subjects were given an opportunity to learn a simple problem.

A Bimodal Distribution Indicates the Presence of Two Populations

If the members of population, which initially vary in degree only, can be separated into two widely separated groups in this manner, it is reasonable to suppose that two different kinds of populations have been formed. In Chap. 2 it was postulated that some of the individuals were not frustrated by the frustrating situation and hence had nonfixated responses whereas other members were frustrated by the situation, and it is these which showed the fixated responses. A condition of frustration within the individual, therefore, was assumed to be the factor that split the population.

In order to contend that frustration acts to split a population, however, one must assume that there are effects induced by frustration that are unique and that these effects appear at a particular stage in the animal's condition. In this case the effect of frustration was found to be the appearance of behavior rigidity. Thus when frustration was induced all animals affected received an increment of rigidity that separated them from the nonfrustrated animals. From this we may conclude that behavior shows a marked change when the environment sets up a state of frustration in the individual. Individuals may differ in the ease with which

they will be frustrated, but once frustration occurs a marked behavior change appears.

Frustration and Motivation as Processes in the Population Split

Is the change produced by frustration reducible to a form of motivation or learning? Some of the experimental evidence presented compared animals which were trained to show position responses through learning with those which were caused to express position responses through frustration. Here again a sharp separation in the rate of ability to change was found. Groups of animals with position responses of a like nature in appearance and with the same number of previous executions of the response showed marked differences when attempts were made to alter their differently formed position responses. The animals that had position responses developed through learning and reward as a rule were able easily to learn a new response, but animals with position responses that spontaneously appeared in the frustrating situation as a rule failed to respond adaptively to the learning situation. The exceptional animals in the nonfrustrated group can be explained by supposing that the initial learning situation in which the position response was formed frustrated a few animals and these few have fixations and so cannot learn a new problem. The exceptional animals in the frustrated group can be explained by supposing that the frustrating situation fails to frustrate a few animals and these are the ones that learn the new problem at the normal rate.

These findings indicate that a frustration-induced response is stronger than a response normally learned, despite the fact that the learned response is reinforced by reward and the frustrated response is not. This observation gives the frustrated response a property that learned responses do not have. If this conclusion is accepted it follows that frustration

introduces something which is different in kind from that introduced by learning and reward.

Two Opposite Effects of Punishment Suggest Two Functions

If the qualitative difference between the effects of frustration and the effects of learning through motivation are accepted, some of the other experimental findings also become clear. It was found, for example, that punishment increased the strength of behavior fixations and that learned habits may be transferred into abnormal fixations by too much punishment. Ordinarily it is supposed that punishment weakens a response. That the contrary is the case would be predicted if it is assumed that punishment often frustrates the individual and therefore fixates the response in question. In a similar manner the compulsive property of fixations, the lack of responsiveness to goals in frustrated animals, and the fact that guidance is better for altering fixations than for training new responses are readily understandable results if they are not analyzed in terms of learning and motivation principles but instead are viewed in the light of the frustration-fixation principle.

Implications of Separating Frustration from Motivation Processes

This conclusion that frustration introduces a kind of behavior which is not reducible to learning and motivation concepts but instead must be described by a new set of concepts raises many complex problems. It means a redivision in the classification of many behaviors with resultant changes in meaning. One of the important changes involved is that of delimiting the conditions in which goals exert a determining influence on behavior. This means some delimitation in the concepts of motivation. Once a distinction between motivation and frustration has been made, many behaviors must be

reclassified, particularly behavior that is classified as abnormal. Whether or not a reclassification will result in an improvement in psychological analysis will constitute a pragmatic test of the hypothesis which states that motivation and frustration are qualitatively different instigators of behavior and must therefore be described by different behavior principles.

The Mechanisms of Frustration and of Motivation

A More Specific Definition of Motivation

In order to make the distinction between motivation and frustration more clear cut we shall use the term *motivation* to characterize the process by which the expression of behavior is determined or its future expression is influenced by consequences to which such behavior leads.

This definition clearly excludes a number of behaviors that have been assumed to be motivation determined. Jumping when pricked with a pin must be regarded as a stimulus-response reaction and not a motivated response, unless it can be shown that a goal (escape from pain) perpetuates the response. Similarly the random behavior of a hungry animal cannot be regarded as motivated unless this random behavior is shown to be more than restlessness. Thus in many instances the hungry cat may show learned searching behavior that would be goal oriented and not mere increased activity. When, however, a hungry animal goes to a specific food place, it is clear that the behavior is motivated since both the hunger need and a goal (the food place) have determined the specific behavior elicited. The exclusion of many stimulus-response behaviors from motivation does not mean that they are determined by frustration. Rather such behaviors fall into a separate class, many of which may be reflexive or instructive in nature. That such responses are

adaptive and have survival value does not make them motivation determined. Rather these responses survive and are perpetuated because of natural selection and heredity principles and not because of rewarded learning. In separating motivation from frustration, therefore, we necessarily create a third category of behavior that may be classified as behavior that is determined by neural connections only.

The Problem of Behavior Selection in Frustration

We shall use the term *frustration* to characterize the process whereby the selection of behavior is determined by forces other than goals or mere neural connections. We have seen that availability is one of the basic forces that determines the behavior expressed in frustration. These same factors may also play a part in determining behavior in motivation but they are less important than the influence of rewards and punishments. In distinguishing between motivation and frustration, therefore, it is important to recognize that the consequence of the action is not a factor in the selection of behavior under frustration. Undesirable consequences may lead to further frustration and so alter the response, but the form of the alteration is not predictable from motivation concepts in the sense that pleasant consequences increase the tendency to repeat a response and unpleasant consequences decrease the tendency. Further, the selection of behavior because of a principle such as availability is not due to mere neural connections. In a state of frustration the same neural connections may have a different degree of availability than in a state of motivation. Thus right and left turns at a choice-point may cause an animal to express a preference for one path over the other, but position responses expressed either through rewarded learning or in a state of frustration need not conform to the natural preference. Further, the property of fixation in behavior is produced by frustration and this property of

behavior is not caused by the residual neural connections alone. We shall also see that frustration adds other properties to behavior which seem unreducible to goals reached or the relative strengths of associations acquired and the strengths of neural connections developed through maturation. Since our main purpose is to differentiate between motivated behavior and frustration-instigated behavior, we shall hereafter confine the discussion to these processes with the understanding that neural connections and pure associative connections may contribute to both.

Greater Objectivity Is Obtained by Separating Frustration from Motivation

In thus separating some forms of behavior from the general concept of motivation we are proceeding contrary to accepted usage. However, the appearance of qualitative distinctions makes it necessary to use terms with more and more delimited meanings. Without the distinction, the term *motivation* becomes so broad and inclusive that it incorporates contradictory principles, and this condition hinders progress. When the distinction is made, however, one can proceed to develop behavior principles that show internal consistency.

At the present time inconsistencies in motivated behavior are explained by postulating shifts in goals or in needs. Thus behavior that seems unresponsive to a certain consequence is supposed to be influenced by needs and new goals that the observer may not yet have discovered. Consequently he sets himself the task of discovering such changes in needs. In some cases the need may be discovered in the unconscious. The utilization of the principle of unconscious needs allows considerable leeway, and by means of the concept many apparently unmotivated responses can be made to appear motivated. It will be the purpose of this analysis to demonstrate that behavior can be more simply and effectively

explained and altered by separating goal-oriented behavior from frustration-instigated behavior in our thinking. In addition this separation will permit the establishment of more general principles. When all behavior is explained in terms of motivation, the psychology of behavior becomes an individual study since variations in expression must be related to the manner in which each individual shifts from one form of motivation to another.

The studies of fixation and habit alteration have demonstrated a need for a distinction in behavior established under different conditions. The next step was to generalize these findings and postulate that all behavior instigated by frustration is different in kind from behavior controlled by motivation. It now remains to be seen whether this distinction can be consistently applied to other evidence. The behavior effects of frustration have been extensively investigated, and the principle of the frustration-fixation relationship is only a small sample of the behavior that is expressed during frustration. Before proceeding with this analysis it is well first to describe the more limited use of the concept of motivation that the above analysis requires.

How Motivation Controls Behavior

According to the limited usage given the concept of motivation, it can be said that motivated behavior is controlled by both an internal and an external condition. Thus a need or a desire is always within the organism, whereas the incentive or goal is outside. Either condition may be present without the other and produce stimulus-response behavior, but both are essential for creating the state of motivation which selectively arouses behavior that may be called goal oriented. Behavior called forth by the state of motivation tends to relieve the internal condition and this in turn leads to satisfaction. So-called "adaptive behavior" is characterized by the fact that it leads to a reduction in need. For

example, both a hunger need and a food incentive (or a symbol for food) must be present in order to produce behavior that is oriented toward food. When such behavior culminates in obtaining food, satisfaction is experienced and the need is either reduced or removed.

Further, it must be recognized that a state of motivation exists only when internal and external conditions are properly paired. Thus water cannot be substituted for food unless the hunger need is changed to thirst. The various needs have a limited number of external objects that will serve as functional incentives or effective goals. It is these objects toward which behavior is oriented when we speak of motivated behavior.

To cause a hungry animal to perform such behaviors as lead to food, it is necessary that a period of learning precede the appearance of goal-directed behavior. This period of learning is necessary for building up associations between behaviors and the consequences of such behaviors. Behavior not requiring such associations but requiring both a need and an incentive is called *instinctive* or *innate*, and for purposes of clarity in concepts should not be included under the limited definition of motivated behavior.

Experience with reaching need-satisfying goals encourages repetition of behavior that carries the animal toward them; experience with reaching objects without need-satisfying values discourages repetition of such behavior since more adaptive responses replace them. The experience of reaching painful objects encourages behavior away from the objects. Active avoidance, therefore, is more than a reduced excitability; it is excitability in the opposite direction.

Past experience builds up associations between responses to situations and the incentives that these responses obtain. These associations determine the anticipations an individual develops so that the animal chooses between behavior alternatives in accordance with these anticipations. As the

animal's needs change, choices will vary even though incentives and learning have not been altered. (39, Leeper; 33, Kendler). Thus the animal may become more thirsty than hungry, and then it behaves in terms of its new dominant need. If the animal's needs remain the same, choices may change if the incentives are altered or if anticipations are modified through the failure of previous behavior to reach the goal object. Thus the motivation process is a selective mechanism that brings one of several abilities to expression. How effective the selection is depends upon the type of associations formed and upon the type of innate neural connections.

Viewed in this manner motivated behavior is functionally always choice behavior, since among the many potential forms of behavior an animal possesses (innate and acquired) only some come to expression in a given situation. The response expressed is the one that has the relatively greatest attraction for the animal and we speak of the choice made as an expression of the animal's preference.

Usually psychology has limited choice behavior to a condition in which there is a conflict in motives. Thus when a situation motivates an animal to move in two opposite directions, one speaks of the animal as having a conflict in motivation. Such a conflict is finally resolved in terms of the stronger motivating condition. The more evenly matched the opposing motivations the more difficult the choice and the longer the decision time. It seems more reasonable however, to regard all motivated behavior merely as a deviation from this conflict condition. In many cases the other potential behaviors have such weak motivation that, with respect to the dominant one, they are practically negligible. Thus conflict is not always apparent, merely because the other attractions are overpowered by a single one. A change in needs (internal condition) or incentives (external condition), however, would quickly bring such

situations into a true conflict in motivation or into a real choice situation. For example, if one asks a boy if he wants to go to the movies no conflict is set up, but if one adds that he may go to the ball game if he prefers, the situation is immediately altered. In the latter case we have introduced a second incentive that offers competition. In making all motivating situations variable in the degree to which difficulty in choice is involved we are not merely quibbling over terms. This becomes a fundamental way for distinguishing such behavior from frustration. As we shall see below, behavior instigated by frustration cannot be transformed into a choice situation merely by manipulating goals or needs.

Behavior Controls during Frustration and Motivation

In frustration-instigated behavior there is no goal orientation; consequently, the behavior appears senseless when looked at from the point of view of motivation. When frustration is experienced behavior is a terminal response to frustration and not a means to an end. No need is satisfied because no goal is involved. Any satisfaction that occurs must be in the form of relief, not in the form of consummation. Our theory, therefore, forces us to distinguish between two possible forms of satisfaction: relief from frustration, and the removal of a need through the attainment of a goal.

Frustration, although it may be set up through need deprivation, initiates behavior which may be unrelated to the conditions that lead to the frustration. Thus frustration represents a change in the condition of the organism, and through it a different set of behavior mechanisms is put into operation. Goals no longer serve as guides, so that frustration-instigated behavior is behavior that is forced by the condition of the organism. In this sense all frustrated behavior has the character of a compulsion.

This does not mean that controls are entirely absent.

Rather the controls are not of the goal type but must be investigated separately. To seek for goals or to attempt to influence such behavior by manipulating goals confuses the issue. Our search for controls is more likely to succeed if we give up our goal-seeking bias and do not attempt to attach goal significance to what the frustrated organism does. Thus when we say that the response expressed is the one having the greatest availability to the organism or that frustration perpetuates the response that is in progress at the time of frustration, we are describing types of control that are unrelated to goals. That fixations arise in frustration is one fact; that a position response appears is quite a different fact. To explain the latter we must seek to determine the factors which control the type of response that comes to expression. In motivation, experience of reward and punishment control the response that will be expressed, but in frustration reward and punishment exert no such control.

Motivation and Frustration Controls May Compete

The two mechanisms behind behavior, motivation and frustration, are here treated as if they were entirely exclusive of one another for the sake of clarity in presentation. In actual cases the two processes may sometimes appear to be of equal strength and may function simultaneously. Thus some of the behavior may seem to be goal oriented, whereas in other respects the behavior is unrelated to goals. This would occur when there is a transition from the motivation mechanism to the frustration mechanism. Likewise the condition may be reversed. Frustration may be relieved and the organism then may gradually return to goal-oriented behavior. Again the organism may switch from one type of behavior to the other as it is moved from one situation to another. Thus a person may have stubborn (fixated) attitudes on one subject and be reasonable on other subjects.

Further Implication of the Separation of Frustration from Motivation

Having distinguished between two qualitatively different mechanisms in behavior, let us now reexamine some other types of behavior and see whether the separation in behavior mechanisms clarifies them. If previous interpretations have been primarily based on the assumption of goal control, their reinterpretation in the light of our new frame of reference is demanded. To stand the test of sound theory, a new theory must not only explain certain new findings but must also integrate old findings at least as well as previous theories.

Aggression as a Symptom of Frustration

The Frustration-aggression Hypothesis and Motivation

Aggression in behavior represents some form of attack, such as striking another person, using abusive language, and, in general, behaving destructively. Generally speaking it is the kind of behavior displayed in anger. Dollard, Doob, Miller, Mowrer, and Sears (14) have made a strong case for the relationship between frustration and aggression and have formulated the frustration-aggression hypothesis. They state that when goal-directed behavior suffers interference, frustration results and aggression in behavior follows this frustration. A frustrated person may attack the source of frustration either physically or verbally. In such cases it may appear that the goal is to remove the obstacle or inflict injury upon it. However, when a man smashes a window because he cannot close it, the goal achieved or the injury inflicted is not so apparent. In other instances the frustrated person may attack innocent bystanders, particularly if attack on the real obstacle is prevented or if it is unknown. Thus Hovland and Sears, (27) found that the number of lynchings of Negroes in the South was negatively correlated with the

price of cotton. Frustration caused by low cotton prices is regarded as the instigator of aggression and the Negro becomes the innocent bystander who is attacked. Scapegoating and crimes of violence likewise are associated with periods of frustration, and the objects attacked have nothing to do with originating the state of frustration. In such instances the goal striving in behavior is not so clear and direct. It is supposed, however, that such acts of aggression are released by a minor incident and that the major frustration is caused by a background of aggressive tendencies that have been inhibited. Thus the minor incident is perceived as the source of frustration and consequently is attacked.

The proponents of the frustration-aggression hypothesis do not regard behavior instigated by frustration as different in kind from behavior elicited by motivation. For them both types of behavior are a means to an end and punishment is regarded as a method for inhibiting both types of behavior.

Aggression as a Pure Frustration Concept

We may accept the evidence for this relationship for the frustration-aggression hypothesis without supposing that behaviors other than aggression are excluded and without accepting their view that frustration does not produce a break with motivated behavior. If we integrate the frustration-aggression hypothesis with our theory of frustration, aggression becomes a product of frustration and hence is not goal-oriented behavior. Thus when a frustrated person strikes an opponent he is not doing so to remove an obstacle or to injure someone. Rather we would contend that he strikes because he is frustrated, and if the obstacle is removed or if injury is done it is secondary or incidental. Although frustration frequently produces aggression against the barrier or the source of frustration we would not call such acts goal-oriented responses. Instead it seems that barriers and obstacles often are attacked because they are convenient

objects to attack, particularly when behavior preceding frustration is centered around the obstacle that blocks progress toward a goal. When the barrier is one that cannot be destroyed it is difficult to see how the continued attack on the barrier can be described as goal oriented. Nevertheless, French (18) points out that the futile struggle against an obstacle as a substitute goal is an unsuccessful reaction to frustration. If, however, we do not make goals a part of the interpretation of behavior, we do not have to make value judgments of this sort and speak of successful and unsuccessful aggression. Rather we say that aggression occurs, and for the individual the basic psychological principle is the same regardless of consequences. Although the consequence of behavior may alter the course of aggression or modify the state of frustration (for better or for worse), we do not consider it a part of the frustration-aggression sequence.

The point of regarding the attack as due to frustration and not as a means of solving the problem becomes even more convincing when the attack is directed upon innocent bystanders. Here the goal is not furthered and attack is apparently for its own sake. Dollard *et al.* recognize the facts that attack is not necessarily directed at the point which obstructs the solving of the problem, and that the results of the attack even may be such as to aggravate the frustration. It is at this point that their motivation explanation is least convincing, because the goals are clearly not directing the behavior. Thus economic frustration leads to violence in the home, strained relationships among friends, crimes against society, lynching, and rioting. As a result problems are not solved and goals are not achieved. But always the innocent bystander is a convenient object. Attacks on minority groups too are clearly cases in which the object of attack is convenient. Our culture and propaganda have furnished us with these hate objects and thus have built attacks on them into responses with a high degree of availability. After the

response occurs it is rationalized and justified, but such reasons or justifications must not be confused with causes or goals. Brutal parents justify the abuse of their children by contending that the children are being trained, but the cause of the abusive behavior is their own frustration.

Sears, Hovland, and Miller (98) attempted to establish techniques for measuring aggression and performed an experiment with college men as subjects. The subjects were told that they would be used for a study investigating the effects of loss of sleep. Thus the subjects all knew that they would be kept up all night. The students were requested to report to the laboratory at 10:30 P.M. and were told that games, decks of cards, and lunch would be furnished during the night. However, the promised games were not forthcoming and other promises were repeatedly broken. Quiet periods were enforced and smoking was prohibited, but the experimenters talked and smoked. Instead of the promised food the students were confronted with experimenters who walked through the room with hamburger sandwiches and coffee. It will readily be conceded that these conditions would be irritating and had the experimenters not been professors, aggression might have been more freely portrayed. The described behavior did show aggression in the form of a cold attitude, hostility, complaints, and uncooperative behavior. One subject drew pictures of mutilated bodies, a man hanging from a post, a heart with a dagger, etc., and said the drawings were about psychologists. Such remarks as "Are all psychologists mad?" "Everything in this experiment was done 60 years ago—everything." "Let's leave and wreck the experiment" are typical of those observed. Aggression toward individuals in the group also occurred, but those directed at the experimenters were the most pronounced.

However, attempts to develop a scale for measuring the degree of aggression were unsuccessful. One of the most

promising was that of rating friends, before and during frustration. Although the ratings tended to be less favorable during than preceding frustration, it was evident that the full extent of the aggression was not carried to other situations.

Without much question experiments with children would reveal aggression in behavior more clearly. The adult has developed many methods of withholding the expression of his feelings, and in addition, a situation dominated by professors is not conducive to breaking down these inhibitions. Thus certain experiences alter the availability of many responses. The attempt to make quantitative measurements of aggression stems from the assumption that the degree of aggression is positively related to the extent of the instigation or the amount of frustration. In postulating this relationship the possibility that frustration may lead to behaviors other than aggression is overlooked. Perhaps it is premature to expect to be able to relate the intensity of a sample of frustration-instigated behavior with the extent of frustration until more is known about the varieties of frustration-instigated behaviors. Furthermore it is difficult to compare the relative intensities of two types of aggression and certainly even more difficult to determine the amount of aggression which is the equivalent of a given degree of fixation. Until qualitative analysis has progressed to the point of having isolated the types of behavior associated with frustration, it seems that quantitative studies will have to limit themselves to situations that produce a restricted range of behavior types.

Why the Expression of Aggression May Relieve Frustration

If our contention is correct that aggression is solely a response to frustration and that the response expressed is an end product rather than a means to an end, then we may

expect the frustration-instigated response to be a relief of a tension rather than a solution to a problem. If this is true it follows that revenge is not a goal. Rather, revenge relieves tensions and this relief makes revenge sweet and satisfying. No problem is solved, however, and no wrong is corrected by revenge. The fact that revenge behavior, rather than what revenge does to another, supplies the relief is born out by common experiences. Many persons have felt relief by writing a letter and telling a person just what they thought of him. Before the letter is written, tensions are unrelieved; after the writing there is relief, and it is unnecessary to send the letter to experience the relief.

The counseling program described by Roethlisberger and Dickson (92) was shown to give relief to industrial workers. The program supplied interviewers who listened to the workers' problems and gave them an opportunity to "blow off steam." As a consequence the factory adjustments of those interviewed were greatly benefited.

Baruch (6,7) found that children's home adjustments were improved if the children had opportunities to mutilate clay models of their parents in the nursery school. Thus smashing a clay model of a mother's head made it more possible for the child to love his mother.

It appears, therefore, that regardless of goals achieved, aggression relieves frustration tensions, and if the original cause of frustration has passed, the process has spent itself. In general the aggressive response also may have survival value in that sources of frustration are sometimes destroyed, but it is not an infallible corrective response since many aggressive responses evoke violent reactions from the object attacked. These reactions make for further frustration, and so aggravate the condition of the organism as well as complicate the problem situation. When frustration produces aggressive tendencies it would seem that relief is most adequately achieved if this aggression can be directed along

harmless channels. In this respect nondirective counseling (93, Rogers) and play therapy (4, Axline; 6, Baruch) serve a valuable therapeutic function since they furnish relief from frustration without permitting expression to make the situation worse.

Regression as a Symptom of Frustration

The Concept of Regression and Motivation Theory

Regression has long been used in psychoanalysis as a trait associated with neuroses. The term *regression* means the opposite of development so that in regression behavior becomes more childish or less mature. The degree of regression can be expressed in terms of the number of years a person regresses, in the same way that development can be expressed in terms of mental age. Theories of regression vary from the contention that behavior retraces the line of development to the contention that behavior becomes dedifferentiated, but not necessarily along the same line or in the same sequence that differentiation occurred. According to the second view regression would represent childish behavior, but it would not indicate a return of the individual to his own childhood behavior. Behavior can become simplified without matching particular stages of development.

The first view easily permits regression to be interpreted as a form of motivation. It may be said that the individual returns to a form of earlier behavior that he found more satisfying than his present condition. The second view does not readily lend itself to an explanation in terms of motivation concepts, and this may be a reason why the first definition of regression is sometimes preferred. However, no serious attempt has been made to explain regression in terms of motivation, although it is generally assumed that the individual who regresses has a motive. This is quite generally true of other behaviors associated with frustration. Text-

books describe behaviors produced by frustration in one section and in other sections imply that all behavior has a goal.

Experiments on Regression

The work of Barker, Dembo, and Lewin (5) has clearly linked regression with frustration. These writers view regression as a dedifferentiation in behavior and not as a retracing of an individual's past. In their experiments with children they first determined the type of play that children of different ages express and on the basis of these observations established norms for play ages. With increased developmental ages, play activity gradually becomes more and more complex and constructive. Under frustration, however, the play of children of any given age becomes more like that of younger children. In the frustration behavior experimentally induced, the children's play regressed, on the average, one and one-half years.

The experimental situation was divided into three stages. In the first stage, children played with toys in a room and during this stage the play ages were determined. In the second stage, a screen was removed which gave the children access to another half of the room filled with additional toys. Now the play spread over the whole play area and the new toys were combined with the old. For example, a doll's house in the new part of the room was used for a doll from the old part; a toy lake in the new part was used for sailboats from the old part of the room, etc. The new part of the room thus offered many added attractions that enriched the previous activities. In order to frustrate the children, toys belonging to each part of the room were replaced, the children were returned to the first part of the room, and a wire curtain was drawn that prevented the children from using the new part yet permitted them to see the toys in it. Thus in the

third stage the children were deprived of attractive play objects and consequently showed the effects of frustration. Although aggression was also present, the experiment was designed to measure the decline in the constructiveness of play. The same toys used in the first stage were manipulated unconstructively during frustration. For example, a fish pole used to play fishing would be dangled about a toy sailboat; a truck previously used to haul dolls and other objects would be carried about or merely pushed back and forth; a doll that had been used to play housekeeping would be dangled or examined superficially.

Behavior That May Be Classified as Regressive

If regression is a recognized response to frustration, it becomes necessary to determine the behaviors that are immature. Although they have not been experimentally isolated, it seems reasonable to classify such behaviors as dependency on the mother, bed-wetting, excessive tattletale behavior, suggestibility, whining, excessive crying, many forms of speech deficiency, and nonconstructive play as regressive when they occur in children whose level of maturity is beyond the age at which these behaviors normally occur. When a mature child returns to such behaviors it is clearly a sign of regression. Often when parents move their residence children are disturbed and they abandon more mature behavior for less mature behavior. Thus a child who has learned to walk may crawl again, may show less mature speech, and instead of playing may follow the mother from room to room.

Regression as a Means of Relief from Frustration

In discussing aggression it was pointed out that the expression of aggression relieves frustration. Whether or not this is also true for regression has not been determined. It

seems reasonable to assume for the present, however, that regressive behavior (*e.g.*, a good cry) does give relief. Miss Axline (4) freely used a nursing bottle in her therapeutic play situations. She found that disturbed eight-year-old children would suck on the bottle and then progress to mature play activity. It is also probable that the modern psychotherapy used with adults encourages the expression of regressive as well as aggressive behavior and that the expression of each type of behavior accounts for some of the beneficial effects of nondirective counseling (93, Rogers). This does not mean that all the benefits derived from counseling are in the form of relief from frustration. Being accepted by the counselor and having an opportunity to work out solutions to problems must also be included in a description of the total process. However, relief from frustration seems to be an important initial phase.

Regressive Behavior and Motivation Concepts

Regressive behavior readily lends itself to classification under nongoal-oriented behavior. Regressive responses appear spontaneously and without learning so that they do not appear to be learned techniques for gaining attention and other possible goals. This does not mean that in some instances a child may not play tricks and use regressive responses to gain certain ends, but to claim that this is the case in truly regressive behavior seems to be an exaggeration. To claim further that the regressive child wishes to return to a previously secure condition and in some instances to a fetal state likewise seems to carry a motivation point of view well beyond the actual observation of behavior.

In regarding regression as an end response to frustration and in utilizing availability as the principle that determines the form of expression, however, one seems to remain closer to the facts. At the same time this view explains why the

regressive responses spontaneously disappear when frustration is relieved.

Resignation as a Symptom of Frustration

The Conditions under Which Resignation Is Observed

Another characteristic class of behavior that has been associated with frustration is that of resignation or apathy. Allport, Bruner, and Jandorf (1) used the term to describe the attitudes of many refugees persecuted under the Nazi rule. Unemployment during a depression also transforms many individuals into such a condition (15, Eisenberg and Lazarsfeld). The following is an example of the apathetic attitude of a Polish worker cited by Zawadski and Lazarsfeld (108).

"A carpenter, about thirty years old, married, unemployed for some months, but not longer than thirteen weeks, because he still gets the dole, described the morning after dismissal with the words: 'Grief, tears, impulses to revenge, numbness. For a time, awakening in the morning is unbearable. The world becomes ever gloomier and viler. One sees in it neither pity nor friendship.' He looks for work at a labor exchange; there he gets a sarcastic answer which angers him. After one day of fruitless search for work he says, 'I decided not to go anywhere any more. And for months, lying in the sunshine, I wait quietly for the day when my wife will tell me that she spent the last money and that the grocer does not want to give us credit. . . . But it lasts very long, and I ask myself how fate will finally decide.' He stays inactive, although previously painting was a hobby which he practiced devotedly" (page 237).

According to the above authors, the attitude of resignation implies "extreme limitation of all needs; no plans; no definite relation to the future; either no hopes at all or hopes which are not taken seriously."

Resignation Is Inconsistent with Motivation Concepts

Since the trait of resignation is one of giving up and a loss in hope, it clearly is a class of behavior that is not oriented toward goals. Goals have ceased to be part of reality so motivation seems to be largely absent. However, *lack of overt behavior* rather than another type of behavior seems to have replaced goal-oriented behavior. As a consequence it is more proper to regard resignation as an attitude or a condition than a form of action.

Relation between Resignation and Other Frustration Symptoms

Whether the absence of expressed behavior is due to the blocking effect of barriers (fear of punishment) or is a characteristic of the condition of resignation cannot be determined from our present knowledge. If it is merely blocked behavior it is possible that it is a variation of one or more of the three classes of behavior described above. In order to determine whether or not resignation represents a fourth class of frustration-instigated behavior, it is desirable to examine it in relation to each of the other characteristics.

If apathy or resignation represents a case of blocked aggression, then it follows that, once the barriers for action are removed, destructive action will be freely expressed. In such case resignation should readily be transformed into aggression and it would become a special case of the class of behavior we have called aggression. There is at present, however, no evidence that seems to indicate that apathetic people readily become aggressive, although hate may be a part of their mental make-up.

Resignation on the surface also may seem to have some characteristics of regression. The tendency to escape from the present to the past (return to childhood) is a sign of regression and is similar in some respects to loss in hope and to thinking at a wishful level. However, resignation is more

of a desire to escape by waiting for death than a return to a more primitive condition. It seems that the state of resignation is not so much a deterioration in constructive behavior as a deterioration in motivation. Thus from our present knowledge resignation does not seem to be a special form of regression.

The class of behavior we have called *fixation* likewise seems unable to include the condition of resignation, even if one considered the persistence of the resigned attitude as a fixation. If it were true that apathetic conditions tend to be fixated, one could not logically reduce apathy to fixation; rather apathy would be combined with fixation.

Thus the state of resignation is unique in that it does not represent a condition of goal orientation and it does not describe a type of action that is an end in itself. Rather it represents a state in which action is lacking, but which was preceded by types of frustrated behavior. Perhaps it represents an escape from reality in which further frustrations cannot be aroused. Apparently the ego is lost and this may represent a terminal condition of repeated and prolonged frustration.

The Interrelationship between Frustration Characteristics

For the present it seems desirable to retain the four classes of behavior: aggression, regression, fixation, and resignation as the characteristics of behavior induced by frustration. The extent to which the traits expressed are functions of the situation and functions of the individual must be answered by future research. The degree to which the nature of the situation influences the type of behavior expressed likewise must be investigated before its role can be evaluated. At present all types have been observed and the emphasis given in each case seems to have been largely dependent upon the experimenter's interest.

It is probable that aggression occurs most frequently in free situations, when behavior is not restricted by barriers. Probably fixation and resignation occur more in situations in which behavior is restricted and frustrations persist. The studies on unemployment frequently cite anger and tears as a first reaction, but it does not follow that these reactions are replaced by reactions of another type.

Frequently the behavior expressed has characteristics of two or more of the frustration symptoms. Gossiping, for example, may be aggressive in that it attacks someone and regressive in that it is a variation of the tattletale behavior common in children. Name calling during a frustrating argument is a sign of regression in that this behavior ceases to advance the argument and involves exaggeration and generalization. It is aggressive in that it attacks another person verbally. Illustrations of combined symptoms frequently occur among children. A child may use a toy telephone regressively to hammer rather than constructively to play by communicating with another child. If the child hammers another child with the telephone, he combines the regressive hammering activity with aggression. Fixation may be combined with both the above characteristics if such behavior becomes stereotyped and is persisted in, despite consequences. Fixation and regression frequently are combined with aggression in racial prejudice. Such prejudices persist regardless of facts and consequences (fixation); the reasons for believing are frequently unsound and go back to childhood, and there is a failure to make obvious distinctions (regression); and finally racial prejudice is associated with destructive behavior toward some group or individual (aggression).

The trait of resignation, however, does not appear in combination with others. For this reason it may be a more final or end condition. Perhaps psychoneurosis and resignation represent final stages of frustration, and aggression,

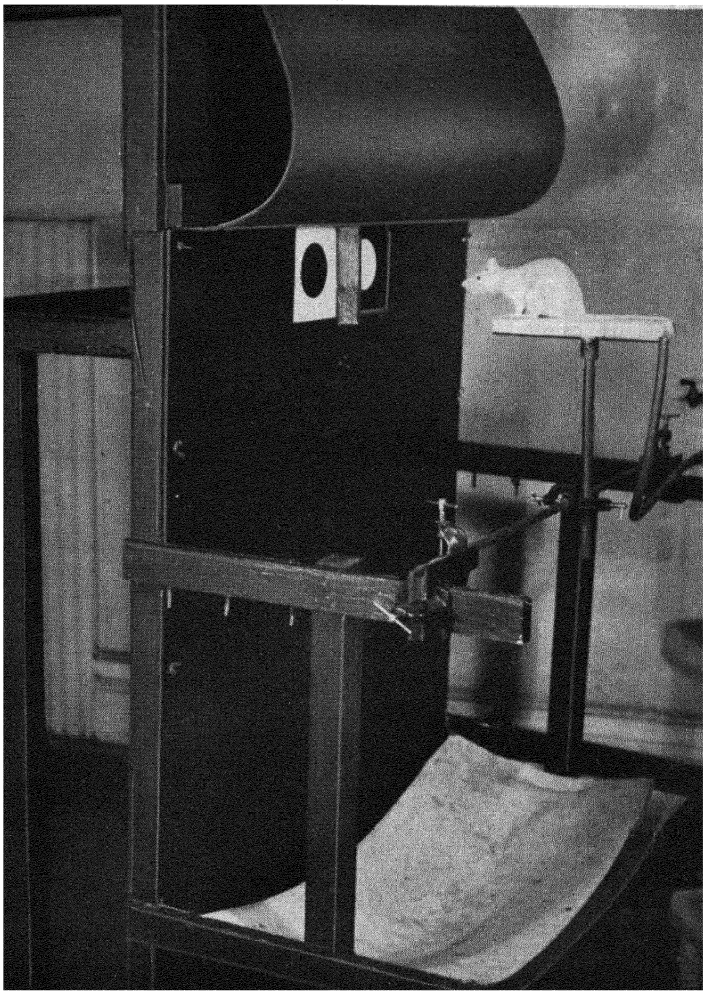


FIG. 2. Photograph of a rat in the jumping apparatus. The picture shows the rat on the jumping platform confronted with two cards placed in the windows of the vertical screen. The rat is trained to jump at the cards, either of which may be latched in place or left free to be knocked over. If a latched card is struck the rat receives a bump on the nose and falls into a protective net shown near the bottom of the picture. This net is suspended from springs so that the rat receives an unpleasant experience but cannot be injured. If an unlatched card is struck the card falls over and gives the animal access to a platform behind the screen where it finds food. The curved cardboard above the cards prevents the animal from jumping over the cards, which frequently is attempted when difficulty in learning is encountered. The rubber hose leading to the back of the jumping platform supplies air, which is used to drive the rat into making a response when it becomes stubborn. A nozzle attached to the hose (not visible) directs the air blast on the back of the animal and drives it toward the cards.

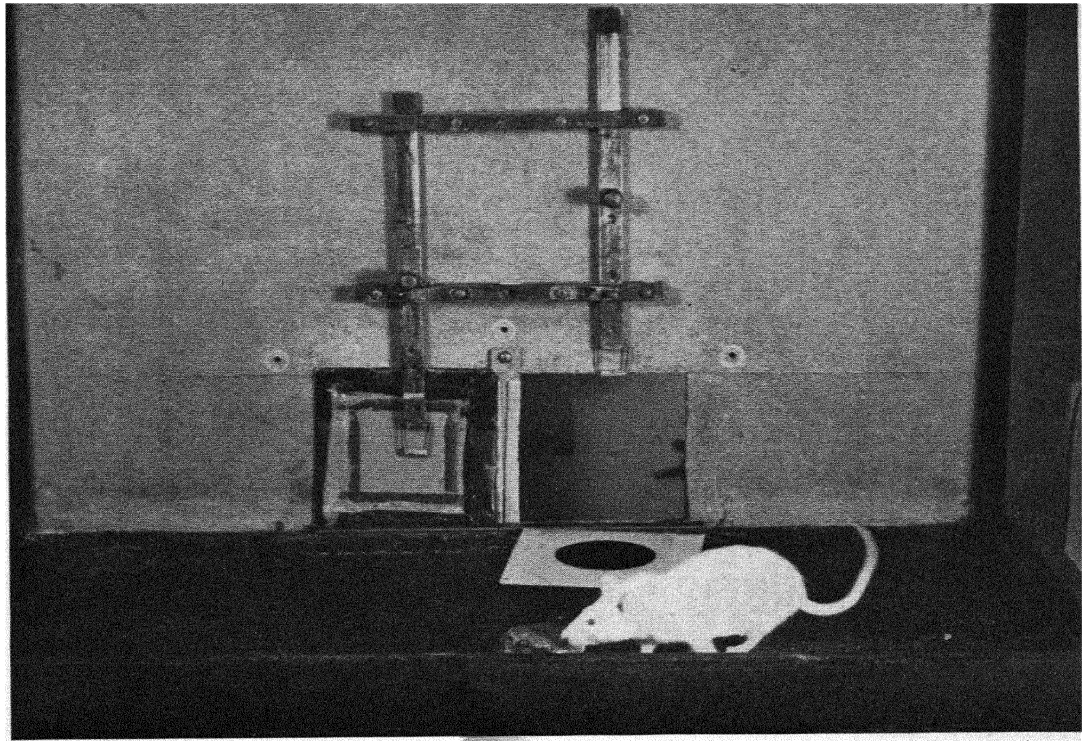


FIG. 3. Photograph of rear view of apparatus. The rat has struck the unlatched window and gained access to food. By lowering and raising the levers, to which a weight is fastened, the card may be securely latched or held lightly in place

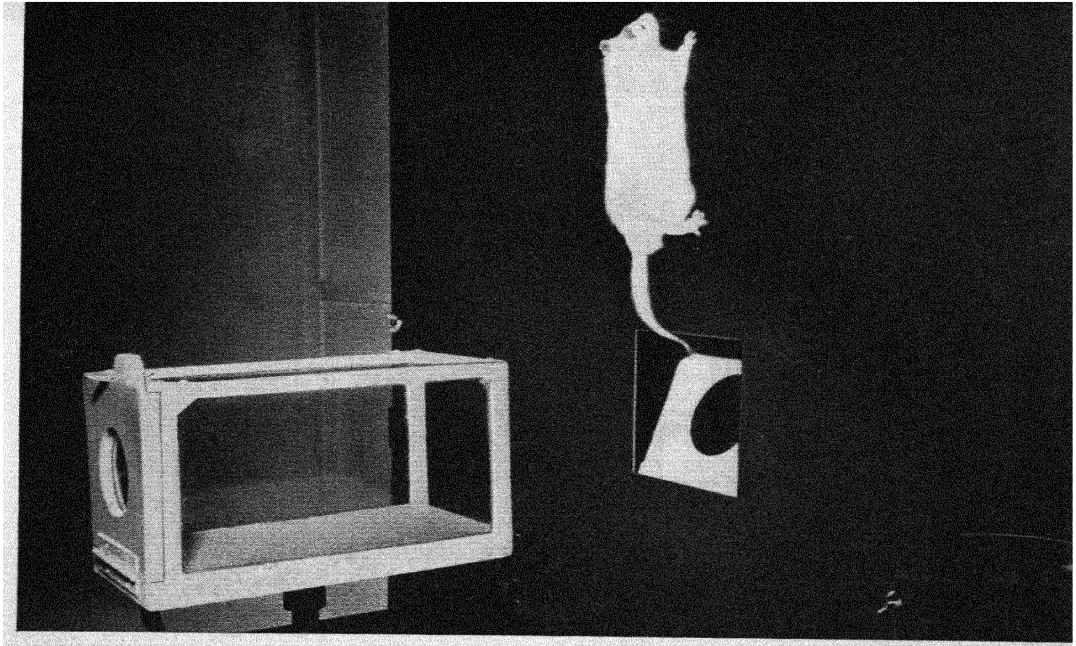


FIG. 4. Photograph of a rat jumping above the stimulus card. The curved cardboard shown above the cards in Fig. 2 has been removed, thus permitting a greater freedom in the manner of jumping. Jumps toward the card that are inadequate for gaining entrance to food are called *abortive jumps*. Although the reward card was presented on this occasion, the rat made an abortive jump and knocked the card over with its tail. In this picture the jumping platform was enclosed to prevent escape. When the rat experiences too much failure it must be confined on all sides except the one toward the screen. On this occasion only one card was presented, for reasons that will be made clear later in the text.

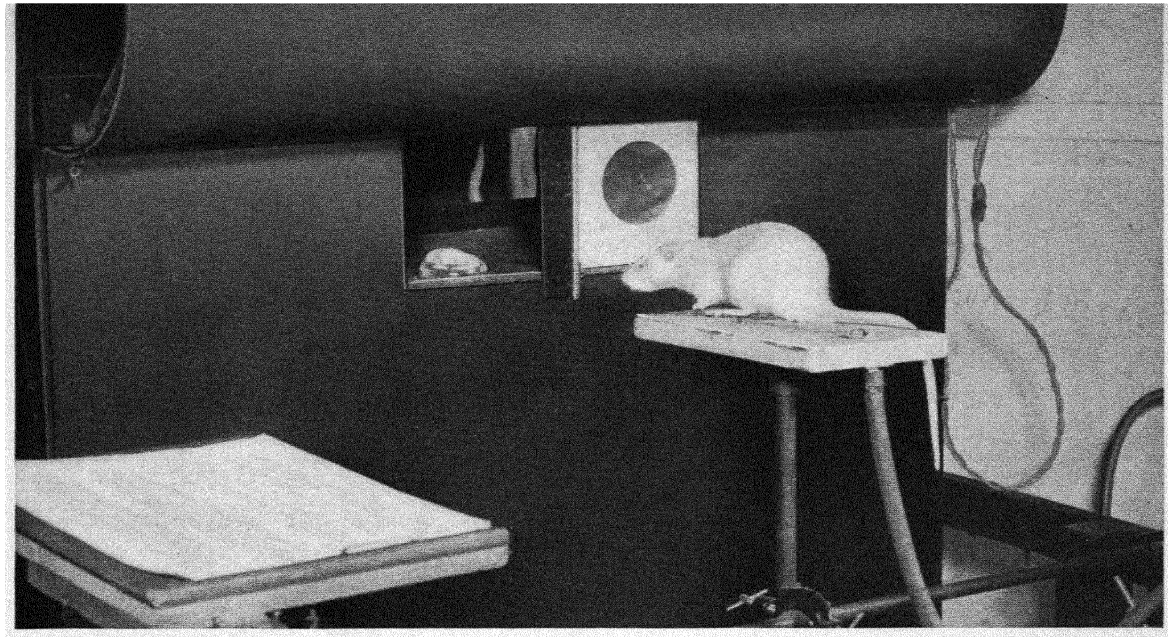
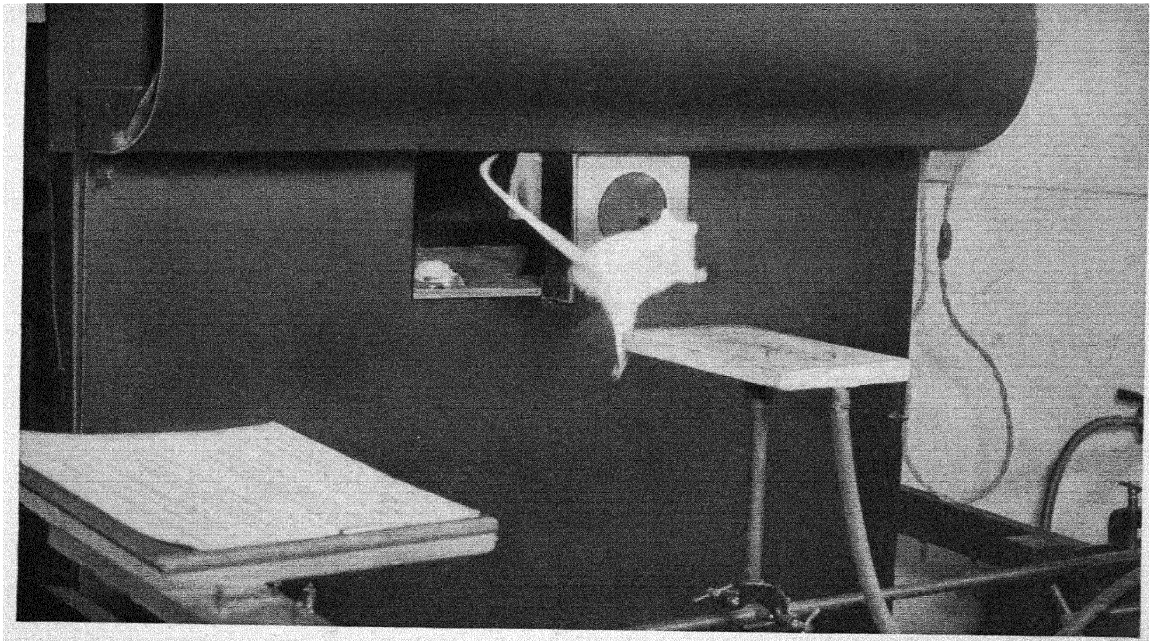


FIG. 5. Successive photographs illustrating the compulsive nature of a position fixation. This rat developed a right position fixation in the insoluble problem. Thereafter it was unable to learn a symbol-reward response that required the avoidance of the card with a black circle and the choosing of the card with a white circle. The tendency to choose the card on the right is so strong that it will be taken in preference to an open window with food showing. In Fig. 5*a* we see the rat observing the food in the open window. The behavior of the animal on these occasions is one of sniffing and reaching out toward the open window. One feels that the animal surely will choose it. Yet, invariably, the rat finally turns and jumps in conformity with its position fixation as shown



in Fig. 5*b*. Apparently the animal cannot bring itself to violating its position fixation. The fact that open windows are used in the initial training on the jumping apparatus makes the refusal to jump toward it in these instances even more striking. Note also that the rat has turned so as to strike the locked card with its side. This type of jump is not adapted to gaining access to the food platform even if the window were unlatched. Rather this type of jump (abortive) is used by the animal only after it has learned that the window is latched. It appears that the animal adapts itself to its fixation by cushioning the blow but it cannot eliminate the fixation.

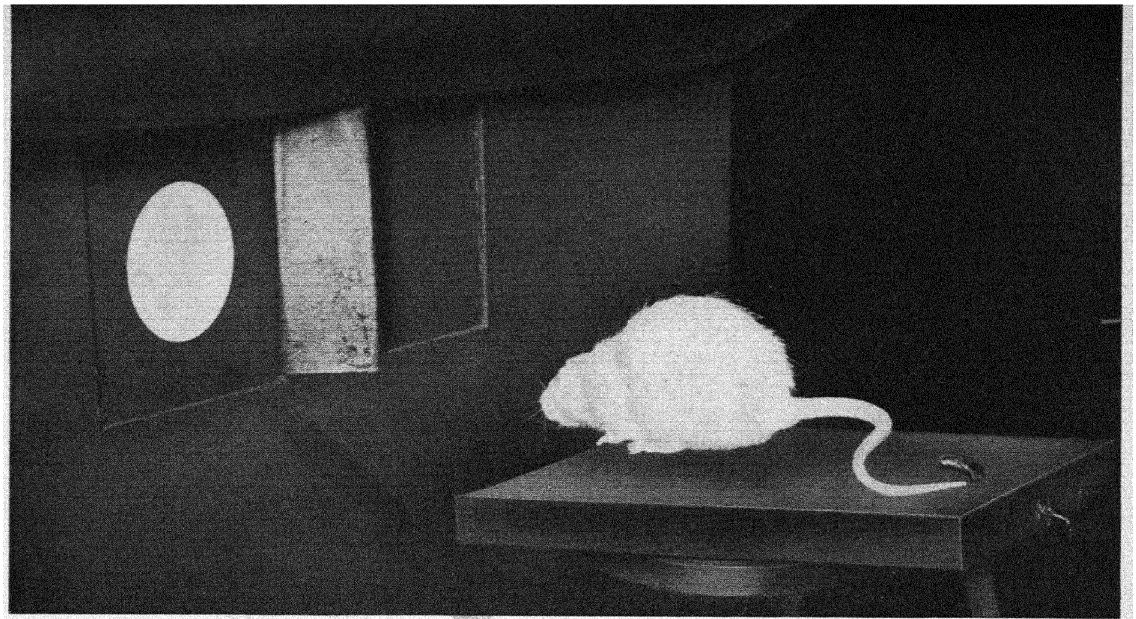


FIG. 6. The one-window test situation. Instead of being presented with two cards, the rat is presented with one card only. With a single card present, a position response (right or left) cannot be executed. When the rat is trained to choose the reward card and reject the punishment card this changed situation may offer some difficulty. If the reward card only is presented the rat has no problem, but if the punishment card is presented the rat is forced to choose a card it has been trained to avoid. Further, the rat cannot fall back on a fixated response if it finds this situation stressful. The one-window test has been used to create a conflict between avoiding the punishment card and being forced by the air blast to choose it whenever it is presented.

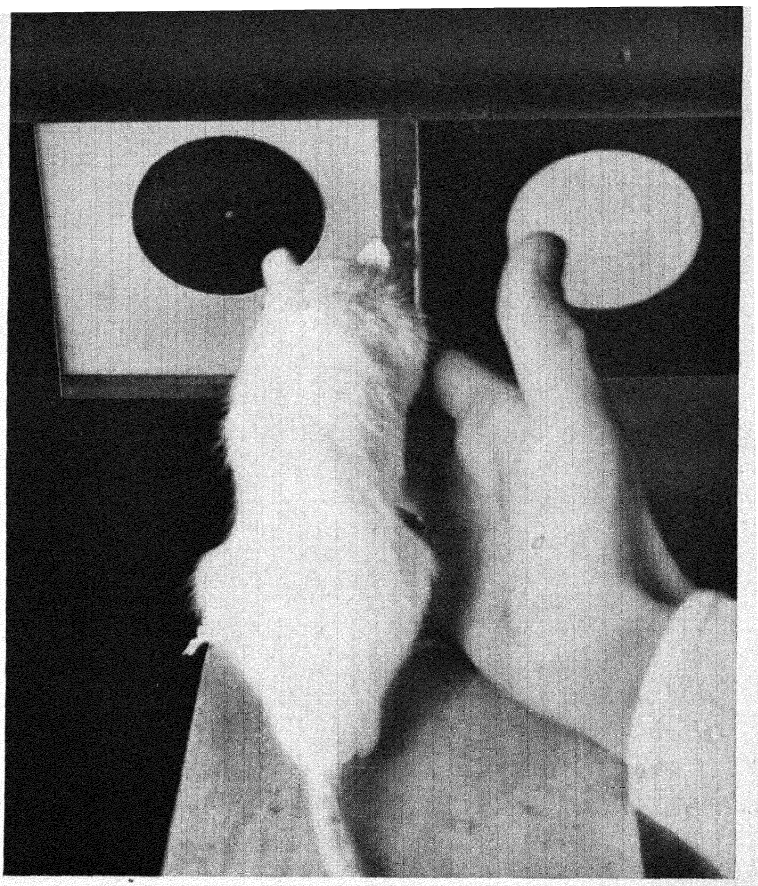


FIG. 7. Guidance procedure. Rats that cannot overcome their position fixations through ordinary training may readily be induced to drop a fixation if aided by guidance. The guidance procedure is merely a matter of interfering with the rat's expression of a fixated response and manually forcing it to respond on some other basis. In the photograph the rat is being prevented from jumping to the right card because it has a right position fixation. Note how it is pushing against the experimenter's hand. Air may be applied or the rat may be pushed from behind and thus a response to the left may be forced. At first the rat's resistance is great and it may achieve a jump between the two cards. However, after a few guidance trials it offers no more resistance than is shown in the photograph. In a few more trials this rat will choose the positive card on either the right or left side without guidance.

regression, and fixation are the more preliminary or intermediate conditions.

The extent to which personality determines the type of symptom expressed has not been sufficiently investigated at present. In American society, women, for example, seem more inclined to show regression and men to show aggression. However, some suggestive results have been obtained. Miss Marquart (78) found individuals who tended to show stereotypy under frustration to be low in self-sufficiency and sociability, whereas extroverts were inclined to be aggressive but not fixated under frustration. Those scoring high on the Bernreuter neurotic inventory were inclined to show quitting behavior (which may be an expression of regression or perhaps of resignation), but they had no greater tendency to show fixation and stereotypy than normals. These relationships are sufficient to indicate that personality differences are, at least in part, responsible for some of the individual variation found in reactions to frustration.

Comparison of the Behavior of College Students with Frustrating as against Secure Childhood Experiences

How the Two Groups Compared Were Selected

Having discussed the various characteristics of behaviors associated with frustration, it is now desirable that we test the adequacy of the list of symptoms by seeing how well they account for the actual behaviors expressed. A study by Watson (106) furnishes us with a list of behavior items found in individuals who had been reared under two widely different conditions of frustration. Although the purpose of the study was to test the effects of strict versus lax home training, the method for selecting cases was based upon whether or not parents regimented their children's behavior and were incon-

siderate of their feelings. Lax in this study did not mean removal of parental influence, but rather a respect on the part of the parents for the way children saw things.

In order to make the basis of the selection and classifications of cases clear, we have reproduced Watson's list of questions. College men and women, all graduate students in education (median age 30), were asked to answer yes, no, or questionable to each of the following:

1. Sometimes punished very severely.
2. Sometimes felt like running away from home.
3. Times when child hated father.
4. Times when child hated mother.
5. Sometimes punished unjustly.
6. Felt socially handicapped during adolescence because home set up higher standards of recreation and social life than were required for other young people.
7. Mother tried to plan life for child.
8. Father tried to plan life for child.
9. Amusements and recreations strictly supervised.
10. Many times felt like running away from home.
11. Father was unusually stern or strict.
12. Mother was unusually stern or strict.
13. Child was overprotected from knowledge of the evils of life.
14. Did not talk over adolescent "dates" freely with either parent.
15. Was held to regular chore and study habits at home.
16. At age ten to twelve still had regular bedtime insisted upon.
17. Required to attend Sunday school and church whether child wished to do so or not.

The group of 230 students was then divided into four quarters: the quarter answering "yes" to the greatest number of items, the quarter answering "yes" to the fewest number of

items, and two intermediate quarters. In the quarter in which the home situation was most confining, it was found that, on the average, 10.2 of the items were answered affirmatively; in the quarter in which the home situation was least restricted only 2.6 of the 17 items were answered affirmatively. Thus the average score of the one extreme group was four times as high as that of the other. We may

TABLE 11. DIFFERENCES IN AGGRESSIVE BEHAVIOR IN PERSONS HAVING DIFFERENT DEGREES OF CHILDHOOD FRUSTRATION

Behavior traits	Home situation	
	Group 1 (most frustrated) per cent	Group 4 (least frustrated) per cent
Rude answering to parents	76	29
Irritated by parents	98	72
Feeling that teachers are unfair	36	12
Carry grudges	55	26
Frequent quarreling with friends	93	71
Broken engagements	26	7
Average	64.0	36.2

suppose, therefore, that the childhood frustrations of these two groups were distinctly different in degree.

The behavior characteristics of these two extreme groups were then compared. For our purposes the list given by Watson has been classified into different types of behavior to determine whether or not the behavior characteristics discussed above are adequate.

Aggressive Behavior in Adults Related to Childhood Frustration

A number of behavior characteristics show a greater tendency toward aggression in the frustrating than in the nonfrustrating home situation. Clear samples of aggressive behavior that occurred are given in Table 11. This table

includes the following items that have been selected as the most typical signs of aggression: (*a*) rude answering to parents; (*b*) irritated by parents; (*c*) feeling that teachers are unfair; (*d*) carry grudges; (*e*) frequent quarreling with friends; and (*f*) broken engagements. As we shall see later, it is possible that other items should have been included. It will be seen that the average frequency of the six selected

TABLE 12. DIFFERENCES IN REGRESSIVE BEHAVIOR IN PERSONS HAVING DIFFERENT DEGREES OF CHILDHOOD FRUSTRATION

Behavior traits	Home situation	
	Group 1 (most frustrated) per cent	Group 4 (least frustrated) per cent
Bothered by bashfulness	52	23
Finicky about foods	31	7
Feel lacking in self-control	17	2
Curious about sex	60	35
Wish to be little again	33	16
Homesick when away from home	24	12
Cried easily	54	32
Average	38.7	18.1

items is 64.0 per cent for the most frustrated group as compared with 36.2 per cent for the least frustrated group. It is clear from the items listed that the greater aggression in the one group than in the other was not confined to the home situation but extended to friends, teachers, etc.

Regressive Behavior and Childhood Frustration

Samples of behavior indicating regression are given in Table 12. Here the average is 38.7 per cent for the most frustrated group and 18.1 per cent for the least frustrated group. Some question may be raised regarding the inclusion of the item "finicky about food," which may be thought to indicate fixation (in so far as it appears as a phobia), and the

item "feel lacking in self-control," which may contain an element of aggression. Greater tendency toward homesickness in the most frustrated group than in the least frustrated group is of particular interest because the group having the least happiness at home is most likely to be homesick. From the point of view of motivation this behavior is difficult to understand, but it is clearly consistent with the view that

TABLE 13. DIFFERENCES IN STEREOTYPED OR FIXATED BEHAVIOR IN PERSONS HAVING DIFFERENT DEGREES OF CHILDHOOD FRUSTRATION

Behavior traits	Home situation	
	Group 1 (most frustrated) per cent	Group 4 (least frustrated) per cent
Cherished deep and lasting hurts	62	37
Many childhood fears	52	14
Worry over being underweight	36	10
Feeling of being physically handicapped	24	0
Feeling health was neglected	19	2
Average	38.6	12.6

frustration induces regression regardless of the adaptiveness of behavior.

Other regressive samples listed in Watson's study, for which specific percentages were not given, are speech defects, excessive daydreaming, exorbitant ambitions, and play with imaginary playmates. All these traits were more frequent in the most frustrated than in the least frustrated group.

Fixated Behavior and Childhood Frustration

Samples of fixated behavior are given in Table 13. Unreasonable fears for which there was ample opportunity for alteration are included. The average for five items is 38.6 per cent in the most frustrated group as compared with 12.6 per cent in the least frustrated group. "Cherishing deep and lasting hurts" is perhaps the most clear-cut example of

fixation. A study by Newcomb (87) may also be cited in this connection because it contained measures of stereotyped attitudes. He found that persons who failed to change attitudes on economic issues when the environment favored such a change were two and one half times more likely to be emotionally unstable than those who changed attitudes.

TABLE 14. DIFFERENCES IN ANXIETY IN PERSONS HAVING DIFFERENT DEGREES OF CHILDHOOD FRUSTRATION

Behavior traits	Home situation	
	Group 1 (most frustrated) per cent	Group 4 (least frustrated) per cent
Worried a great deal	64	21
Troubled by thoughts of hell	38	23
Severe headaches	38	19
Unhappy childhood	43	7
Average	45.8	17.5

Resigned Behavior and Childhood Frustration

Samples of resignation are not numerous in Watson's study. However, he does cite the fact that suicide was frequently and seriously considered by 19 per cent of the most frustrated group and by 10 per cent of the least frustrated group. Whether this behavior should be regarded as resignation or aggression is open to question. Experiences of sex relations before adulthood were also twice as great in the first as in the fourth group. This behavior characteristic justly belongs in the resignation category to the extent that it is the result of reduced hopefulness and increased passivity. To the extent that this behavior represents aggression toward social values it is a sign of aggression. Proper classification of this item, therefore, requires more analysis of the factors associated with the behavior.

Anxiety Behavior and Childhood Frustration

Watson's study reveals one group of behavior characteristics not discussed so far, the trait of anxiety. Samples of this type of behavior are given in Table 14. Anxiety is an important factor in all analyses of neurosis and must be considered in an analysis of frustration. A detailed discussion of this behavior appears in a later section (pages 131 to 134). At this point, however, it is desirable to indicate that anxiety represents a transition state in which both motivation and frustration processes are operating. It therefore contains some of the features of each process and is characterized by indecision. Perhaps indecision is the result of conflicting behavior tendencies released by the two processes.

Results Related to Frustration Theory

The above consideration of behaviors associated with frustration indicates that the categories of aggression, regression, fixation, and resignation are quite adequate if provision is made for anxiety behavior. In none of the behaviors listed by Watson does the most frustrated group show superiority in adaptive behavior or in the making of rational choices over the least frustrated group, and in all cases the behaviors we have classified as signs of frustration are found to be more numerous in the most frustrated than in the least frustrated group. Attempts on the part of the parents to dominate the behavior of their children led to effects opposite to those the parents may have intended. In no way was character developed by the character training. This means that learning did not occur as one should suppose from pure motivation theory. Morals likewise were not improved by the training since both groups were found to be equal in the frequency with which (*a*) members of either group played with undesirable gangs; (*b*) did things which, if known, would have resulted in charges of delinquency; (*c*) received poor deportment marks in school; (*d*) stole; and (*e*) lied.

If regimented training has negative value only, one may wonder why parents persist in such training. The answer to this question may also be found in Watson's study. In the group with the most frustrating home training 81 per cent came from homes in which the parents were unhappily married; 24 per cent from homes in which the parents were divorced or separated; and 40 per cent from homes having social or economic handicaps. In the group having the least frustrating home training the corresponding percentages were 33, 7, and 8, respectively. The differences indicate that the parents were aggressive toward their children, persisted in ineffective training, and lacked the maturity for coping with the situation because they were frustrated themselves. They undoubtedly believed in their training methods, but this was a form of rationalization rather than a choice of training method based upon motivation. Thus frustration of one generation creates the conditions for frustrating the next generation, and man's ability to think is used to justify frustration-instigated behavior rather than to remove frustration. It is important to recognize that common sense and reasoning ability alone are not adequate tools for dealing with problems in human relations if this circular causal sequence is to be broken.

Chapter 4

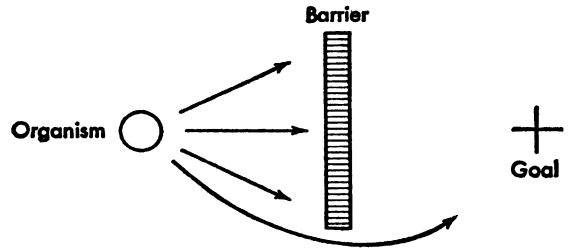
THEORETICAL IMPLICATIONS

The Motivation and Frustration Processes

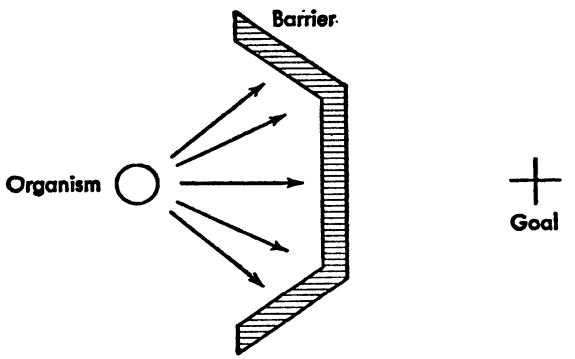
The Problem as a Stimulus for Problem-solving Behavior

In the absence of a problem, behavior is primarily a matter of expressing learned and unlearned activities. Unlearned reflex and instinctive responses are extended and integrated through the learning process, and the abilities to behave developed in this manner are adequate for satisfying needs as they arise under standard conditions. Thus, if a situation does not change too much, the organism acquires an adequate behavior repertoire. The techniques of obtaining food, for example, are learned, and when hunger arises the adaptive responses developed in the past are expressed. Similarly, the organism can adjust to thirst, changes in illumination, temperature, etc. Under such conditions the organism has no problems.

When these behaviors are inadequate for a new or changed situation the organism is confronted with a problem. A problem arises, for example, when a hungry animal finds the route to food blocked; when two or more paths to food are presented (choice situation); or when a new and dominant stimulus, for which the organism has neither grown nor acquired a response, appears. The organism's first response



a



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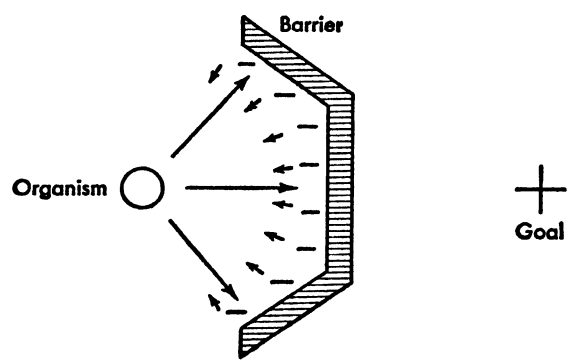
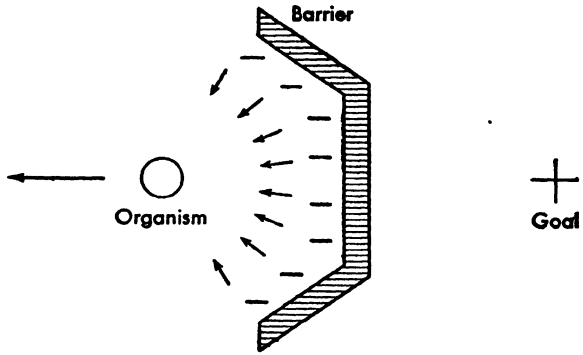


c

FIG. 8. The diagrams show the effects of a barrier on goal-oriented behavior. A barrier first presents the animal with a problem and under these conditions the behavior is characterized by *variability*. This variability may take the animal around the barrier and solve the problem as shown in Fig. 8*a*. The three top arrows indicate behaviors that do not solve the problem and the fourth arrow indicates a type of behavior that is successful.

Some barriers are more difficult to circumvent. Such a barrier is indicated in Fig. 8*b*, which shows all behaviors leading to failure. Since failure is unpleasant, constant blocking by the barrier gives it an unpleasant (negative) characteristic



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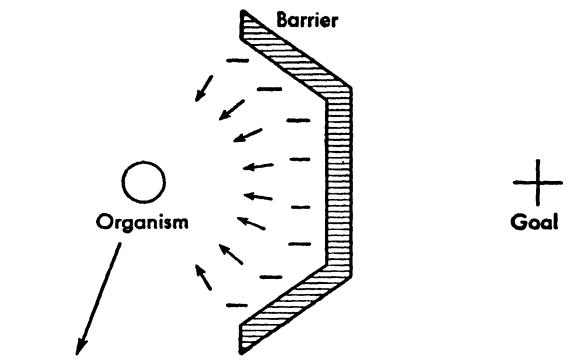

e

and so provides it with a repelling as well as an interfering property. When this occurs, the attracting properties of the goal that initiates behavior toward it are offset by the repelling properties of the barrier. This condition is shown in Fig. 8*c*. If the repelling properties of the barrier exceed the attracting properties of the goal, the behavior may be directed away from the goal. If this occurs, the animal leaves the situation as shown in Fig. 8*d*.

In case a minor goal is present, the organism may move in the direction of the lesser goal. At first the major goal may be sufficiently attractive so that a minor goal has no competing value, but the negative properties of the barrier may reduce the attractiveness of the major goal to such a degree that the minor goal may be relatively the stronger attraction. This condition is shown in Fig. 8*e*. Instead of leaving the goal entirely the organism moves toward what was initially a lesser attraction and now becomes a substitute goal.

In order for positive and negative attractions to function in this manner one must presuppose that the situation does not frustrate the organism. If frustration occurs then the behavior must be explained by different principles.

to a problem is that of running through a repertoire of both learned and unlearned activities (57, Maier). Thus, problem-solving behavior is variable behavior. If variability takes the animal around the barrier, makes possible the learning of the shortest route to food, or leads to escape from the strange stimulus then the problem is solved, and with one or more repetitions the animal learns the adaptive response. In this manner its adaptive responses are extended. This condition is diagramed in Fig. 8*a*.

Suppose, however, that the animal's problem-solving behavior is inadequate for getting around the barrier. This can readily be the case when a barrier completely blocks the route to food or some other needed incentive (see Fig. 8*b*). The constant interference of the barrier is unpleasant and gradually the barrier is built up into a negative incentive. This is illustrated in Fig. 8*c*. Although the food incentive is positive (attracting) the negative aspect created by the barrier finally may dominate, and the animal moves out of the situation as shown in Fig. 8*d*. It is also possible that other incentives may become relatively more attractive than food so that the animal finds substitutes and leaves the situation by moving toward another goal, as in Fig. 8*e*. Human beings in such situations may say that the goal was not worth the trouble.

In the case of conflicting incentives, such as occurs when there are two routes to food, failure to solve the problem occurs only when the animal cannot make a differentiation. In such case the problem remains much as it was at the outset and variable behavior continues (37, Krechevsky).

Situations in which intense or irritating stimuli are introduced normally can be solved by variable reactions that eventually take the animal out of the situation. In this case, as in the first, variable behavior is a satisfactory process for solving most problems of this sort.

The Problem as a Stimulus for Frustration

A problem, however, takes on a different aspect if pressure is applied to force the organism to solve a problem that it is incapable of solving. This is the case when the individual is driven to solve a problem. The negative effects of the barrier

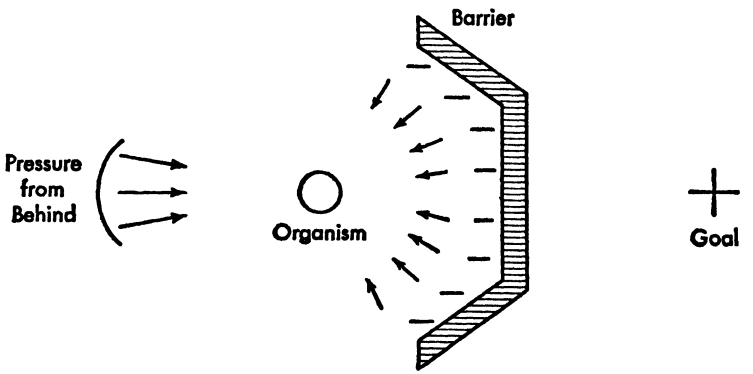

FIG. 9. The introduction of pressure from behind. When escape or the choosing of substitute goals is prevented, the situation becomes more stressful and frustration may be made a more likely condition. The animal's methods of avoiding the unpleasant effects of barriers may be further prevented by forcing the animal toward the barrier. Thus any pressure exerted that drives the organism toward the barrier hastens the transition from the state of motivation to the state of frustration. In some of the experiments this pressure was in the form of an air blast. In life situations this pressure may be in the form of meeting dead lines. When a person is trapped in a situation, he is surrounded by barriers and pressures for action.

and the negative effects of the pressure applied create a conflict situation in which all factors are negative and opposed.

This condition is diagramed in Fig. 9 and illustrates the situation in which rats were forced to jump at stimulus cards in the experiments with insoluble problems, discussed in Chap. 2. This type of conflict in motivating conditions must be distinguished from conflicts arising through two opposite and nearly equal attracting conditions. Two opposed negative incentives or forces in a situation, give it no need-satisfying

aspects but instead produce the deadlock that restricts all action. Under these conditions, the problem situation becomes one that eventually leads to frustration. Just when this transformation from a problem situation to a frustrating situation takes place varies from individual to individual, depending upon the organism's perception and his frustration threshold or ability to withstand internal tensions.

Similarly, a problem situation may become frustrating when the motivation to solve the problem is intense and the obstacles are insurmountable. This might be the case under intense hunger and repeated failure. Likewise, inability to escape an irritating stimulus (which occurs when the animal is surrounded by barriers) might create a condition that sets the frustration process in motion.

Thus the conditions leading to frustration are those which arouse behaviors which are directed away from objects but which fail to achieve escape. When positive incentives are present, however, an outlet for behavior is present, in that some specific positive activity, at least, is being stimulated. When only negative stimuli are present the motivation situation is such that it permits only a choice between the lesser of several evils. If the alternatives are strongly negative and the outlets for behaviors are sufficiently blocked, unresolved conflict is aroused. This type of conflict builds up tensions, and it is the accumulations of these tensions that institute the condition of frustration.

From the postulation that the frustration mechanism differs from motivation processes, one readily can see that when the normal motivating processes are replaced by a condition of frustration, behavior must undergo a distinct change. Thus it follows that the normal constructive problem-solving behavior that is characterized by choices influenced by goals, variability, and thinking will be replaced by non-constructive activity such as fixation, aggression, regression, and possibly resignation. In many respects the frustration-

instigated behavior is just the opposite of the motivation-induced behavior. Thus the stereotypy and compulsive aspects of fixation are in contrast to variability and choice behavior; the destructiveness of aggression and the nonconstructive nature of regression contrast with constructive goal-oriented responses; and the infantile nature of regression contrasts with development that occurs in thoughtful problem solving. Normally the frustration process is dormant, but when it is aroused, it dominates the expression of behavior.

Conditions That Result in a Return to Motivation

If the behavior arising in frustration is not goal oriented but is a direct response to the state of frustration, one may postulate that the expression of behavior will dissipate the tensions. The literature supports this hypothesis. Baruch (7), for example, found that children who were able to dissipate their frustrations by mutilating clay models of their parents become better adjusted at home. Roethlisberger and Dickson (92) report that one of the important contributions of counseling in industry was the relief given the worker by having a chance to "blow off steam." Rogers (93) likewise recognizes that one of the values of nondirective counseling is the opportunity to express freely pent-up aggression tendencies, and the technique of the counseling procedure is one of encouraging such expression. As long as aggression is relieved through harmless channels, the condition is not aggravated. As a matter of fact, the relief given often is sufficient to permit the person to return to the same situation and view it in a constructive manner. For example, a person might be reacting to the hostility he sees in another person, but after relieving his aggressive tendencies he may fail to see the other's behavior as hostile and thereby find his situation improved. Thus some problems that were insoluble become soluble when perceived differently.

In general, the process of nondirective counseling reveals four rather distinct developmental stages when applied to disturbed employees. The first stage is characterized by aggressive language directed toward a person or group (*e.g.*, the company) that is not the real cause of the frustration. Thus employees charge that the supervisor is unfair, that the lighting is poor, or that the wages are miserable. If a counselor forms an opinion of the nature of the person's problem at this stage, he is invariably wrong in his diagnosis.

The second stage shows a spread in the number of individuals and objects included in the complaint. Other people or conditions are also at fault. At this point the counselor is told about a wider range of abuses. Both these stages reflect the function of the frustration process.

The third stage may be characterized as one of fluctuation between constructive and destructive (or nonconstructive) thinking. The person may reflect that he may have contributed to the problem and then return to the defensive state. The oscillation may go on for some time. This stage may be explained by assuming that there is a fluctuation between the frustration and motivation processes. The first and second stages have served to dissipate the frustration and have permitted the motivation process to crop up now and then.

In the fourth and final stage, the person is entirely in a problem-solving stage. During this stage different solutions are considered and evaluated. Rogers (93) speaks of every person having the ability to solve his own problems if interferences can be removed. According to the present theory this means merely that the layer of frustration must be removed in order to permit goal seeking and choice behavior to function. The only reason that the person cannot be constructive at the outset is that he is dominated by frustration, and the behaviors released by frustration are destructive, childish, and stubborn. As the frustration tensions are drained off by the responses to frustration, however, the

person gradually returns to normal or constructive behavior. When the motivation process is in full control he can see his situation as a problem and so proceeds to show problem-solving behavior.

Anxiety Conditions and Frustration

Certain Aspects of Anxiety State Are Reducible to Regression and Fixation

With the separation of the frustration process from the motivation process, it becomes necessary to place the condition of anxiety in the theoretical system. In so far as the term *anxiety* indicates a state of generalized fear and is not a reaction to some particular object in the environment, it fails to be goal oriented and thus appears as a product of frustration. In analyzing aggression it was found that the objects attacked tended to give no clue as to the source of the frustration. Likewise in anxiety the objects feared may give no clue as to the source of the danger. In the sense that such reactions are generalized, the trait of regression is indicated. General timidity also seems reducible to regression. When fears become highly specific, as in the case in phobias, a behavior fixation is indicated. Thus some of the characteristics of anxiety seem to be reducible to a condition of frustration.

Aspect of the Anxiety State That Indicates Conflict between Two Processes

In many instances, however, the term *anxiety* is associated with a condition of indecision. The person feels impelled to do something but fears to do it because of the undesirable consequences. A recognition of consequences on the part of the person indicates a reaction to alternative goals. Ordinarily indecision indicates a difficult choice. A choice between doing and not doing something is the type of problem

diagramed in Fig. 10 in which there are vectors both pulling the individual toward a goal object and pushing him away from it. Action toward or away from the object should result when either the attraction dominates over the unpleasantness of the consequence or the unpleasant consequences override the attraction. Thus a woman might have a strong desire to consume malted milks but fears to gain more

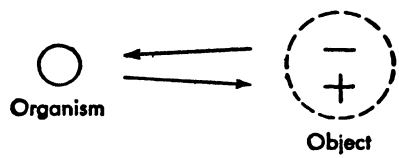

FIG. 10. Conflict between positive and negative incentives. The same object has both attracting and repelling properties, but the situation may remain at a motivational level. Action follows when either the repelling or the attracting force dominates. Thus candy may have an attraction because of its taste and it may be avoided because it puts on weight or is injurious to teeth or complexion. Whether the resultant action is toward or away from the candy depends on which of the forces is the stronger for a given individual. Such conflicts are at the motivational level and when evenly matched result in long decision times. They are not the type of conflicts that are present when the situation arouses both the motivation and the frustration processes. The latter conflicts are more deep seated and seem to be present in states of anxiety.

weight. She finally solves her problem by refraining, indulging, or compromising. When anxiety occurs, the situation obviously includes more than this. In such cases the deprivation seems to be acute enough to produce frustration. With the appearance of frustration, compulsion in behavior is introduced so that behavior ceases to remain purely one of choosing between doing and not doing, as occurs in motivation. At the same time, frustration has not taken over sufficiently to produce action, such as an attack on the object feared. The person remains motivated by fear and compelled by frustration. In this condition the person's behavior oscillates between behavior tendencies produced by the frustration process and those instituted by the

motivation process. Viewed in this manner, anxiety is an intermediate condition in which both processes influence behavior. Thus the person seems reasonable in that he recognizes consequences but is unable to understand himself because the behaviors he feels compelled to express do not make sense.

In any situation in which the frustration process cannot take over because motivation is sufficiently present to block the frustration-instigated behaviors, tensions persist. These tensions constitute the generalized emotional state that is associated with anxiety and produce the conditions of psychological heart ailments, digestive upsets, sleeplessness, and dreams.

If our treatment of anxiety as a conflict between the motivation and frustration processes is sound, it follows that persons who tend to restrain their frustration-instigated reactions are most likely to develop anxiety. For them the motivation process resists domination temporarily, and as a consequence they are less able to obtain the reliefs that dissipate their frustration.

The Anxiety State Also Contains Element of Resignation

To the extent to which depression is part of the anxiety picture, it may be considered to be a property of frustration if one regards resignation as a basic factor in depression. Resignation implies a rather complete loss in motivation and no effort to alter the state. It differs from other frustration-instigated symptoms in that behavior is lacking. A depressed individual likewise seems unable to respond constructively and lacks interest in his surroundings.

The Anxiety State Considered as a Mixture

The present treatment of anxiety reclassifies the symptoms that are usually grouped together to characterize the ailment.

To this extent anxiety is not a pure or primary condition but rather a mixture. That such a condition should occur is not surprising if one postulates two different mechanisms, each of which is describable by different laws. The extent to which this state of conflict can exist will depend both upon individual differences in thresholds to frustration and upon differences in the tenacity with which individuals can maintain the motivation process. Undoubtedly, situational factors also can be discovered that tend to promote an oscillation between the two processes.

Experimentally Produced Seizures

Psychological Methods Found to Be Effective

If tensions continue to pile up in an organism and normal channels for relief are inadequate, the behavior may take the form of a seizure or convulsion in which the total musculature of the animal is involved. Rats, when subjected to irritating stimuli such as the jingling of keys, the sounds of electric bells, Galton's whistles (17, 58, 64, 65, 85), or a forceful spray of water (62), and when surrounded by barriers so that they are unable to escape, show a sudden burst of undirected running which is so violent that the animals' nails become torn. This running phase may or may not terminate in a violent convulsion involving clonic activity of all legs (55, Maier). In the insoluble problem situation described in Chap. 2, convulsions also may be induced when the animal is immediately driven to respond to a punishment card by means of a blast of air (55, 71) or by an electric shock (22). In this case the effect is more readily produced when only the negative card is presented in the one-window situation (see Fig. 6) and the animal is forced to choose it and receive punishment, than when the insoluble problem that utilizes two cards is used (68).

Conflict between Two Negative Forces Common to All Procedures

That seizures produced by the method of exposing a confined rat to an auditory irritant are basically the same psychologically as those produced by using an air blast to force an animal into choosing a card it has been trained to avoid is demonstrated in an experiment by Maier and Longhurst (71). They trained an experimental group of animals to avoid a stimulus card and then proceeded to use a blast of air to force the animals to choose it. A control group was not given the previous training but was exposed to the blast of air in the same way. In the first group, the training afforded an extra element of conflict, but in the second group only the air blast (auditory and tactual stimulation) and confinement were present. Although the two groups were taken from the same litters it was found that 37.8 per cent of 37 experimental animals had seizures and that 9.1 per cent of 44 of the control animals had them. It was further found that more of the control animals could be induced to have seizures if a more intense auditory irritant was used. In other words, intense auditory stimulation produced about as many seizures as mild auditory stimulation plus conflict. Thus conflict becomes equivalent to added auditory stimulation for inducing seizures. This finding indicates that a seizure is not a function of activation of auditory centers. Rather it seems that the seizure occurs when intermediate centers are highly activated; these centers may be activated by a number of conditions, of which auditory stimulation may be one. Any factors that influence this intermediate condition, therefore, may be expected to influence the incidence of seizures.

All convulsion-producing situations may be considered as means for promoting negative conflicts since they surround the animal with repelling forces and permit only limited

opportunities for reactions. This view makes conflict the basic factor in arousing the intermediate center. Under conflict, the animal has no choices and few opportunities to express its frustrations. As a consequence it seems reasonable to suppose that tensions and cortical excitations may become acute and generalized. This view is supported by the fact that the animal appears quiet and stubborn for a period before the behavior explosion (55).

The Seizure as a Break-through of Tensions

That the seizure arises when tensions become acute is indicated by a number of experimental findings.[1] Maier and Klee (68) found that animals which developed behavior fixations (*i.e.*, a response to frustration) thereafter showed a reduced number of seizures when subjected to the insoluble problem. Maier (56) also found that if animals were trained to jump over or to the side of the stimulus card, seizures and convulsive reactions likewise could be prevented. However, blocking opportunities to utilize these responses resulted in a recurrence of convulsions. Arnold (3) has described the seizures that occur when animals are confined and exposed to auditory stimuli as a short circuit of excitation. She bases her opinion on the fact that animals not having seizures when exposed to irritants tended to show a greater number of defense and relief reactions than others. The same was also

[1] Arguments opposed to the ones presented here are summarized by Finger (17), who states that seizures are sound induced as if by some reflex mechanism. This position, which takes the whole problem out of the area of psychological analysis, is one of opposition to the author's position rather than the presentation of a positive alternative. This writer ignores the pertinent fact that sound is not the only irritant that induces seizures and fails to consider the related evidence discussed below. It should also be added that Maier and Longhurst had not published their study at the time Finger published his discussion. Morgan, whose views are reflected by Finger, has informed the author that he wishes to withdraw from the controversy in the light of the Maier-Longhurst study.

true when a given animal was compared on seizure-free and seizure-susceptible days. The defense reactions that showed marked differences were tremors, twitching, and lip wetting. The fact that such behaviors may relieve tensions explains why animals readily exhibiting emotional behavior in strange situations are less inclined to show seizures than others (80, Martin and Hall). Running activity and other movements also seem to furnish relief. Frequently an animal subjected to auditory stimulation seems about to burst with tension and then exhibits a few normal escape reactions such as leaping to the top of the enclosure. When this occurs, the observers have learned not to expect a seizure. This observation is supported by the fact that an animal is more likely to have seizures when confined in a small enclosure than when confined in a large one during auditory stimulation (66, Maier and Glaser).

Several studies demonstrate that seizure behavior can be prevented by supplying the animal with a response to the situation. Marcuse (77) found that seizures which ordinarily occur during auditory stimulation were completely prevented when the source of the sound (electric bell) was attached to the animal's back. This method permitted the animal to show escape activity without actually escaping. Thus the escape activity rather than the accomplishment of escape must be credited with the therapeutic effect. This conclusion is further substantiated by Griffiths' discovery (22). He found that rats placed near a small enclosure would have seizures when exposed to auditory stimulation, but if the rats were allowed to express escape behavior by running into the enclosure for shelter the seizures were less likely to occur. Since the sound stimulation in the enclosure was the same in the two conditions, the difference in results must be explained by differences in the animals' behavior.

Bitterman and Warden (8) accomplished similar results by combining electric shock with auditory stimulation. When

shock was given in conjunction with auditory stimulation, seizures occurred on only 10 per cent of the tests, but when auditory stimulation was given alone, seizures occurred on 88 per cent of the tests. Electric shock, on the one hand, produces a specific reaction (crouching in this case) that gives the animal something to do in the situation. Auditory stimulation, on the other hand, is an irritant that fails to arouse specific protective reactions.

The fact that fatigue and a lowering of body temperature reduce the incidence of seizure likewise is consistent with the view that seizures represent a break-through of unrelieved tensions (66, Maier and Glaser). Both muscular fatigue and lower body temperatures are associated with reduced energies, thus making smaller amounts of energy available for release through seizures.

Many drugs that in themselves produce convulsions tend to increase an animal's convulsive reactions to irritating stimuli (17, 73, 74, 94, 95). Thus Maier, Sacks, and Glaser (74) found that subconvulsive doses of metrazol caused 23 out of 30 rats, which normally failed to react convulsively when subjected to key jingling, to show typical so-called "sound-induced" seizures. Similar results have been obtained with strychnine (101, Snee, Terrence, and Crowley) and other drugs. On the other hand, dilantin, which inhibits epileptic fits in human beings, likewise prevents seizures in rats (21, Griffiths; 100, Shohl). Adrenalin, which produces an emotional state in the organism, inhibits rather than facilitates seizures. It is probable that the emotional responses produced by adrenalin serve to relieve rather than to contribute to the tensions (3, Arnold).

If one assumes that tensions must be acute to precipitate a seizure, it is clear that drugs which in themselves have convulsion-producing properties should in lesser doses supplement externally imposed irritants, providing the drug used does not elicit energy-releasing behaviors.

Theory of Convulsive Behavior

In brief, it seems to the writer that seizure and convulsive phenomena occur under conditions similar to those which produce frustration-instigated behaviors. However, the piling up of the tensions (cortical excitations) is either so rapid or the relief mechanisms that frustrated behaviors afford are so ineffective that excitations accumulate to the point that the organism cannot withstand them. When this occurs the excessive tensions break forth in a mass reaction. This is the condition which seems to correspond to one that Goldstein (20) has described as a catastrophic reaction. He points out that when conditions in the outer world are so intense that they do not permit an equalization of conditions within the organism, in the form of performances or behaviors that are in line with the way the organism is constituted, the effect is one of shock. These conditions no longer serve as stimuli with which the organism can come to terms in a manner such that its existence is not essentially disrupted. Thus, instead of stimulation, the animal as a whole is shocked and the behavior continuity is disrupted by the catastrophic reaction (page 107).

The mass reactions resulting from the breakdown in differentiated behavior are similar to Coghill's mass reactions occurring in the undeveloped salamander (10, Coghill). Coghill describes the process of development as one in which total or mass behavior is differentiated into smaller and smaller segments. This is the process of *individuation* and it is progressive in the developmental sequence. Of importance is the fact that the neural mechanism for the total reaction is not replaced by development, but rather the additional processes are superimposed on the basic mechanism. Through the acquisition of inhibitory mechanisms, the partial behaviors are able to function in isolation when individuation has progressed far enough. This differentiated behavior can be maintained as long as the inhibitory process is allowed to

function. However, if we assume that shock destroys the inhibitory functions in whole or in part, the total pattern is permitted to reappear. In this sense mass reactions that occur in a differentiated organism represent a condition of dedifferentiation. If a convulsion is regarded as the disintegration of inhibitory processes, it would be analogous to regression since the organism would be returning to a more primitive kind of behavior. This would represent optimum regression since the animal would be reverting to a degree of undifferentiated behavior found only in the fetal animal.

Experimental Neurosis and Frustration

A Common Factor in Experimental Studies

In analyzing the many experimental investigations dealing with the development of neuroses in animals, one strikingly common feature can be found, which also seems to be one that influences investigators to claim they have obtained a neurosis in their animal. This common element is the appearance of a kind of behavior in the animal which seemed not to be demanded by the motivating and learning conditions of the test situation, and which at the same time seemed to be caused by the test situation. In addition, the behavior expressed seemed to be out of character with the animal's ordinary behavior. To the extent that this observation is sound, it is in conflict with the traditional view that a neurosis is a deviation from normal behavior in degree rather than in kind. The observation, however, conforms to the thesis of this volume that postulates a qualitative distinction between frustration-instigated and goal-motivated behavior. It is also interesting to note that the claims for animal neurosis are associated with stressful situations in which conflicts and frustration are present. To make this point more clear, let us examine a few of the typical examples of animal neurosis.

Characteristic Features of Pavlov's Work

Pavlov (91) was the first writer to make a case for neurosis in an animal below man. In working with the conditioned salivary response in the dog, it was routine procedure to strap the animal in a harness and greatly restrict its free movement. The animal was then trained to salivate in response to the presentation of certain stimuli, such as a visual object, light flashes, or a bell, by following their presentation with food or acid. These gustatory stimuli (unconditioned) normally produce a salivary reaction and soon the stimuli which precede them (conditioned stimuli) likewise elicit salivation. Thus if the sounding of a bell is frequently followed by the taste of food, the sound of the bell alone produces the salivary responses that previously were shown in response to the food.

In one experiment the dog was given food in connection with the presentation of a circle and no food whenever an ellipse was presented. By this procedure the dog acquired a so-called "differential conditioned response," which was evidenced by the dog's salivating whenever the circle appeared and not salivating whenever the ellipse appeared.

The differentiation was then pressed further by reducing the difference between the ellipse and the circle. The animal continued to make the differentiation for a time, but when the axis and semiaxis of the ellipse obtained a ratio of 9 to 8, difficulty was encountered. After 3 weeks the discrimination became worse rather than better and finally control of salivation was lost altogether.

At the same time the conduct of the animal underwent a marked change. The previously quiet animal that had submitted to the harness and other equipment needed for recording behavior, now squealed, struggled, and bit at the equipment. When released from the room it barked violently. Later, when tested on the more simple discriminations it was found that the benefit of the previous training was lost. Pavlov claimed that the dog showed an acute neurosis and

found that some of the other dogs similarly underwent a behavioral change when submitted to the same kind of problem.

The behavior shown by the dog was contrary to expectation if it were supposed that one was dealing with learning. Practice should not cause a loss in learning, and the dog should not struggle in a situation to which it had learned to submit. In short, the dog ceased behaving according to expectation and showed a sharp break with his previous behavior. It is at this point that Pavlov described the behavior as neurotic and as similar to the unpredictable behavior of human cases.

Contributions from Liddell's Laboratory

Similar disturbances have been produced in pigs and in sheep by Liddell and his coworkers (44), showing that the dog is not unique in its reactions to such situations. The work in Liddell's laboratory has utilized mostly conditioned leg flexion (response to mild electric shock) as the trained response, and the animal was disturbed by the use of difficult differentiations as well as by other procedures developed by Liddell and his associates.

To illustrate the development of neurosis in the pig, a brief description of the procedure used will suffice. The first problem was to tame the pig until it accepted the restraining conditions of the laboratory. The pig was then trained to differentiate between a tone of one pitch, which became the feeding tone, and a tone of lower pitch, which became the shock tone. On certain days the feeding tone only would be used. It would be sounded at 10-second intervals and each time it sounded, an apple was dropped into a feeding box in front of the pig. In this situation the animal soon responded by opening the lid of the feeding box and waiting for the apple. On days that the lower tone was used an electric shock was delivered to the animal's foreleg each time the tone

sounded. Soon it became customary for the pig to squeal and shake its foreleg during the periods of silence. When the tone and shock finally appeared the animal would squeal and flex the leg vigorously and then seemed to be temporarily relieved and relaxed.

After the animal had clearly learned to distinguish between "shock" and "feeding" days, the problem was further complicated by giving the animal an electric shock whenever it opened the feeding box before the feeding tone sounded. As a consequence the animal soon disregarded the signal and responded instead to the sound of the dropping apple.

In order to get the animal to respond to the tone again, the shock days were discontinued and only the feeding tone was used on the succeeding days. Instead of relearning to react to the tone, the pig delayed opening the lid for longer and longer periods, sometimes refusing to open the lid for an hour. At the same time, the behavior underwent an abrupt change. It now would stand quietly with eyes closed during the time the food signal was sounded, following which it began to grunt and squeal and then make a lunge at the box, thrust up the cover, and rapidly sweep the interior with its snout for the apple. On later occasions, it would let the apples accumulate and remain passive until the experimenter entered the room. Then the pig would rouse itself and eat rapidly.

It would appear that the introduction of shock during the days when the food tone was sounded served to confuse the animal so that it was unable to determine the conditions for avoiding shock and instead of the differentiation being carried further, the learned responses were replaced by resigned, regressive, and aggressive behavior.

In some instances Liddell's animals developed responses exactly opposite to those demanded by the training. Neurotic goats often stiffened their legs rather than flexing them when the signal was given. This usually followed a rigid period of

testing with "shock" signals. In some instances the legs became so stiff that they approached a state of complete immobility.

Much of the work in Liddell's laboratory showed that the symptoms developed in the testing situation persisted outside the laboratory. Increased and irregular pulse rate, hypersensitivity to sounds, and rapid and shallow respiration were common (2, Anderson and Parmenter).

Gantt's Study of Nick

Gantt (19) has been able to develop many abnormalities in the dog that simulate those found in human patients. One interesting observation was the development of abnormal sex behavior in his dog Nick. For no apparent reason erections with ejaculations occurred when the dog was in the presence of persons who had previously worked with him, or when he was given food of the type that had been used in the experiment. The behavior in question seemed to appear spontaneously and was unrelated to the problem that caused the original disturbance.

Gantt emphasizes the point that symptoms developed in the experimental situation are elicited by the appearance of things connected with the frustrating situation. Thus the experimental camera influenced the neurotic dog's heart rate, his general attitude, and his feeding behavior. Reactions to the experimenters, the type of food used, and other stimuli such as light flashes, which were given in connection with the laboratory situation, likewise elicited the pathological reactions. These findings suggest that the human being's greater associative patterns may be one of the reasons why mental patients carry their disturbances to a greater variety of situations than do animals.

Generalization of responses has also occurred in the author's experiments with rats, when it was found that responses (abortive behavior and seizures) that were devel-

oped in connection with the punishment card later were applied to the positive or reward card. Generalization of response appears in many learning situations, but it is a characteristic of the early stages of learning. Thus when conditioning a dog to salivate to a bell, it at first salivates to all bells and only later to the proper bell. This is similar to a child calling all men "Daddy" until he learns to make finer differentiations. Since the progress in learning is away from the initial generalized behavior and in the direction of making finer and finer distinctions, it seems that the appearance of generalization at some late point in the experiment is the opposite of learning and must be regarded as regression.

Contributions from Masserman's Laboratory

The work of Masserman (81) with cats likewise shows behavior that seems inappropriate from a certain point of view, and it is at this point that he speaks of his cats as being neurotic. He trained cats to go to a box, raise the lid, and feed at a sound or light signal. When the response was learned, a conflict was established by blowing a blast of air in the cat's face at the moment of feeding. Masserman speaks of a conflict between fear and hunger, the air blast serving as a fear stimulus. Masserman's technique resulted in the appearance of a variety of behavior patterns that he calls neurotic. He divides them into three categories: (*a*) Chronic anxiety shown in or out of the situation as indicated by restlessness, trembling, crouching, and alterations in pulse and respiration. (*b*) Phobic responses and attempts at escape when the food signal is given. The tendency to feed is greatly inhibited and many cats starve themselves.[2] If the animal is pushed toward the feeding box the fear is exaggerated. (*c*) Other symptoms, such as excessive cleaning and efforts to secure fondling by the experimenter. Some cats

[2] Loss of interest in food was also shown by Maier (55) and actual starvation by Klee (34).

develop fixations in the form of stereotyped methods of escape. Senseless behavior of a compulsive nature also occurs. For example, on the presentation of the food signal a cat sometimes would hide its head in the box without taking food, although very hungry.

These behavior manifestations correspond with many already described, and the classification neurotic seems to be used by Masserman because the behavior of his cats is inappropriate from the point of view of learning and motivation and because the behaviors are similar to those found in human cases. The uniqueness of neurotic behavior in cats becomes apparent when we consider the following conditions that are ineffective for producing it. Placing a barrier in front of the food box prevents the animal from feeding when the signal is given, but the effect of this method is to cause the animal to cease reacting to the food signal. Likewise, the animal may be trained to become accustomed to the frightening effect of an air blast and react less and less to it. However, when a conflict is present, a group of behavior patterns occurs that do not seem to be called for by the training method.

Interesting also is the fact that cats made neurotic prefer milk containing alcohol to plain milk, whereas normal cats prefer the ordinary milk. Intoxicated neurotic cats lose most of their phobic reactions, but these gradually return as the effects of the alcohol wear off. A neurotic cat also may show no interest in mice, regain that interest when intoxicated, and then lose it again on sobering.

Further Contributions to the Experimental Literature

Cook (12), working with rats by methods similar to those of Liddell, was able to produce a disturbance in some of them. The first step in his procedure was to get the animal habituated to being strapped to a board so that only the legs could be moved. When this was accomplished the rat was trained

to flex the right leg and to push a lever, thereby obtaining food, whenever a light signal was given. The rat, however, often pushed the lever between signals. To prevent this, a mild electric shock was applied each time flexion occurred in the absence of light.

The next step was to give a more severe electric shock each time the animal flexed its leg when a dim light was turned on. Thus the animal was required to flex its leg for a bright light and not to flex it when a dim light was presented. Disturbances occurred when the difference between the two lights was gradually reduced and when the periods between feeding signals was lengthened.

The symptoms observed in one rat were (*a*) loss of ability to inhibit flexions, (*b*) hypersensitivity when touched, (*c*) spontaneous loud squealing, (*d*) general stiffening of the body and tail, (*e*) reduced postural reflexes when in contact with the experimenter's hand, and (*f*) avoidance of the experimenter's hand when in the living cage.

Another rat showed quite different symptoms. At times it temporarily lost its ability to flex the right leg and became generally inactive, even spending much time sleeping while in its cage. Stimuli that normally produced exploratory behavior now were ignored.

The difference in the symptoms shown by different individual animals in the same type of test situation is fairly common, so that the terms *inhibitory-* and *excitatory-type neuroses* have been used to describe the two extreme conditions.

An interesting case of the inhibitory type of reaction was studied by Maier and Wapner (76). In a discrimination situation similar to that which caused the seizure type of abnormality (page 134), this animal instead became extremely passive. When confronted with the situation in which it was forced (by means of electric shock) to jump to the punishment card (the one-window test) it eventually became inert

and could be molded into any position. Thus it would remain rolled in a ball on the palm of the hand, hold postures determined by the experimenter, fail to right itself when placed on its back, and permit its legs to be extended or flexed without offering resistance. These symptoms appeared and disappeared from week to week depending on whether the animal was being tested in a frustrating situation or on a simple discrimination problem.

Of importance is the fact that the symptoms were carried outside the test situation. A reduction in activity outside the situation was measured by having the rat live in a standard activity cage that recorded the amount of spontaneous activity. Records of activity were made for periods when the animal was tested in the conflict problem (one-window situation) and on the discrimination problem (requiring a choice between cards); when the animal was not tested but instead was subjected to 5 minutes of electric shock; and during vacations when no testing of any kind was given. Each type of situation was continued for 7 or more days at a time and the periods on each test were rotated in a different order until a total of 128 daily measurements were made. Although continued testing caused a gradual decline in activity over the whole period, it was clear that the conflict test problem was the situation that was responsible for reducing the animal's spontaneous activity. When other periods followed the conflict test period, activity again increased. The average number of cage revolutions per day for the conflict test periods was 85.5 revolutions, as compared with 202.1 for periods when electric shock alone was used, 369.2 for periods when a discrimination problem was used, and 383.5 when a vacation period was instituted.

Variations in the individual symptoms developed by different animals within the passive and excitatory categories also are common. Anderson and Parmenter (2) describe the variations between animals and in the same animal on different

occasions. They consider this variation in symptoms to be a characteristic of the neurosis. In accepting this observation, additional emphasis is placed upon the fact that the symptoms displayed are more determined by factors within the animal than by the nature of the demands of the situation.

The studies discussed up to this point utilized methods that were effective for disrupting the normal behavior of a fair proportion of the animals tested and in this sense they may be regarded as neurosis-producing situations. It might be supposed, however, that other training situations should be effective on occasion for producing disturbances in the more unstable animals.

As a matter of fact, observations of certain animals disrupted in the adaptive behavior in routine experiments have been reported. Jacobsen, Wolfe, and Jackson (29) reported that a chimpanzee with a frontal lobe injury had an experimental neurosis in a delayed reaction problem. On one occasion it flew into a temper tantrum, rolled on the floor, and defecated. Karn (32) describes a cat that changed from a docile subject in a maze to one that became hesitant, then showed wild running. Thereafter, the cat resisted being put in the maze, attempted to escape from it, became stubborn, meowed loudly, and urinated at choice-points. Undoubtedly many other cases have been observed and the animals discarded because they were considered unsuitable for the type of experiment at hand.

Experimental Neurosis and Frustration Concepts

The above illustrations of experiments are adequate to indicate the type of disturbances shown in animals when confronted with certain stressful problems. Methods vary in the manner in which the stresses are set up, but all seem to be methods designed for frustrating the animal. Although more work must be done to develop unifying concepts in the field of abnormal behavior, the present evidence is sufficiently

consistent to permit the conclusion that frustrating situations and neurosis-producing situations are basically alike.

The symptoms in experimental neurosis likewise conform to those discussed under frustration, and the behaviors therefore seem related to the frustration mechanism rather than the motivation process. The responses in experimental neurosis are unadaptive in the sense that they lack goal orientation and are not related to the training situation. The variability in the specific responses that occur indicates that the properties of the individual organism rather than the nature of the situation are determining the selection of the behavior. Because responses are so variable, one can best describe them in conceptual terms. In general the frustration classifications of aggression, regression, behavior fixation, and resignation are adequate especially if one also includes anxiety in the group of behavior characteristics. Thus the destructive and hostile types of behavior fall in the aggression category; the generalized reactions and disorganization of learning are indications of regression; the symbolic and stereotyped responses may be classified under the behavior fixations; the passive and inert reactions may be included under resignation; and the vacillating responses as well as the circulatory and respiratory disturbances may be included under anxiety.

Most of the behavior described as neurotic also seems to conform with the concept that frustration-instigated behavior is compulsive in nature. There is no evidence to indicate that the behavior expressed by the animal is chosen or preferred. It is probable that an examination of the behavior of human neurotics, from the point of view of compulsiveness, would throw light on why their behaviors are so inadequate for handling the situations in which they find themselves. For example, Dr. Walworth Slenger described to the author instances in which neurotic sailors went A.W.O.L. a day before their

discharge, knowing full well that they would be caught and that discharge would be delayed. At the same time the sole desire seemed to be to get out of the Navy. No motive for the act could be found. Some even asked to be detained by the psychiatrist because they feared they would run away.

Toward a Theory of Neurosis

In considering experimental neurosis in relation to the frustration mechanism, it is not enough to say that neurotic animals are frustrated animals, since an animal may be frustrated and not be classified as neurotic. What then is the difference? In most treatments of neurosis there is the implication that neurosis represents a relatively permanent alteration in the animal's behavior and, when human beings are involved, the notion of a personality change is either explicitly stated or implied. Thus a normal person may show symptoms of frustration in one situation and not in another, but the neurotic individual tends to be neutrotic without respect to some specific situation, except in so far as the situation may have been the original cause of the neurosis.

It seems that this distinction is highly important, and controversy concerning the validity of animal neurosis has hinged upon this point. For this reason it was necessary for animal experimenters to demonstrate that the symptoms produced in the laboratory were evidenced outside. Maier (55), therefore, emphasized the fact that the behavior of rats in their home cages became retiring, and Maier and Wapner (76) pointed up the inactivity in the home cage of the rat that became passive in the conflict experiment. In Liddell's laboratory (44) the permanently altered circulatory and respiratory changes were crucial facts in claiming neurosis, and Gantt (19) made a strong case for personality changes in his dog Nick.

There seem to be two ways in which the condition of

frustration established in a problem situation may become so general that it becomes a condition of the individual rather than one aroused by the situation.

The first may be due to increased generalization. The various aspects of the frustrating situation become symbols of the situation so that many of them appearing in isolation produce behaviors that the original situation induced. In higher animals, which respond to people, this generalization can lead to all situations in which the experimenter is present. In lower forms the range of equivalent stimuli (those which produce the disturbance seen in the test situation) would be more limited and perhaps would be confined to parts of the apparatus and experimental equipment. Since the stimuli that are equivalent to the training situation show wide individual differences, the experimenter often might be unaware of the aspects that are crucial to the animal. This would cause him to fail to understand why the animal transferred its disturbed condition to other situations. Neurotic persons certainly are said to read threats into harmless situations. It seems that the method of equivalent stimuli developed by Klüver (36) should yield many interesting results. Maier (54) and Wapner (105) found that rats trained on the same pair of stimulus cards of a discrimination problem show a wide range of individual variations in the way this training transfers to new problems, and it appears that the difference is primarily one of variation in perception. Likewise, Halstead (23) as well as Strauss and Werner (102) have shown that the reactions of human patients are greatly clarified when one investigates differences in perceptual organization.

It seems reasonable to suppose that the type of perceptual organization made under conditions of frustration must be carefully investigated if a better understanding of so-called "personality change" is to be achieved. There seems little doubt that the animal studies suggest that the carry-over

from the frustrating situation to outside situations is partly one of transfer by the medium of equivalent stimuli. Thus if an individual is frustrated in connection with *PWQ* he may show his symptoms when he sees any of the following symbols: *WXYZ; WAS;* ; ; ; ; . For him all contain *W*.

The second way in which a frustrating situation may extend its effects to other situations is by a reduction in the threshold for frustration. This would amount to a true change in the organism. With a reduced threshold, the frustration mechanism would be brought into play on the least provocation. Such a person would be ill adapted for meeting many everyday problems because the frustration process would dominate on so many occasions.

The fact that poor adjustments made in childhood tend to extend into adult life would conform to this view. Likewise the tendency for neurotic animals to be hypersensitive and readily disturbed by sudden changes in their environment indicates that the possibility of a lowered frustration threshold should be carefully considered as a basic condition of experimental neurosis as well as of human neurosis.

Both a change in the frustration threshold and the tendency to generalize responses developed under conditions of frustration would explain why the neurotic organism responds in an unadaptive manner even outside the laboratory or when away from his problem. Such an organism's experience of stress is out of proportion to the stresses normally exerted by the immediate situation, and consequently his behavior may be considered exaggerated with respect to the problem at hand. Truly stressful situations call out similar responses in the ordinarily well-adjusted organism, but then one does not speak of the organism as being neurotic, but rather one considers his relatively temporary condition as a state of frustration. However, the boundary line between a temporary state of frustration and

one that is relatively permanent (*i.e.*, neurotic) must necessarily be vague since the two states would be a matter of degree.

It should not be supposed that the above discussion represents a satisfactory analysis of the broad classification of mental illnesses known as "neurosis." Rather it is intended to orient the problem of neurosis in terms of the frustration process and to argue against the fruitless seeking of motives in the specific symptoms of neurotic individuals. Thus if a person develops paralysis in a condition of hysteria, one would not seek to find a motive in the sense that the paralysis represented for the patient a solution to a conflict he was unable to handle. Rather, another attitude would be to regard the paralysis as a fixation and to consider that the response (paralysis) became selected because of its availability. Availability would be influenced by suggestion, a previous injury to the limb, an impulse to strike a person, etc. It is possible that with a change in the attitude of the psychiatrist, facts in the life history of a patient might be found that would conform to the principle of availability. Without this attitude it is unlikely that pertinent data would be reported. Life histories contain so much material that bias invariably functions in determining which data are pertinent and which are irrelevant. Thus a theory can often be read into a case. Experimental evidence and research must establish the guiding mental sets for the psychiatrist and determine what factors in life histories are pertinent. Animal experimentation may be a crucial type of research since it is less hampered by mentalistic concepts and introspective reports, which are often vague and spotted with rationalizations.

Part Two

IMPLICATIONS AND APPLICATIONS OF THE THEORY OF FRUSTRATION

Chapter 5

INTRODUCTION

The Postulation of Two Behavior Mechanisms Simplifies Theory

The purpose of the discussion in the preceding pages has been to establish the view that abnormal behavior fixations produced under frustration are different in kind from behaviors produced through motivated learning. Experimental evidence supporting this qualitative distinction was presented, and it was argued that the basic assumption which postulates that all behavior is influenced by motivation is inconsistent with these experimental facts. To account for the basically different behaviors, two different psychological processes or mechanisms were postulated, one of which was called *the frustration process* and the other *the motivation process*. With different processes controlling behavior, it follows that each will have its distinct laws and that failure to differentiate between them will give the appearance of irregularity and inconsistency.

In the light of this postulation an examination of other experimental studies of frustration was then made to determine whether or not these findings were consistent with the theory of frustration developed in animal studies. It was found that the characteristics of aggression and regression readily lent themselves to this reinterpretation and that certain difficulties were circumvented at the same time.

Let us examine some difficulties encountered and the assumptions that must be made when this distinction is not accepted. When motivation is postulated to be a factor in all behavior, one has the problem of demonstrating that in all aggressive and regressive responses there is a desire to solve problems and at the same time one must explain why these responses often appear unadaptive. In order to deal with this problem it has been postulated that a number of needs, both conscious and unconscious, often operate and that when these are known they explain why the individual sometimes seems to behave in a contradictory or unadaptive manner.

Thus it has been stated that the enuretic child expresses his unconscious hostility for his mother, and the behavior is his way of striking at her and doing her injury. That he does not succeed in removing his frustration merely shows that in satisfying one desire he sacrifices the satisfaction of others.

The postulation that a problem is solved by frustration-induced behavior is implicity made when it is stated that aggression represents a means for (*a*) protecting oneself, (*b*) obtaining satisfaction from a hostile world, (*c*) destroying the source of pain, or (*d*) overcoming an obstacle. When aggressive responses fail to accomplish any of the postulated desires and instead accomplish additional frustration, it still is necessary to explain why the unadaptive aggressive responses occur.

To explain unadaptive aggressive responses for which no needs can be found the principles of learning have been utilized. By assuming that aggression is a learned response one may state that the organism tends to resort to aggressive responses that have produced satisfaction on previous occasions. However, the postulation of learning introduces a new problem, that of explaining why aggression occurs without learning and why persistent aggression is not altered by repeated failure.

That regressive behavior likewise is regarded as motivation determined is reflected by definitions which state that regression represents (*a*) a return to a formerly secure state, and (*b*) a way of escaping from a difficult or frustrating problem. Since regressive behaviors seldom overcome obstacles or correct the source of frustration, there is little evidence to support the contention that this type of behavior is a problem-solving process. Thus regressive behavior is less satisfactorily explained by motivation and learning concepts than is aggression, but both types of behavior readily lend themselves to classification under the frustration process. As a matter of fact they actually enrich the concept that frustration-instigated behavior is different from motivation-induced behavior.

An examination of the literature on experimental neuroses and experimentally induced convulsions likewise fails to support the view that such behavior has a basis in learning and motivation. Instead, the findings seem in many ways to be inconsistent with learning and motivation principles. If, however, this experimental evidence is classified as frustration-instigated behavior and not regarded as controlled by motivation, the behavior characteristics observed seem to be consistent with other findings on frustration.

Behavior under Frustration and Motivation Contrasted

When we assemble all the behavior properties associated with frustration and consider them to be descriptive of the frustration process, we find that they are quite different from those found in motivated problem solving and learning. At present a number of basic differences can be described.

1. A problem situation produces stereotyped behavior in the frustrated individual, whereas it produces variable behavior in the motivated individual.

2. Responses produced under frustration, in so far as

they show fixation, are rigid and stereotyped to a degree that exceeds responses produced by rewarded learning. Thus the motivated individual is characterized by plasticity and the frustrated individual by rigidity.

3. Responses produced during frustration (such as abnormal fixations) are not responsive to alteration by punishment although reward-learned responses can be altered by punishment.

4. Punishment may serve as a frustrating agent and when this occurs a learned response may be replaced by a characteristic frustrated response.

5. Frustration-induced responses seem to be an end in themselves. They are not influenced by consequences except in so far as the consequences may alter the state of frustration, whereas motivated responses are a means to an end.

6. The method of guidance is highly effective for altering frustration-produced responses but it has no great value for replacing reward-learned responses.

7. Frustration-instigated responses are compulsive in nature whereas responses appearing in motivation situations are choice reactions.

8. The degree of frustration can be relieved by the expression of responses, regardless of whether or not the response is adaptive, whereas responses expressed by a motivated individual are satisfying only when the responses are adaptive.

9. Frustration-instigated responses are either nonconstructive or destructive in nature whereas motivated responses are constructive.

10. The response expressed during frustration is influenced to a great extent by its availability to the organism, whereas the response expressed in the state of motivation is influenced more by anticipated consequences than by availability.

11. Learning takes place under motivation and permits an increase in the number of differentiations the organism

can make, whereas frustration leads to dedifferentiation (regression) and in some cases to convulsive or mass behavior.

12. The trait of resignation that may appear in frustration contrasts with the zest shown in states of motivation.

The number of contrasting features present in motivated and frustrated behavior offers great difficulty if one attempts to reduce them to the same basic principles. If the characteristics of each are assembled into two separate groups, however, consistency between the characteristics of each group can be obtained. These two groupings of behavior characteristics thus furnish the basis for a description of the two types of behavior mechanisms.

Basic Characteristics of Frustration-instigated Behavior

The frustration process produces behavior that is purely an end in itself and not a means to an end. The behavior thus elicited is not an expression of a preference since it is not influenced by what it accomplishes. In this sense the behavior is compulsive in nature, and the type of behavior that is selected in frustration is a matter of its availability at the time as well as of a number of other factors not yet clearly understood. This type of behavior is altered most readily by a reduction in the state of frustration. When this is not possible, frustration-instigated behavior may be directed along different channels by the introduction or removal of barriers and other forms of restraints or by various forms of guidance. By means of such techniques the pattern of available responses is altered. Thus aggression induced by economic hardship may be directed away from government offices and toward food stores or racial groups. Restraints of various kinds may be produced by our culture and may train people not to strike at certain objects, but at the same time, certain other responses may be facilitated by suggestion and cultural backgrounds. Through training

and education some responses may obtain a lower availability than other responses. In such cases the frustrated responses are channelized differently but not eliminated. Thus a first step in therapy would be reducing the state of frustration by directing destructive responses along socially harmless channels.

Guidance as a Form of Therapy

In the case of behavior fixations it was found that guidance was very effective for breaking the stubborn response. This method required preventing the organism from expressing the fixated response and giving it the experience of executing a different response. The method of "putting the individual through" alternate responses was found to have little training value where the learning of a new response was involved, but it was found to be very effective for the breaking of a stubborn response that prevented the acquisition of a new response. It appears that the replacement of one response by another frequently involves two aspects, the elimination of the persistent character of the first response and the building up of an alternative response. For the first aspect guidance has great value, but for the second the ordinary trial-and-error learning method is superior. The value of guidance as a training method therefore depends upon the degree to which the first of these two aspects is present. Since fixation is present in frustration-produced behavior it is possible that guidance has a special value for the correction of frustration-induced responses.

If one applied the guidance method to a persistent type of behavior such as dipsomania, it would seem that the procedure would entail giving the alcoholic the experience of declining drinks. The method of attempting to keep the alcoholic away from drinks avoids the problem of breaking a response rather than solves it.

The "role taking" and psychodrama techniques that are

used for changing stubborn attitudes seem to be examples in clinical practice of the technique that we have called *guidance*. In psychodrama a person may be requested to play the role or act out the part of a person for whom he has no understanding or sympathy. In playing the part he practices or experiences the attitudes he cannot hold, and in so doing he is more likely to change than if threats and incentives are used.

The effectiveness of guidance seems to depend upon two factors. It channelizes a response tendency along a different line and thereby gives the organism the experience of a response to the situation that is different from his compulsion, and it completely avoids the experience of failure or punishment that ordinarily serves to aggravate the frustration. Whether or not the guidance of the experimenter's hand gives the animal a feeling of security and a relief from tension cannot be stated.

Although the technique of guidance was found so effective for breaking behavior fixations in the animal and suggests a direction in the approach to the correction of clinical behavior problems, much research must be done with various types of cases in order to refine procedures and to build specialized techniques adaptable to human cases. Whether the method is confined to behavior fixations or whether it likewise is effective for regressive and aggressive traits also remains to be determined. The work in animal therapy thus serves as a suggestion for the development and extension of new clinical approaches.

Frustration State, Not Behavior Symptoms, Must Be Treated

The fact that frustration-instigated behavior may show a great variety of symptoms and yet lead to the same diagnosis greatly simplifies the problem of therapy. In regarding frustrated behavior as dependent on a specialized type of

behavior mechanism, which produces behavior that is an end in itself, it is not important to analyze the functions of the behavior expressed. Instead it becomes important to observe behaviors from the point of view of classifying them as either frustration-instigated or as motivated. Thus, an insecure child may show regression through bed-wetting, speech defects, whining, excessive timidity, and nonconstructive play. He may show aggression by stealing, excessive fighting with other children, destructiveness of property, destructive play, and associating with rough gangs. He may have personality traits that are characterized by such terms as negativism, selfishness, antagonism, and uncooperativeness. The presence of behavior fixations would be indicated if he showed repetitive actions such as thumb-sucking, nail biting, compulsive stealing, phobias, and stereotypy in any of the behaviors listed as regressive or aggressive. Finally, resignation would be indicated by a marked tendency to withdraw from the group, being uncommunicative, and lacking interest in the surroundings.

All these classes of behavior have a common cause and a common remedy. A given frustrated child might show any combination of these traits, but so long as the traits fall within the scope of the frustration process the pattern expressed is of secondary importance. If this is the case, it means that in therapy attention should be directed from the symptoms and what they mean to a search for the sources of frustration.

In emphasizing the unimportance of such differences in expression of frustration-produced behavior, there is no intent to imply that the different expressions of frustration have no cause. The problem of why one individual expresses his frustration one way and another in a different way is important for theory and behavior prediction. This problem requires extensive study and it is probable that Sheldon's

studies (99) with body types may supply some of the answers. Studies of behavior characteristics of the abnormal in different cultures may supply others. The concept of availability is extremely broad, since many factors in heredity, growth, and learning are included.

Basic Characteristics of Motivated Behavior

In contrast with the frustration process, the motivation process produces behavior that is a means to an end, and the continuance or discontinuance of behavior instigated by motivation depends on the nature of the end it obtains. Because the motivated organism tends to move directly or indirectly (in case of barriers) toward objects that have been experienced as need satisfiers, motivated behavior may be described as goal oriented.

In order for a goal object to exert a controlling influence on behavior it is necessary to postulate (*a*) that the object has previously satisfied a need and (*b*) that the organism is capable of association formation. The postulation of association formation makes learning a prerequisite to goal-oriented behavior.

Previous learning, however, may affect motivated behavior in two ways. The first way is the one assumed above in which attracting or repelling properties are given to objects because of associations built up between the need-satisfying property of the object and its stimulating effect on sense organs. The second influence of learning is its selective function on behavior. This is the type of learning that supplies the animal with specific means to an end.

For example, the sight of a banana causes the hungry chimpanzee to move toward the banana because of the previous experience with the need-satisfying property of the banana, but this previous experience may not be adequate for supplying a behavior that will lead the animal to the

banana. However, the first condition will produce variable behavior that in turn will serve as a basis for selective learning.

Specific behaviors are selectively developed through experiences of success and failure that the organism obtains as a consequence of its variable trial-and-error activities. The associations of pleasantness and unpleasantness thus developed influence the degree of attractiveness of a variety of alternate behaviors and finally some one behavior pattern may emerge as the stable reaction to a stimulus object when a given need is present.

Since the organism has a variety of needs and is stimulated by many objects with differing degrees of repelling and attracting properties (which vary with the needs of the organism), the behavior expressed on any given occasion is the resultant of many forces. Ordinarily one speaks of the behavior that emerges as the organism's choice. Accordingly choice behavior is the process by which the act having the most desirable anticipated consequences is brought to expression. Thus choice behavior differs basically from compulsive behavior in that anticipated consequences exert an influence in the former case and not in the latter.

Because the anticipated consequences of various behaviors are factors in the final choice made, motivation-produced behavior occurs in a much larger behavior universe than is the case in frustration-instigated behavior. All the many possibilities for behavior play a part in determining the final outcome of a choice, and in so far as they exert an influence they are a part of the stimulus situation.

Since the learned consequences of many behaviors play a part in determining the response selected, it follows that motivated choice behavior can be altered by changes in the anticipated consequences of any of the alternative actions even when the organism seems not to be in a choice situation. For example, the alternatives of going to a football game and

staying home may be two potential behaviors that a boy may consider. However, the consequences of the second possibility have very little attractiveness so that the competing value of this behavior may be so low that the situation may not even be recognized as one involving a choice. Nevertheless, if the weather is bad, the existence of this alternative becomes clear and may dominate. Changes in the anticipated consequences of any of the alternatives influence motivation determined behavior because each is an essential part of the total choice situation and the order of preference at any moment will depend upon the relative attractiveness of each alternative.

Altering Behavior Controlled by Motivation

Techniques for altering motivated behavior, therefore, are primarily methods of varying alternatives and manipulating preferences through the building up of associations with consequences. Diagnosis then becomes a matter of discovering a person's needs so that effective incentives may be utilized. In these cases the specific behavior expressed is very important since its direction gives a clue to the needs of the individual. Thus in the case of motivated behavior the choices made and the behavior expressed may require a careful analysis of the underlying needs if one wishes to influence the behavior. For example, a person who requests a promotion because he desires prestige will be unresponsive to a wage increase, but he might be satisfied with a new desk. In general, it may be assumed that the behaviors expressed under motivation are influenced by specific needs and that these needs must be known if one desires to influence the behavior. This is a commonly accepted approach and the position here taken is merely one of limiting it to cases in which motivation is determining the behavior.

The other method of influencing motivation-induced behavior is through the use of reward and punishment. Here

again the specific response is singled out for treatment and by attaching reward and punishment to it the degree of preference for the response is raised or lowered.

Thus the details of behavior expressed under motivation are important both because they furnish clues for an understanding of the needs that influence the behavior and because alterations in behavior can be made by accompanying the expressed behavior with rewards or punishments. If a child steals under motivation then the stealing behavior is treated. This is in contrast to what we have said about frustration-instigated behavior since in such case the behavior detail was important for diagnosis but not for correction.

A New Kind of Conflict Emerges

The distinction between frustration-instigated behavior and goal-motivated behavior also was found to permit a new type of conflict, a conflict between these two behavior processes. It was suggested that this type of conflict operates in states of anxiety. Heretofore conflict has been limited to opposed motives and was considered to be a special problem in motivation. When conflict is regarded purely as a difficult choice situation, a problem is encountered in explaining why such conflicts should yield abnormalities in behavior. The conflict between two behavior mechanisms, however, is something more fundamental. It readily explains why the smooth operation of the organism is disturbed and why the behavior expressed in anxiety can show sharp contrasts and inconsistencies.

Relationship between Psychological Theory and Method in Therapy

If these principles are valid and basic they should serve as an aid in the analysis and the understanding of nonadaptive behavior, as well as guide one in remedial action. The purpose of the following chapters is to test the applicability of these

concepts in a variety of human problems. No claim is made that the remedies suggested are original or new. Many of the techniques now practiced are in the direction recommended in the following pages, but some of these principles may be inconsistent with present practice. Some of those which are agreed upon have been discovered by trial and error and are practiced by psychologists because they work. It is hoped that, in some instances at least, the concepts developed in this volume will explain why they work. Certainly much good clinical practice and the techniques used in effective human relations are not deducible from present psychological theory. As long as this condition prevails, scientific theory is inadequate for preparing the practitioner.

View That All Behavior Is Motivated Lacks Experimental Support

In the light of some of the doubts raised, one may question whether there is any evidence in support of the common assumption that all behavior has a motive. That some behavior is motivated cannot be questioned in the light of experimental evidence. But the issue here raised is whether there is evidence in support of the generalization that motivation concepts apply to all behavior. There is no experimental evidence, either direct or indirect, in support of this assumption. The origin of the assumption undoubtedly goes back to early speculation and self-analysis, and perhaps it has not been questioned because it seems so obviously true to any person who reflects upon his own actions. When a person is in a reflective mood he is sensitive to logical sequences, and any behavior that approaches goals seems reasonable to him. Consequently the reflective person will find that much of his behavior is consciously directed toward goals. This will be particularly true of his choice behavior and it is on these occasions that he is most likely to have time for such analyses. If goals are not too apparent to him on some

other occasion, it is likely that these are times when he is placed in a position in which he must justify his actions. When this occurs he rationalizes or invents goals that seems appropriate. Self-analysis, therefore, invariably reveals goals, either real or supplied, as a factor in behavior.

When reflecting on the actions of others, man again sees goals in another's behavior. As a matter of fact, he charges another person with wickedness if he does not approve of the goals he has attributed to him. Thus parents may believe that it is sometimes a child's goal to annoy them. Disputes between persons are largely accusations of having goals that are unworthy of "good" men. As a consequence, name calling in disputes becomes descriptions of men with "bad" goals. Thus two people who fear each other may claim that the other is infringing on his rights in order to make a selfish gain, but the true explanation of the behavior might be based upon the fear present in each.[1]

[1] For example, management and union leaders are in conflict in their views as to the value of the union shop, which requires that all employees hired by the company must join the union. In an open shop union membership is optional.

The writer has conducted discussions with students in which those favoring the union shop were asked to develop a list of ways in which the open shop was better for management and those favoring the open shop were asked to develop a list of ways in which the union shop favored management. The items are discussed and analyzed in the order suggested and all participate in evaluating them. This technique soon takes the emotion out of the discussion and competition develops to see which group can get the greater number of items.

The two lists developed under these conditions are strikingly similar. Both sides make a claim on better morale, greater democracy (one because it gives individual freedom, the other because it gives majority recognition), and greater production. A difference is that management cannot hire persons refusing to join the union. When opposing sides are asked to supplement the other's list they are unable to do so, and yet each remains dissatisfied at the outcome because neither list supports its convictions. Both sides agree that the arguments listed are not sufficient to explain the hostility toward the union shop.

The concepts of good and evil are social judgments we make of others and stem from man's tendency to supply goals to explain the behavior of others. His own goals, however, remain acceptable and good. One may even raise the question as to whether any man ever does anything that he does not consider directed toward a worthy goal. To himself a man is not evil, because he supplies the goals that he considers worthy. Good and evil thus become our judgments of the goals we read into the behavior of others, and which term we apply depends upon our own attitude rather than the behavior we observe.

Although the method of self-analysis is very convincing to the person himself, it has many limitations. When introduced into psychology it was refined and became the method of introspection. Even in its refined state the method could not be widely used, and gradually it became replaced by methods that measured behavior under controlled conditions.

The study of attitudes reveals that rationalization is commonly used to justify actions and prejudices. A person argues and defends his beliefs and thinks they are logical

However, when both groups list their fears, one discovers a basic difference. Management fears that the union shop will cause it to lose its basic prerogatives, and the union fears that it will lose its gains. No difficulty is encountered in finding why these fears should be real. The union has made gains, and legislation may restrict union activities. Thus management's opposition to the union shop represents a threat to the security of the union since it feels that management is attempting to destroy unions, whereas the union's insistence on the union shop represents to management a desire on the part of the union to control industry. Thus each claims that the motive of the other is to destroy it, yet neither has this basic motive.

When the fears are examined and recognized for what they are, one may ask, "Can management give a kind of contract that will ensure the strength of the union and at the same time give management the say-so it wants in hiring?" A little discussion soon results in a modified union shop that produces 100 per cent agreement in a group that previously was divided and appeared to have opposed interests.

deductions even when they have no basis in logic. In many instances a person does not know what caused his attitudes.

Even when obvious prejudice is not involved, analysis by introspection is misleading. Maier (48, 72) demonstrated that persons solving creative problems could not describe or explain the appearance of the solution in consciousness. When hints were given that stimulated the solution, the person was unaware of their influence, although it was shown that the hint directly stimulated the solution.[2] Mental sets and directions in thinking, therefore, are factors in behavior that interfere with psychological analyses utilizing introspective data.

It appears then that the assumption that all behavior is motivated rests primarily on the fact that it has seemed self-evident for so long that it developed the status of being a fundamental truth. The implications of this assumption, however, are very great and may prove to be a handicap to the development of theories in abnormal behavior.

[2] At this point the reader may wonder whether this is not an argument for the subconscious. However, the demonstration that the forces which influence behavior are unknown to the individual does not mean that a subconscious mechanism with motives and drives has been demonstrated. Many functions take place which have no effect on consciousness but which are set in motion by proper neural stimulation. The mechanisms that control bodily functions, for example, are not operated by subconscious motivation, unless the term *motivation* is used so broadly as to encompass all behavior.

Chapter 6

COMPARISON OF MOTIVATIONAL AND FRUSTRATION-INDUCED BEHAVIOR PROBLEMS IN CHILDREN

Basic Differences in Similar Behaviors

Two Different Kinds of Causes

If the distinction between the two behavior mechanisms is to be applied to behavior problems, it follows that the first step in understanding or diagnosing behavior is to determine which mechanism is responsible for the behavior under question. Suppose a child takes things that do not belong to him. Society calls this stealing. Such behavior may have desirable anticipated consequences in that attractive objects are obtained. In this case one might suppose that the child was motivated to steal. However, if a child steals objects that have little or no need-satisfying value to him, one may question the existence of a motive. Suppose the child shows indications of frustration in that he is regressive. He also may have had aggressive tendencies at home which were restrained. Is there a source of frustration in the child's life which preceded the stealing? Excessive criticism (degradation), a favored sister, a new baby, strained relations between father and mother, absence of the father, mother away from home a good share of the time, difficulties in school, and

many other factors of this sort are pertinent (82). Speculation along these lines might indicate a condition of frustration. In such case the stealing might be a sign of aggression or fixation or both.

Two Different Kinds of Corrective Measures

The remedial action would be quite different in the two types of stealing. A child who steals to obtain objects could be influenced by such actions as giving him an allowance so that he can buy some desired objects, pointing up the consequence of such actions (if he is old enough), explaining to him that the objects belong to the store (if he is still learning the notions of ownership), offering incentives if he cooperates, calling the behavior stealing and pointing out that it is bad, and punishing the child for the act. Punishment is a negative incentive and should supposedly make the punished behavior less attractive; however, it has inherent dangers which will be discussed later.

Ordinarily the methods just described are utilized by parents before they seek help, so that a child who is brought to the psychologist or psychiatrist is usually one who has not responded to the above treatment. This would indicate that whenever real problem cases are involved the instigation for stealing is one of frustration.

Suppose insecurity in the home is apparent. In such case the parents rather than the child should be treated. If the child is given attention and affection, the mother spends more time at home, or school problems are corrected (reading difficulties overcome, glasses obtained when needed, etc.), the stealing behavior often disappears without its being directly treated. Any direct attack made on the behavior in question would do more harm than good because it would aggravate the feeling of deficiency and make the child feel less secure. Punishment would directly frustrate the child and increase the original cause of stealing. The best that

could be expected by a direct attack on the undesired behavior would be to channelize the frustration-instigated behavior in a different and perhaps more undesirable direction.

Treatment, if directed toward the child, would be a matter of supplying the child with a sympathetic and understanding adult. The parents normally could function in this capacity, but too frequently they need training and are emotionally involved themselves. On the whole, parents tend to be autocratic and tell the child how he should see things. They do not attempt to discover the way the child sees things, and so the child's frustrations are not known to the parent. Parents who take pains to listen to a child's problems as they arise are spared the more acute problems that arise later. For this reason it is very important for a mother to be home when a child returns from school and make herself available if he is excited or disturbed. If she listens sympathetically the child can drain off his emotional reactions and anxious states before they create behavior problems.

In case problem behavior persists after the removal of the frustration, it follows from the theories here presented that a direct approach to the behavior difficulty may be made in the form of guidance methods that put the individual through a different behavior. Applied to the illustration of stealing in frustrated cases, it seems that the procedure would be a matter of taking the child to the store a few times and having him make actual purchases. Basically this procedure is similar to the method of substitution found to be successful in altering stubborn habits. Perhaps this method is successful because it utilizes guidance rather than because a competing and stronger habit has been learned. If guidance and a weakening of a fixation are the important psychological principles in this method, the frequency of repetition is not an important aspect of the technique. It would be important that any guidance procedure practiced be planned and

executed in a constructive manner so that no degradation or other source of frustration will be permitted to enter into the activity.

Some Contrasting Cases

Two Types of Stealing

To make the discussion of the two basically different kinds of stealing more concrete, let us examine a specific case illustrating each of them. A five-year-old child is found to be taking keys whenever he can find them. At first he does this openly. When his actions meet with disapproval, however, keys continue to disappear, but now they are more difficult to recover—some were not recovered until after the behavior was corrected. After 9 months this behavior is sufficiently troublesome to warrant special consideration.

Since the stealing is primarily confined to appropriating specific objects and there are no characteristic signs of frustration, the behavior appears to be a problem in motivation. The child just needs keys very badly. In the light of this interpretation, it was recommended that the child be given a large set of keys for his very own. The parents at first questioned this proposal because it seemed to them that the child was being rewarded for not respecting property. However, if we consider that the child's need for keys is great, he can still have a desire to respect property but this desire would be of a lesser degree than the desire for keys. It seems probable also that "respect for property" is an adult's interpretation of the situation but is not an aspect of the situation for the child.

In any case, a ring of keys was obtained and the child was delighted. He now preferred his own keys to those of other people and he never again molested the keys of others. As a matter of fact, the child showed greater respect for other

people's keys, perhaps because he knew how possessive he felt about his own.

When the use that the child made of his keys was observed (previously he could not use the keys he obtained because they were taken from him), it became more clear why his need for keys was so great. He used his keys to turn an imaginary lock on his tricycle, just the way his daddy did with his car. Was it naughty for the child to want to be like his father? Was it naughty to have a strong need to play constructively? When the need becomes clear, one can seriously question whether the child's stealing behavior demanded correction and even whether the term *stealing* was appropriate.

Similar results can be obtained in cases where a child persists in playing in mother's cupboard, using prohibited chairs, taking good books out of the bookcase, and playing with father's tools. It is true the child disobeys, but this places the emphasis on the phase of the behavior that the parent sees and not on the phase that causes the behavior. The child is willing to accept substitutes and he prefers his own things to those of others. By having his own things he learns to respect property rights, and this amounts to teaching him to refrain from taking what belongs to others. To prohibit such actions builds a barrier between a strong need and a satisfying incentive; if this barrier is insurmountable and the need is great, we have created a frustrating situation. Such negative training thus transforms the constructive play tendencies of the child into regressive and nonconstructive play.

In contrast, let us take the twelve-year old boy who is frequently reported for stealing in school. He has been lectured and punished by the parents (including severe whippings) but the behavior continues. The parents have done their best and are at their wits' end. Signs of frustration

also are present. The child is uncooperative and uncommunicative. He lies to escape punishment, does poor work in school, and has undesirable companions. His younger sister, however, is a joy to the parents. She offers no behavior problem, does good work in school, is frequently praised and is held up to the boy as an example. One might say she has earned the privilege of being both father's and mother's pet. In this case, the parents' behavior rather than the boy's seemed to require correction because their behavior was creating a frustrating situation. To win the parents' cooperation, the boy's side of the question was presented. The father recognized that he had a preference for the daughter. He set out to correct things. Much was made of the male side of the family. The father took the boy for walks, fishing trips, etc. Gradually the boy began to respond to his father as a companion and together they discussed questions of mutual interest. At no time, however, were morals or stealing discussed or mentioned. Nevertheless, stealing almost immediately disappeared, grades in school improved, and the boy spent much more time at home working on constructive projects.

The attentions and considerations required in cases of this sort are not easy things for parents to practice. A problem child is not a lovable child, and yet he must be given love and consideration if this condition is to be corrected. The only way to avoid the necessity of using such difficult therapy is to begin loving the child sooner and thereby prevent the condition from arising.

That frustrated problem cases do not respond to criticism and punishment is supported by Merrill's study (82). These approaches merely prove to the child that his feeling of being inadequate or rejected is correct, and no amount of logic alters this feeling since it was not logically induced. To offer rewards for improved behavior also is relatively ineffective since the compulsive nature of the behavior makes the

individual unable to live up to expectation; being unable to succeed further degrades and so exaggerates the very condition that caused the problem behavior.

Other problems associated with the condition of frustration likewise require treatment that is in harmony with the principles of frustration-instigated behavior, and in many cases the problem can be solved by removing the source of frustration.

Two Types of Thumb-sucking

Another example of a behavior problem that requires our distinguishing between motivation and frustration is found in cases of thumb-sucking, but here the age of the child aids in the diagnosis. An infant may suck his thumb when hungry, and the thumb is a reasonable substitute for the real incentive. Boredom or the absence of other stimuli may be another cause. That this infant behavior will necessarily become a habit when feeding by sucking has been replaced by eating behavior seems an unwarranted fear. If sucking habits persisted because of the frequency with which they were practiced, thumb-sucking should be a national pastime. Even the habits established by the old-fashioned pacifier were readily replaced. To suppose that such habits must be broken by force assumes that responses continue because of the frequency with which they are repeated, regardless of motivation. Not long ago it was common practice actively to break the nursing responses in children when they reached a certain age, the theory behind the practice being that infantile responses must be broken in order to replace them with others. Instead of being a training method such treatment in many instances creates frustration. If a child is fed by spoon and glass as supplements to nursing, the new feeding responses gradually become substitutes for the nursing and with the child's increasing development the new responses become superior in satisfying the hunger need. Soon the need

for nursing disappears entirely. Children so trained will reject a bottle and do not have to be denied the nipple.

In the infant, thumb-sucking seems to be his discovery of a substitute for nursing and as such is hardly worthy of active correction since the treatment may be more harmful than the original behavior. A proper diet may suffice in many cases, since an unsatisfied hunger need is one of the causes of thumb-sucking. Another common cause is boredom. Changes in the play needs and interests, as they develop with increasing age, should offer sufficient new responses to furnish competition and replace the thumb-sucking in such instances. Social stimulation by adults readily distracts the baby and can also be used. Any treatment should be in the direction of stimulating interests in other activities rather than in the direction of suppressing the undesired response. To suppress responses with strong needs may lead to frustration.

However, when thumb-sucking is present in a five-year-old, it may be regarded as a combination of regression and fixation caused by frustration. Children who sucked thumbs in infancy are perhaps the worst offenders, merely because this regressive response was more available to them (through previous practice) than to others. The other children when frustrated find other regressive responses that relieve their frustrations, although it must be remembered that the desire for relief is not the motive.

An examination of the home situation of thumb-sucking children frequently reveals inattention, insecurity, strictness, laxity in the child's care, loneliness, or rejection. The other symptoms of frustration that also may be present often are overlooked because the thumb-sucking is so obvious and makes the mother ashamed of the child or fearful of malformation of the child's mouth. Her shame and irritation or her anxiety do not put her in a mood that would tend to reduce the child's problem. Rather, the child is criticized and made to feel inadequate and rejected.

In order to correct the problem behavior in the most effective manner, the frustration must be located and the situation remedied. Ordinarily this is all the treatment that is required to remove the usual symptoms of frustration. Some behaviors, however, may remain, and it is conceivable that the frequently practiced thumb-sucking may be the kind that will continue as a response not to hunger needs but to certain situations. With the major source of frustration removed, however, motivation techniques may be applied with success. As a matter of fact, the older child may be receptive to any constructive aid he is given since social pressure from playmates constitutes a problem for the child, and one in which the parents' help may be welcomed. If this occurs, the parent ceases to be another critic and becomes a helping hand. The parent may suggest practice periods in refraining from thumb-sucking and supply chewing gum as a substitute. Encouragement for success would give the child goals. It is important that any procedures that are used furnish goals and develop confidence. Degrading experiences must be avoided to prevent a recurrence of the frustrated condition during the period of training.

Two Types of Destructive Behavior

Destructiveness is still another illustration of problem behavior in children that may have two opposite causes. As a matter of fact, before one classifies the behavior as destructive, one should determine whether or not the child is destroying one thing to be constructive in something else. A child who takes watches apart may be engaged in a high type of constructive behavior. Wanting to learn how a watch works can hardly be called destructive. Similarly when a child saws the legs off chairs to obtain lumber for building toys or just to practice sawing, one can hardly speak of destructive behavior. Rather, it is the accomplishments that are destructive. The problem in such cases arises through a

misunderstanding between child and parents due to their different sets of values. In such cases punishment or an implication that the child is naughty will seem unfair to the child. Parental interest in the child's development and cooperation in his investigations will cause the child to make his plans known. This is the method of prevention. In most cases when such behavior does occur it is probable that it will not be repeated in its exact form. Consequently, any disciplinary action is unlikely to have training value, and it certainly does not repair the damage. If the child appreciates the damage without being degraded, he is likely to desire to cooperate in repairing it.

However, when destructiveness of property becomes an end rather than a means to an end, it indicates aggression due to frustration. When this occurs the condition of frustration rather than the specific act becomes the problem to be attacked. In such cases the approach is similar to that described in the previous instances.

Two Types of Whining

Finally, the problem of excessive whining and nonconstructive play may be considered. Here again there are two types of sources or causes. A child may be bored, which is another way of saying he has no play objects. As a consequence the mother becomes the only playmate, and she is unwilling and uncooperative. What the child needs may be new toys. Children do outgrow their old toys and these may be put away for a time and replaced with a new set that is in line with the child's development. Later on the old toys may be reintroduced. A child also needs playmates, a change of scenery, and the like. A little consideration of this sort may require much less of the mother's time than is consumed by the constant interruptions and whining.

However, nonconstructive play and whining may also be an indication of regression due to frustration, particularly if

the child refuses to stay with persons other than his mother and is extremely dependent upon her. Again one may suspect insecurity and rejection; unfortunately, the more the child engages in this behavior, the more the mother is inclined to express behavior that aggravates the condition. Excessive attention, affection, and repeated reassurances of love must be practiced for several weeks. These are unnatural responses for an adult to make when also frustrated by the child's regressive behavior; nevertheless, they are the required treatment.

The preceding behavior illustrations have been given in pairs to show how similar behaviors may have very different causes and require remedies that suit the cause rather than the behavior. Obviously all cases of problem behavior do not have two possible interpretations, but it is clear that many of them do. In each case, however, the treatment must conform to the nature of the underlying process.

Common Sources of Frustration in the Home

As a further development of the application of principles of motivation and frustration, consideration should be given to some of the ways in which parents unknowingly frustrate children. A common source of frustration arises when parents play favorites by giving more attention to younger children and by differences in handling due to sex.

Boy-Girl Siblings

Attention is given to a girl's clothes and she is more likely to draw attention from friends of the parents. Boys supposedly have no interest in these things, and the boy's behavior may not reveal his interest because he has been told that such things are for girls. His frustrated behavior likewise gives no clue to the source of frustration; so he becomes a pest and may even take poor care of his clothes, thus supporting the parents' supposition that boys must be

given less attractive clothes. However, this very conduct on the boy's part reveals his frustrated condition. Identical twins have the reputation of getting on well with each other, whereas many sets of fraternal twins are reported to be somewhat quarrelsome. It is probable that the difference is due to the fact that identical twins, being of the same sex, receive equal treatment whereas fraternal twins may be of opposite sexes and under such conditions receive differential treatment. No one who has spent time with identical twins can avoid being impressed with the fact that they must receive attention and affection in equal amounts. Even during the illness of one of them the other will show signs of regression (whining, bed-wetting, nonconstructive play, etc.) and aggression (antagonism, negativism, and destructiveness) if only slightly neglected.

Favoritism as Seen by the Child

The problem of avoiding favoritism from the point of view of the child requires constant attention. If one child needs clothing, this problem should be discussed with all the children. When this is done, agreement can readily be reached in the form of each child receiving something, turns being taken, settling for candy, movies, or a toy, etc.

If children remain at the motivation level and their needs are understood by parents, one has no difficulty in achieving constructive and cooperative solutions to problems centering around fair treatment. When jealousy appears one may assume that the person showing it is on the verge of a condition of frustration, and in frustration cooperation and reasonableness disappear.

On one occasion the younger daughter of considerate parents was frustrated because the older child was about to be a flower girl at a wedding. The mother became aware of the younger child's disturbance when she said, "I'm just

nothing around here." The mother replied, "Why you are very important, you are the flower girl's sister." This was a fitting substitute goal and thereafter the little girl boasted about the fact that she was the flower girl's sister. This simple consideration on the part of the mother prevented frustration.

When children fight it is natural for the parent to protect the younger one. From the point of view of the parent, justice is then administered. The fact of fighting indicates frustration, and in addition the parent steps in and settles the fight by taking sides. When this is done, one child is further frustrated in order to protect the other. A better way is for the adult to step in without taking sides and tell them both what nice children they are and how the trouble was all due to a misunderstanding. The adult may then attempt to aid the children in reaching a settlement that is fair to each of them. An attempt to determine who started the fight neglects to take into account all the factors that stimulated the frustration.

In twins this type of consideration is more likely to be given by parents than when age difference exists, and this fact undoubtedly accounts for the greater incidence of cooperative play in identical twins than in siblings. Progressive schools often advocate letting children solve their own problems. This may be better than having teachers take sides, but adults often can hasten the settlement of disputes by the proper kind of interference.

Discipline versus Training

When children refuse to obey and to come when called, parents often become disturbed and feel that this behavior calls for disciplinary action. The preschool child is often negativistic and refuses to do anything the parents ask. The negativistic period corresponds with the time when the child

is beginning to feel the restricting influences of training. Usually it is not serious and is overcome when the child achieves some of the habits. It is not a necessary period, however, and can be avoided if parents are moderate and considerate in their requirements as well as in the way the training is handled. Learning under conditions of motivation is a pleasant experience. In taking the negativistic period too seriously one tends to extend the period because another source of frustration is introduced. The objective of parents should be to teach their children what to do rather than fear to disobey them.

Interrupting an Activity

A kind of behavior that parents may consider disobedience in a child is high motivation to continue playing when the mother has called him for lunch. Experiments have shown (109, Zeigarnik; 89, Ovsiankina) that the completion of any activity is a strong incentive and as a consequence a person resists being interrupted. Thus if a child is playing, he may not have reached a stopping place when called to lunch. If mother cannot wait she may forcibly interrupt the activity and bring the child to lunch. She may insist that the child must learn to obey, but what she often accomplishes is a temper tantrum. In addition, the child is not fed on schedule or the lunch is made an unpleasant experience.

Suppose, however, the mother gives a preliminary call and suggests that the child finish a particular part of his construction, that he take 10 more swings in his swing, or that he get all his cars parked. In such case the child is helped to a stopping place. Or better still, the mother may incorporate the lunch in the play pattern. Suppose the child is playing that he is hauling blocks to Chicago. If the mother knows this she may say that she runs a restaurant on the Chicago road. Then instead of interrupting play, she can say "Mr.

Truck Driver, how would you like to eat in my restaurant?" Now she capitalizes on his natural tendency to complete a task and the child comes to the table and eats like a truck driver.

Similar applications of the principle of the tendency to complete a task may be practiced during feeding times. A child that fusses over his milk can be induced to drink it if the parent counts the number of "swigs" needed to finish the glass, the child is asked to drink the milk so as to see the picture in the bottom of the glass, a small glass and a pitcher are supplied so that the child can refill the glass, the parent offers competition by seeing who can finish food first, etc. Games furnish completion experiences and make eating a pleasant experience.

Failure to recognize the incentives that appeal to the child makes the child appear uncooperative, and this frequently establishes the climate for creating frustrating situations. A child, like an adult, desires to experience progress and the completion of tasks, and when his behavior conforms to these needs in his play, it must not be confused with disobedience. Rather, goal-oriented behaviors in a child are signs of constructive play and should be encouraged rather than destroyed. When they are destroyed, we have replaced motivating situations with frustrating situations.

Child Delinquency and Frustration

Differences between Delinquents and Nondelinquents

From the above discussion of problem behavior in children one would expect frustration to be more common among delinquent than among nondelinquent children. Comparisons of the behavior and personality structure of these two groups reveal that there are some basic differences. One such difference seems to be the way these two groups react to

consequences. For example, Zucker (110) found that delinquent and nondelinquent children reacted very differently to story-completion tests such as the following:

"Jimmy walked silently up the steps of his home with the officer just behind him. After they rang the bell, Jimmy's father answered and was astonished to see Jimmy with a policeman. The policeman said, 'Mr. Horn, I've caught your boy stealing. This is the last time I'll warn you. Next time I'll take him into court.' After the policeman left, Mr. Horn sat down with his son and talked to him for a long time. He showed him how wrong stealing is and what trouble it can bring. He said no man ever gets away with that sort of stuff and asked Jim never to steal again. Jim answered that he'd never steal again. Two weeks later Jim and his friend were walking down the street. . . ."

Of 25 delinquents, 19 completed the story with a stealing episode, whereas only 1 of 25 nondelinquents did so. The reaction of these two groups to the father's discussion of the consequences of stealing is in striking contrast; the delinquents showing practically no response to the consequences, the nondelinquents anticipating that a knowledge of consequences will alter the conduct. Some nondelinquents even had the boy in the story reforming others. Zucker points out that one reason why the delinquents were not influenced by the consequences was because the advice was given by a parent. Another completion story[1] had shown the delinquent to be more likely than the nondelinquent to choose to aid a

[1] It was a bright, sunny day and Frankie was in his drawing class painting a small house. Just then a monitor walked in and Frankie was called to the principal's office. As he came in the principal said, "We just got a call from your home, Frankie. Your parents have had a pretty bad accident. You may leave for home at once if you want to." But just as Frankie was leaving, the telephone rang and the principal answered. Then he called out, "Just a moment, Frankie. Your best friend was just hit by an auto and needs an immediate blood transfusion. They want you to get down to the hospital right away." Then . . .

friend rather than a parent if both needed him. However, still a third completion story[2] showed that 68 per cent of the delinquents indicated that a boy will take a parent's advice rather than the advice of a friend in an ordinary choice situation (a choice of two boxes, one of which has a prize). This figure is close to the reaction of nondelinquents.

It was further shown that ending the first story with a stealing incident was not related to the stealing habits of the delinquent child. Children who were delinquent through running away, truancy, and sexual behavior gave responses similar to those who were delinquent through stealing. Thus it seems that an important factor that determined the difference between delinquent and nondelinquent children was the way they reacted to consequences.

Two Possible Types of Delinquents

There is the probability that two forms of delinquency must be recognized. Merrill (82) points out, on the one hand, that the delinquent child is one who enhances his prestige with his companions by stealing (soda pop, cigarettes, money for movies), hates school, likes to be on the go, and does not enjoy his home. This description distinguishes the delinquent from the nondelinquent in terms of differences in preferences derived from his specific needs. Her discussion of the motivation of delinquent behavior is convincing in many of her cases and, in some of them, an appreciation of consequences corrects the behavior. Thus sometimes delin-

[2] One day Bobby, his parents, and some of his friends went to a theater party. As luck would have it, Bob had the winning card and was called up to the stage to claim the prize. When he got there, the manager of the theater placed two large boxes before him and said, "One of the boxes has an expensive prize in it. The other has nothing. You may pick only one." One of the boxes was colored red and the other was green. Bobby's parents, who were sitting in the front row, kept shouting, "Take the green box, Bob. We're sure it's in there." Bob's friends, who were also sitting there, shouted, "Take the red box. The prize is in there!" Then Bob . . .

quent behavior shows signs of being problem solving in nature (*e.g.*, running away from home). On the other hand, she describes the behavior of many delinquents as hostile, uncooperative, and defensive, and it is often difficult to find good evidence of goal orientation. Our theory would permit a distinction between two types of delinquents; before we interpret the behavior of all delinquents as motivated, we must consider the fact that the expressed preferences may not be the instigators of the child's choice for delinquent behavior.

The frustrated child may rebel, he may be influenced by and attracted to gangs, and his behavior may not be influenced by consequences. His delinquent behavior may satisfy unfulfilled needs and bring some relief from frustration through aggressive acts and permit some escape from the situation through the distracting influences of his activities. These satisfactions and reliefs may be regarded as a basis for determining future behavior (learned patterns) or they may be regarded as secondary factors. In either case they would serve as a basis for rationalizing and expressing preferences. If, however, the behavior is a learned pattern and is chosen because it is satisfying, then it follows that failure to receive satisfaction should cause a change in the learned pattern. The facts are that being repeatedly apprehended frequently does not alter the behavior (82). One boy stole a car on his way home from court where he had been tried and acquitted for the theft of a car. It is common for the same delinquency pattern to be repeated, and frequently the behavior shows fixations and compulsions.

Thus there is evidence which indicates that much of the delinquent behavior is not a choice that the child makes between various need-satisfying behaviors. That the rewards for delinquent behavior are secondary rather than primary factors is indicated by the fact that hostility and regressive symptoms often are part of the behavior picture. Only rarely

does the delinquent have winning ways that would serve him in attaining his ends. It thus seems that if the delinquent were choosing behaviors that gave him desired objects and ego satisfaction he should show a more integrated and consistent pattern.

Merrill accepts the view that the delinquent lacks integration in his motives and that he does not see consequences that are not in the immediate present. This explanation is convincing when applied to delinquents with low IQ's, but it does not fit the mentally superior delinquent. Rather it seems that the disintegration shown in the behavior could more readily be explained by contradictory impulses released through frustration and that regression would explain the inadequacies of the individual's rationalizations.

In order to answer the question of the part played by motivation and frustration in delinquent behavior, it will not only be necessary to compare delinquent and nondelinquent children but also to determine whether or not two groups of delinquents can be differentiated. If some delinquents are dominated by motivation and others by frustration, it follows that corrective measures should be suited to their condition.

Merrill emphasizes the point that the similarities between delinquent and nondelinquent children exceed their differences. However, the fact that personality differences are present must be explained. Would the differences become more understandable if both delinquent and nondelinquent groups were subdivided on the basis of the degree to which their behavior was dominated by frustration characteristics? In classifying children into delinquent and nondelinquent groups one fails to take into account the facts that (*a*) all frustration-instigated behavior is not delinquent; (*b*) some delinquent children may be motivated and others frustrated; and (*c*) some children classified as nondelinquent are actually delinquent but not apprehended by authorities. Since delin-

quency is purely a legal classification it follows that many similarities must occur because psychological and legal classifications differ. Thus a failure to find a clear-cut separation between delinquent and nondelinquent groups does not prove that antisocial behavior has a basis in motivation.

Chapter 7

THE INFLUENCE OF REWARD AND PUNISHMENT ON MOTIVATION AND FRUSTRATION

Some Definitions and Differentiations

For the purpose of this discussion a reward may be considered as any pleasant experience that is attached to or connected with a sample of behavior. Thus if the individual has a need, any behavior that leads to the satisfaction of that need is rewarded behavior. Praise and success in any activity are common forms of reward since the individual's ego is satisfied by them. Some behaviors are pleasant in themselves and in such cases the pleasantness is inherent in the activity. Play activity, for example, may be pleasant in itself and need not always require an element of competition, which, when present, introduces the reward of winning that satisfies the ego. Likewise the completion of a task contains its own reward since the completion of a task represents the attainment of a goal, regardless of whether or not the task is pleasant (40, 89, 109). Thus activities that have attracting properties may be regarded as positive in their motivation since the activity itself satisfies certain needs. Activities that do not have need-satisfying properties may become attractive

if certain consequences are associated with them. We may conclude, therefore, that all activity which produces satisfaction either directly or indirectly involves the condition of positive motivation.

Punishment, on the other hand, is an unpleasant consequence of activity, often involving pain. Any activity that leads to pain, failure, or ego degradation may be considered punished. Some activities are unpleasant in themselves, regardless of where they lead. Any activity which is unpleasant or which is associated with unpleasant consequences may be considered as having negative motivation.

Combinations of positive and negative incentives associated with a given activity exert both positive and negative influences and create a motivation condition that is the resultant of these opposed influences. Whether the behavior selected leads toward or away from a given object depends on the relative strengths of these influences.

If reward and punishment are regarded as having opposed influences one well may ask whether the withholding of reward becomes the equivalent of punishment. Here we must distinguish between an anticipated reward and a reward which might have been given but which was withheld. For example, if a boy is promised a movie ticket for mowing the lawn and then is not rewarded, his reaction to future work is quite different than if he mows the lawn and receives no reward. In the first case he has been actively deprived of an anticipated reward and in the second case he received no reward. Deprivation of anticipated need satisfaction and failure to have a pleasant experience must be regarded as different in their consequences. In the discussion of frustration it was found that obstacles which block need satisfaction are essential conditions to establishing a condition of frustration, and when a human being serves to block need satisfaction he becomes such an obstacle. Thus the method of

withholding reward may be a vital factor in the effects produced.

Similarly a child may be told that he will be fined a certain amount if he does not mow the lawn, and he may agree to pay the fine when he fails to do the job. On the other hand, if a boy is asked to mow the lawn and then fails to do so, the parent may invoke the same penalty, but the effect on future lawn mowing and child-parent relations may be quite different in these two cases.

In psychological literature reward and punishment have long been regarded as positive and negative incentives for motivating the individual. Thus it is assumed that reward tends to encourage a repetition of the response that is rewarded and that punishment tends to discourage a repetition of the punished response. Being opposite in their effects on the individual they are thought to have opposite influences on behavior. Experimental evidence can be presented to show that these different effects on behavior actually are produced, but there is also important contradicting evidence.

Reward and Punishment as Related to Motivation and Frustration

Theoretical Possibilities

A great part of the apparent contradiction in results may be avoided if one takes into account the basic difference between behaviors instigated by frustration and behaviors selected by motivation. When this is done both reward and punishment may function in three different possible capacities. We may consider their effects on (*a*) behavior expressed when the organism is in a state of motivation, (*b*) behavior expressed when the organism is in a state of frustration, and (*c*) the motivation and frustration processes.

Effects of Reward during States of Motivation and Frustration

We have already considered how reward and punishment function differently as positive and negative incentives in encouraging and discouraging behavior in the motivated individual. In the frustrated individual reward and punishment have no such selective function since the behavior is an end in itself, and hence the end the behavior serves is incidental to the cause of the behavior. Thus, for the frustrated organism reward and punishment have no differential effects. The behavior expressed, however, is a function of whether the organism is in a state of motivation or in a state of frustration, and the state of the organisms is a very important determiner of behavior.

Effects of Reward on States of Motivation and Frustration

Since rewards, on the one hand, satisfy certain needs, some rewards may serve to reduce states of frustration that are caused by a deprivation of such needs. Thus, reward may function to cause a change from the frustration process to the motivation process. Rewards applied to behaviors expressed during the motivation state would tend to maintain that state and so permit the positive incentive aspect of reward to exert its influence.

Effects of Punishment on States of Motivation and Frustration

Punishments, on the other hand, may introduce the state of frustration and as such would not only maintain an existing state of frustration but might transform a state of motivation into a state of frustration. In these cases the role of punishment would not be one of functioning as a negative incentive, but rather one of exciting frustration. Thus punishment can only serve as a negative incentive when the organism is in a motivated state and when its intensity is

not great enough to excite the frustration process and cause it completely to dominate over the motivation process.

What Can Be Achieved with Reward Techniques

Frustration May Be Decreased

From this analysis it follows that if a frustrated person receives rewards his frustration is not increased; as a matter of fact it may be decreased, and the frustrated behavior may disappear. However, if he experiences punishment his behavior is not corrected and it may be made worse. A child frustrated by insecurity, therefore, might have his destructive behavior corrected by being "rewarded" with love, and a person suffering from inferiority might be helped by praise. When this occurs it appears that these forms of rewards serve to transform a frustrated condition into a motivated condition. Attention and praise are particularly important forms of reward because rejection is a common source of frustration.

The Ego Need Is Satisfied

Reward in the form of praise, when given to persons not dominated by frustration, may also serve to alter the nature of the motivation condition by changing the relative importance of the various needs of the individual. Loneliness and inferiority indicate that the ego need is dominant and, in such states, a good deal of the behavior may be directed toward satisfying this need. Praise and attention may furnish sufficient satisfaction in this area to permit behavior to be directed toward other need satisfiers. Criticism, on the other hand, even if sufficiently mild so as not to cause frustration, would not only fail to satisfy the ego need but would actually increase the need if the individual experienced rejection. In this capacity criticism would function to increase a need rather than punish for undesirable behavior.

Because persons deprived of adequate ego satisfaction often behave as if they felt superior (seeking satisfaction by bragging, self-display, etc.), other persons are inclined to withhold praise. People in general, therefore, often degrade the braggart and increase his inferiority to the point of frustrating him. When frustration occurs the boasting behavior is transformed into hostile or regressive behavior. To understand these effects one must view reward and punishment not only as selectors of behavior but as stimuli that affect both behavior processes.

The Level of Aspiration May Be Raised

Frequently people fear that reward in the form of praise is dangerous because it is assumed that a person will not be motivated to improve when he receives praise for lesser performance. This fear seems to reside in the fact that praise is viewed purely as a positive incentive. Although this reaction may sometimes occur, since praise is among other things a positive incentive, it must not be considered as the only effect. Furthermore, one can easily guard against this reaction. When giving proper recognition and ego satisfaction for present achievement one can, at the same time, stimulate an interest in improvement beyond this point. The objective in praising, therefore, should be to give ego satisfaction and to raise the individual's level of aspiration (the goal that the individual sets for himself). Since it is known (26, 40, 60) that the experience of success tends to raise the level of aspiration whereas the experience of failure tends to lower it, the use of praise is consistent with the principles that describe the motivating effects of changes in aspiration levels. When praise is given to build up confidence and to indicate acceptance of the individual and when it is accompanied with suggestions that may aid in further improvement, the stage may be set for future praise as well as serve in giving immediate satisfaction. Thus, with praise properly

given one may prevent ego deprivation and at the same time guard against developing low levels of aspiration.

The Frustration Threshold May Be Raised

If reward is considered to be a technique for stimulating the motivation process, one may raise the question of whether it also serves to maintain a state of motivation by raising the frustration threshold. If the frustration threshold of an individual can be raised by reward, it means that present rewards may serve to prevent future frustrations. For example, if a child is to be motivated to submit to a painful examination or treatment by a doctor, can reward be used to prevent frustration? The writer has found that children can be told of the pain they will experience, and with the promise of dime-store presents they will gladly submit to painful experiences without crying or resentment. After a few repetitions, the expression even of discomfiture disappears and the whole process becomes a kind of activity in which attention centers on the reward. In the case of repeated hypodermic injections the reward gradually becomes unnecessary and the injection is taken as if pain is not present. With proper motivation even a painful tonsillectomy is considered an event and all references to it a day later as well as a year later are in terms of the pleasant side of the experience, such as the ride to the operating room, the nice nurses, etc. When observing a number of such instances one is led to believe that the anticipated reward more than neutralized the unpleasant features of the total experience. It gave the whole situation a different interpretation than that which would have prevailed if rewards had not been introduced.

Although examples of this sort involve many other contributing factors, such as the degree of the child's adjustment, it seems unlikely that good adjustment alone will cause unpleasant experiences to play such a minor role. For this

reason it appears reasonable to consider this function of reward as a topic for controlled investigation.

The Pleasantness of Reward May Become Generalized

Even when we ignore the possible value of reward as a means for reducing the potential harmful effects of pain and punishment in their role as stimulants for arousing the frustration processes, the experience of reward seems to make a positive contribution by creating a favorable background for good adjustment. Suppose a child is induced to practice his piano lessons by the use of a schedule of pay, so administered that practice is spaced throughout the week. In this type of work climate, practice becomes a pleasant experience and a fondness for music has a chance to develop. In a closely observed instance the child declined payment a year later because he considered it unfair to receive payment for doing something he enjoyed. It was then necessary to give an allowance in terms of some other activity. Suppose, on the other hand, the child is driven to practice by threat of punishment. In this instance practice takes place during an unpleasant experience and the enjoyment of music may be prevented.

Considered in this light reward and punishment are not merely two opposite forces in the sense that one pushes the child toward the piano and the other pulls him toward it. Rather one must consider the effects of each on the individual's state of motivation as well as on his frustration threshold. The child who is pushed into an act may become frustrated or at least have a reduced threshold for frustration, whereas the child who is positively motivated may be induced to have a constructive state of mind as well as have his frustration threshold raised. Even if punishment is made sufficiently mild so as not actively to frustrate an individual who is in a state of motivation, it may still be more than a negative incentive because it creates an unpleasant experi-

ence that becomes associated with all the activities performed during experience. Thus in forcing a given action one produces future avoidance behaviors for many activities. Likewise reward may be more than a specific incentive for a particular act and a technique for maintaining and strengthening the domination of the motivation process. In addition to these functions it may create a pleasant experience that becomes associated with all the activities performed during the pleasant state of mind. Thus in rewarding a certain action one increases the attractiveness of this and many other activities.

The Limitations of Punishment

Punishment as a Stimulus for Frustration

We have already seen that if punishment serves as a stimulus for frustration its value as a negative incentive is lost. Thus punishment loses its value as a tool for training when it functions in other capacities. Whether or not punishment will induce a condition of frustration will depend upon the individual's frustration threshold, the degree and duration of punishment, and the individual's perception of the situation. The experimental evidence cited in Chap. 2 demonstrated individual differences in the ease with which frustration was aroused by punishment, and in the different effects obtained from comparable groups when punishment was varied in duration and in frequency. It was also found that punishment given in a situation that permitted learning was less likely to frustrate than punishment given in an insoluble problem. It appears likely that, in addition to its function in producing pain, punishment is frustrating because it may be perceived as an insurmountable barrier or obstacle to need satisfaction.

The importance of perception in the frustrating effects of punishment is even greater when human beings are

involved. It is reasonable to suppose that, for the human being, punishment often serves to degrade or to indicate rejection. Thus punishment functions not only as a barrier to ego satisfaction but actually removes some of the limited prestiges and securities that the individual may possess. If punishment is frustrating because it is degrading, then the degree to which punishment will be effective in inducing frustration will be related to the intensity of a person's ego needs. It follows, therefore, that similar punishment may have opposite effects in different individuals and that the most insecure may be least expected to react to it as a negative incentive.

Punishment May Degrade or Indicate Rejection

It follows further that any degrading or rejecting effects that accompany punishment must be influenced by the manner in which punishment is administered. This is perhaps one of the reasons that punishment administered by individuals has a different effect than a painful experience which follows a particular act. It certainly is true that the burnt child avoids the stove and this indicates the effectiveness of punishment as a negative incentive. When a parent, however, attempts to train by punishing the child for approaching the stove, the child frequently fights back. In this instance punishment seems to have a very different effect. Instead of the child associating punishment with the act, he associates it with the parent. It is a common experience for parents to find that a child who has often been spanked accuses his parents of hating him. Explanations as to why a spanking is given do not alter the fact that the child interprets punishment by people as active rejection. The close association of punishment to ego deprivation is also apparent from studies on the effect of reprimand (84). Thus it is found that public reprimand causes more unfavorable reactions than does private reprimand. It is also found

that the undesirable effects of reprimand, ridicule, and sarcasm are least for reprimand and greatest for sarcasm. Thus these techniques produce undesirable effects in the same order as they are degrading to the individual. It may be granted that reprimand produces undesirable reactions and yet it may be claimed that a degrading scolding has some benefits. Hurlock (28) measured the performance of children on an arithmetic test and then proceeded to scold them severely for incompetence and stupidity on the test. The next day showed some improvement, but on the 4 subsequent days the performance declined until it was only slightly better than on the first day and comparable to the performance of groups not scolded. However, a group of children that was praised after the first performance showed continued improvement during the next 4 days, when its score was nearly double that of the control group.

The experimental evidence, in general, is in agreement that punishment which is degrading is an ineffective motivating agent when compared to praise, and the most that can be claimed is that it is better than nothing, at least temporarily.

Life Situations Reflect Poor Returns from Use of Punishment

However, it may be supposed that experiments which compare praise and reprimand are artificial situations and reflect the effects of praise and punishment on morale rather than what they teach the individual. Thus the benefits of punishment may be shown in other situations or at some later date. One may question whether one can risk a reduction in punishment in order to obtain better morale. The study by Watson cited in Chap. 3 gave ample evidence to demonstrate that strict parents (those who punish frequently) do not train their children but instead tend to frustrate them. Thus in actual practice the danger seems to be in the direction of too much punishment rather than too little.

Evidence on the effects of punishment for crimes likewise shows that punishment in the form of imprisonment fails to be highly effective as a corrective method. This either means that habitual criminals cannot readily be rehabilitated or that punishment for past crimes does not ensure adequate training for reforming criminals. The fact that penal institutions are moving in the direction of using less punishment than formerly indicates that experience does not support the value of punishment methods.

A study of 100 A.W.O.L. prisoners (14) clearly showed that imprisonment was not a successful method for preventing a repetition of the act punished. The great majority of such prisoners were repeaters and these were either psychoneurotic or had some other defect. In most instances individuals who showed only one offense had a difficult problem or worry at home that caused them to go A.W.O.L. It was clear from this study that increasing or decreasing the penalty would have influenced the behavior of few if any individuals. Further, a knowledge of the case histories makes it clear that the behavior of most of these individuals was not dominated by anticipated consequences but by an insoluble problem.

Constructive and cooperative behavior is characteristic of the individual in a motivated state. This behavior disappears under frustration, a condition in which the individual is likely to become a target for punishment. If it is true that punishment increases frustration, society finds itself in the position of punishing individuals who have the least chance of benefiting from it; instead, the very condition that should be corrected is aggravated.

In a motivated individual, punishment may serve as a means for developing an avoidance response, providing it is not such as to produce frustration. In most instances the same desired behavior could be accomplished by motivation

directed toward an alternative. In a few instances, however, the training that is desired is purely an "away-from-something" response and an alternative "toward-something-else" is not feasible. For example, it may be desirable to train a child to avoid light plugs, a certain chair, etc., and yet permit the child to be free to do almost any other thing. If too many limitations of this sort are not imposed, such training is effective and perhaps creates no undesirable effects. Many restrictions, however, are confining to behavior and then there is danger that gradually they may lead to frustration and its resulting behaviors. However, activity can be positively restricted and confined without danger by motivating the individual toward a specific kind of activity.

Reward and Punishment as Training Tools

The Training Situation Should Be Analyzed

Since training requires learning and learning is accomplished by motivation, it follows that methods utilizing rewards should be used for educational purposes whenever possible. If a situation arises that requires the purely avoidance variety of responses then some method of using punishment may be required. In order to avoid frustration it is then important to make the punishment only severe enough to produce avoidance behavior and it should be so administered as to avoid the degradation of the individual. When one person punishes another there is always the danger of directly depriving the punished individual of self-respect. In most situations the undesirable consequences of certain acts can be indicated without requiring the person actually to experience the consequence. If these are natural consequences and not authoritarian demands, there is no degradation involved and the person avoids the behavior because he anticipates the consequences.

Positive and Negative Aspects of Training

Most training situations, however, can be so structured that the training is in the direction of what to do rather than what not to do. In reward one encourages a repetition of the same behavior. Constructive training can go beyond this in indicating the direction of further progress. Punishment offers nothing positive. In using it one merely indicates, at best, what is not wanted, not what is wanted.

Johnson (30) experimentally tested the relative effectiveness of positive and negative statements on behavior. She found, for example, that if children were asked to leave a box closed they were less likely to open it than if they were asked not to open it. Thus the positive statement even without a suggested alternative had more of a controlling influence than the negative statement.

Actually a negative statement has a suggestive value that is not intended. Note that when it is suggested that the reader refrain from observing the sensations from the roof of the mouth he must resist the impulse to do so, although he may have previously been unaware of the existence of such sensations.

Another study by Meyers (83) demonstrated some further undesirable effects of negative commands. In this case differences in failure to obey were not observed in the children because the presence of adults was such as to have practically all the commands obeyed. In this study the children were placed in a play situation and, after they had engaged in play activity, different combinations of commands were given by two adults. The situation, two negative commands, consisted of having one adult say, "Don't play with that," and a little later the second adult would repeat the statement. In this situation the child usually obeyed, but obedience was in the form of frightened promptness and the child sometimes failed to undertake a substitute activity. Thus play was generally disrupted and nonconstructive ac-

tivities, such as nail biting and clutching of clothes, took its place. Some children exhibited nervousness and crying and in a few cases suffered severe emotional upsets.

Two positive commands, "Play with this," also caused obedience, but play with the new object was prompt and constructive. Emotional complications did not occur.

When the two adults give different positive commands, the child vacillated between the two activities that were commanded. In about half the cases one of the adults was obeyed and in the other half, neither. Constructive play decreased, but the free movements of the child were maintained.

When one adult forbade the play in progress and the other encouraged the child to continue, the first effect was cessation of activity. Encouraged by the second adult, the child usually kept his hand on the toy in nonconstructive play. Emotional reactions were frequent and similar to those observed when two negative commands were used.

Studies of this type clearly show that forbidding a response and changing behavior by substituting an alternative have very different effects on a child's play and emotional reactions. A negative command leaves the child confused at best, and the command may serve as a form of punishment to the extent that emotional disturbances are involved. These emotional reactions are similar to those aroused when children are frustrated in their play. Although adults may be less readily frustrated than children, one may assume that the effects are in the same direction and that the above experiments deal with general behavior principles.

Why Punishment Has Survived as a Method of Behavior Control

If punishment and even negative commands seem to have little evidence to support their use, why are we so reluctant to give them up? Perhaps partly because it is easier for the

trainer to recognize defects than to offer constructive alternatives. In order to be constructive one must be able to furnish a substitute. It is easier to say, "Don't have an accident," than to tell a person how to avoid one.

Another reason may be the fact that punishment often serves as a form of aggression. When damage is done, the person who does it is a convenient object for attack, verbal or otherwise. Giving punishment also gives the punisher ego satisfaction, but unfortunately at someone else's expense.

In the third place, it must be granted that punishment does serve as a negative incentive in many instances, and people fear to give up a type of control that has evidence to support it. That another procedure may work better is not readily accepted so long as a technique that is good enough is available.

In the fourth place, it may be claimed that although punishment may not improve the individual who is punished, it may still set an example and control others. Thus there is the possibility that punishment may act as a deterrent for certain behaviors even when it does not correct the individual punished. This is a strong point and is psychologically sound since the observation of punishment should not tend to frustrate and therefore this condition should constitute a negative incentive. This raises the question of whether constructive and socially responsible behavior can be effectively obtained from motivated individuals without subjecting others to punishment. Since the motivated individual tends to be constructive and since most situations can be structured in either positive or negative terms, an affirmative answer to the question is not altogether unlikely.

In the fifth place, we have taken the value of punishment for granted because we have lived largely in a culture in which authoritarian rule has been prevalent. The autocrat controls by fear, and people have become accustomed to accepting this kind of control as morally good. It is even

assumed by some that to become a good citizen a child must be punished and when he fails to become a good citizen it is alleged that the punishment has not been sufficient.

If autocrats can maintain their power and influence, people will give the appearance of acceptance, and since the autocrat is not very sensitive to signs of resentment he tends to be unaware of the undesirable consequences of his methods. Nevertheless, revolutions and strikes are aggressions against situations that use fear as a motive, and they bear witness to the fact that negative motivation has not been a complete success.

The Quest for New Positive Techniques

Lewin's Contribution

Lewin (41, 42, 43) has developed new concepts of democratic group action that are of particular importance because they are based upon a series of controlled experiments. His work and that of his students (43, 45) have shown that positive motivation can be effectively used to make for social unity and cooperation. With the proper use of group decisions, one can attain far greater control of a group of people than can be achieved by the use of fear. The writer's own work in industry (60, 61) has demonstrated that such problems as tardiness, quality of work, willingness to do unpleasant jobs, and cooperation can be handled far more effectively by having employees set their own goals than by having management enforce standards of work and deportment. The positive desire to be an acceptable member of a group is much better motivation than the fear of penalties. One of the effective motivating factors in influencing behavior is that of social pressure, as utilized under Lewin's type of democratic leadership. In attempting to obtain unanimous group solutions and in protecting minorities the leader is able to harness social pressure for constructive purposes.

The results of investigations and the author's own experiences with the procedure (61) indicate that it is the positive desire to be a member of the group, rather than the fear of being isolated, that influences and motivates the behavior of the members of a group.

Lewin's work, therefore, suggests that many of the problems in controlling behavior can be solved more effectively than formerly if we use positive techniques in motivation. In many instances the desired positive techniques are not yet known, and in such instances negative motivation must be retained until an appropriate positive technique is found. However, the belief that positive motivation is superior to negative motivation whenever a situation permits its use will encourage the discovery of adequate positive approaches for a greater and greater number of situations.

The Limits of Positive Controls

After positive approaches to behavior problems have been exhausted, there undoubtedly will remain some behavior problems that call for punishment, if certain individuals are to be controlled for the good of society. This is particularly likely in situations in which individuals do not function as members of a group. For example, how would the state collect taxes if no penalties existed? In dealing with the public at large, group decision methods as understood at present could not be used. There is no doubt that the penalty influences tax payments. Could a positive incentive be developed? Reduced taxes for promptness may be part of the answer, but some fines and other penalties might have to remain as a last resort. At the present time some companies give a discount for the prompt payment of bills whereas others attach a penalty for late payment. Although these procedures can be made to yield equal revenues, they are psychologically different in their effects. The first procedure results in more prompt payment and better public relations

than does the second. These procedures are limited, however, in that they motivate promptness but not payment versus no payment of bills.

If problems of this sort have no solution in terms of positive motivation, negative motivation techniques will have to be retained. These problems often will be ones that are associated with behaviors that in themselves are attractive, and consequently they do not create a serious difficulty. The use of penalties in preventing behaviors that are attractive may reduce their attractiveness, but the individual still is free to choose other alternatives on the basis of their relative attractiveness. In such cases it is probable that the threat of punishment merely reduces the attractiveness of a given form of behavior and so permits the condition of positive motivation to be maintained. If this occurs, the method of reducing a response's attractiveness may be considered a safe method. If the need for a particular incentive is very strong, however, punishment would have to be intense in order to have an effect, and in this case deprivation and punishment might lead to frustration. This raises the question as to whether the deprivation of strong needs is psychologically sound. The use of punishment to lower the attractiveness of behavior is quite different from its use for driving the individual into performing unpleasant activities. In such instances one makes failure to do something more unpleasant than doing it. This creates a purely negative situation. It would seem that when certain actions are unpleasant one should attach positive incentives to them to reduce their unattractiveness.

The value of punishment in crime prevention will depend, among other things, upon the nature of the instigation. Crimes that indicate the presence of frustration are perhaps not adequately deterred by punishment or the threat of punishment. Thus crimes of violence, such as murder, rape, vandalism, and incendiarism, are more dependent on the

level of frustration than on the inadequacy of penalties imposed. These crimes increase during periods of stress and insecurity regardless of the penalties. Without question individuals who commit such crimes should be removed from society, but this implies institutionalization rather than imprisonment as a penalty for committing a crime. By the method of institutionalization the person is not released until he ceases to be a danger, whereas when the method of punishment is used the criminal is released when he has paid his debt to society.

In contrast crimes that have a motive, such as theft, fraud, kidnapping, and tax evasion, may be deterred by the threat of punishment. Rape does not seem to belong to this category because it is questionable whether the rapist is highly sexed. Rather his behavior indicates aggression and a disregard for human rights and social values. Likewise some forms of theft represent attacks on society rather than a desire for gain. In these instances the crime must be considered as frustration-instigated and treated as such.

We may conclude, therefore, that the problem of the prevention of antisocial behavior is a complex one and includes the reduction of widespread frustration, the removal of dangerously maladjusted individuals from society, the search for positive methods for making socially acceptable behavior attractive, and the punishment of such attractive behaviors as remain so that their attractiveness may be reduced. In each instance the instigation of the crime should be determined since the remedies for motivation-induced and frustration-instigated behaviors are fundamentally different.

Punishment in Therapy Seems Questionable

Before leaving the subject it is desirable to examine the claim that punishment sometimes relieves frustration and anxiety. It appears that this function of punishment depends

upon the existence of guilt feelings. In order for punishment to relieve guilt, it seems necessary to suppose that the individual anticipates punishment. When it is received, this state of anxiety is removed. It is also possible that punishment may be regarded as a just price one must pay for behavior that the individual regrets. The practice of punishment, therefore, serves to clear up such feelings. Both anticipated punishment for behavior that society does not condone and the belief that punishment is a price one can pay for misbehavior are values that are built up in our cultures. It is possible that punishment has its desirable effects because of these acquired values rather than because punishment is psychologically sound in its own right. To what extent punishment serves as an exchange for even greater anticipated punishment remains a question. If this exchange is a basic factor in the relief obtained from punishment, then it can hardly be claimed that the punishment received has therapeutic value.

When Reward Degrades

Finally, the question of whether or not reward may induce frustration should be examined. When one person bestows gifts on another it may be done in such a manner as to degrade. Thus charity may have a degrading effect on the recipient and consequently increase his experience of deprivation. Paternalism in industry may have a similar effect on employees. To contend that rewards sometimes fail as positive incentives neglects to take into account the distinction between the motivation and the frustration processes. The manner in which a gift is given will determine whether it serves to function as a reward or whether it degrades the person's ego. This point may be made more clear by the description of a case.

On one occasion a Negro houseworker was given a voluntary hourly increase for her services. She worked one day a

week for several families and was found to be most satisfactory by all of them. Recognizing the increased cost of living, one of the families wished to please her by giving her an increase before it was requested. The woman was happy to receive the raise and immediately increased her rates to the other families. Gradually the first family realized that her work was less effective than formerly and frequently she took days off. Invariably the absenteeism occurred on the days on which she worked for the first family. The other families failed to observe a deterioration in the quality of the work and instead praised her work highly. Thus it seems that the family which treated the woman the best seemed least appreciated. This would indicate that kindness had failed.

However, if one considers the fact that the houseworker went to her other employers and bargained for a raise, then it can be seen that the raise that she received from them was due to her own value and not to someone's kindness. In these families she had increased her ego satisfaction, whereas her dependence on the kindness of the first family may have degraded her ego. Thus, the act of kindness lost its motivating effect and instead became a source of inferiority. Persons on the defensive naturally would be most prone to react in this manner. Had the first family discussed the problem of increased living costs and bargained with the woman, it is probable that the undesirable effects could have been prevented.

Conclusions

Thus it appears that the *effects* of rewards and punishments, not rewards and punishments in themselves, must be investigated before the resulting behavior can be understood. In general, reward has the effect of positive motivation. Punishment is its opposite only if motivation is maintained. Punishment also can serve as a frustrating agent and when

it does it ceases to retain its value as deterring agent. If punishment frustrates and produces fixations, it actually strengthens a response even more than reward could strengthen it.

Chapter 8

COUNSELING AND THERAPY

Releasing Expression and Frustration Theory

Expression as a Form of Relief

In recent years it has become increasingly apparent that some form of expression on the part of the patient is of utmost importance in achieving therapy. Psychoanalysis for many years utilized the procedure of permitting the patient to unburden himself freely, but other factors also were involved. Through the patient's rather free expressions the analyst developed an interpretation of the case and tried to help the patient gain emotional insights. As a result, the patient experienced a cure, but it was difficult to determine the degree to which the therapy resided in the expressive aspect of the technique and the degree to which it depended on the effective diagnosis and subsequent treatment. Many persons also have experienced help in solving problems and relieving themselves of guilt feelings by confessing to the priest. The extent to which such self-expression served a therapeutic value and the extent to which the experience of being forgiven contributed to the relief are not known.

That self-expression is an important factor in therapy is generally recognized today, and the techniques in many cases become mere procedures for encouraging some form of expression. Baruch (6, 7) gives an account of the therapeutic

value of play in working with disturbed children. She finds that play with messy things (*e.g.*, clay) permits the expression of inhibited activities (messing with excreta) and relieves tensions. By furnishing children with proper play materials a great deal of therapeutic value is achieved. The type of attitude on the part of the therapist in using the play method is illustrated in the instance of Robert, a four-year-old, who came from a family in which there was conflict between the parents and where the maternal grandmother exercised considerable dominance. Dr. Baruch describes an incident in this child's behavior as follows:

"At rest time Robert pulls and tears the teacher's smock. The teacher says, 'I know how you feel, Robert. You feel like being mean. You feel like pulling and tearing. So I'll get you an old towel and you can pull and tear it all you want.' Robert comes back at her with, 'I hate you because you make me do things I don't want to do. I hate to do things. I hate you.' The teacher gets the towel and gives it to him, saying sympathetically, 'I know you don't like to do many things that you are asked to do.' Robert takes the towel and tears it into pieces, saying, 'I'll tear the old towel all to pieces. I will. I will' " (6, page 169).

The work of Roethlisberger and Dickson (92) in their study of employee behavior at the Hawthorne plant clearly demonstrated the value of verbal expression in relieving emotional stress and conflicts. They utilized interviewers who were good listeners and who had skill in encouraging employees to say things that they ordinarily would not say or could not express. Emphasis was placed on the importance of gaining rapport and being sympathetic and understanding listeners. The program stressed the fact that an employee's feelings may be reflected by statements made by the interviewer but that advice and suggestions were never given.

Although the interviewer had no authority to alter plant conditions or to change supervisory methods, the results of

the interviewing program showed that relations with supervisors improved and that attitudes toward the company became more generous. Employees expressed relief at getting things "talked out" and mentioned feeling better after "blowing off steam."

The use of expression is an important part of nondirective counseling techniques further developed and refined by Carl Rogers (93). He considers catharsis an important part of a therapy program and regards play therapy, group therapy, art therapy, and psychodramatics as having their chief value in that they achieve expression.

The Psychological Meaning of Catharsis

Although the term *catharsis* has been used in connection with the fact that expression gives relief, it is a term that has little psychological meaning. Warren's *Dictionary of Psychology* gives the following three meanings to the term: "(1) alleviation of unpleasant emotions by witnessing their presentation in an artistic production; (2) relief of abnormal excitement by reestablishing the connection between emotion and the object which originally excited it; and (3) the technique of unburdening disturbing complexes." Rogers states "we have learned that catharsis not only frees the individual from those conscious fears and guilt feelings of which he is aware, but that, continued, it can bring to light more deeply buried attitudes which also exert their influence on behavior" (page 21). In the sense that Rogers uses catharsis it becomes equivalent with "talking or acting things out."

Only one of the above definitions makes catharsis anything more than a technique that produces relief. This is the second definition, which states that a connection between emotion and an object is reestablished. Why this reestablished connection should achieve relief is not ordinarily made clear.

If it is assumed that frustration is a process that tempo-

rarily dominates an individual's condition and that frustration tensions are relieved by the reactions they produce, we are able to supply a psychological mechanism to account for the relief. In expressing frustrated behavior the condition of frustration is reduced, and the motivation process may again become dominant and be permitted to function. The fact that a connection between emotion and an object must be reestablished to give relief is not supported by the facts of nondirective counseling, since the mere free expression of emotion itself has an important therapeutic value. The establishment of the connection between the emotion and the object may be important in other ways, such as gaining clarification and insight, but these seem to be different stages in the therapeutic process.

The Return to Motivation

Rogers clearly recognizes that insight into one's problem cannot be achieved until after certain attitudes and feelings have been exposed. The counselor must be able to assist the client in dropping defenses and make him feel that he need not justify his feelings or defend himself from criticism. Rogers believes that in order for insightful experiences and a reorganization of the perceptual field to occur, the person must be freed from defensiveness through the process of catharsis. When expression of feelings has been adequate, insightful understanding appears spontaneously, according to Rogers (93, pages 195 to 207). This seems to be an excellent description of what one would expect if one postulated the existence of two separate mechanisms and assumed that at times the mechanism of frustration dominated over the motivation processes. When the state of frustration is reduced by the release of behavior it instigates, the motivation process can again take over; problem-solving behavior is a characteristic aspect of behavior when the motivation

process dominates. It has already been pointed out that problem-solving behavior may precede frustrated behavior when a person is in a problem situation. However, if the problem is too difficult and it is important to solve the problem, frustration may occur. The behaviors it instigates have little or no problem-solving value, but the condition of nonconstructive behavior may continue as long as the problem is present and serves as a source of frustration. Through relieving the state of frustration the problem-solving behavior may be reestablished, and with the proper aids a solution may be achieved.

Expression as a Means of Clarifying a Problem

It is important to recognize that the relief of frustration is not the only value of self-expression. It is the first step that must be taken, however, when the client is excited and shows aggressive and regressive tendencies. In the case of a confused person one might argue that self-expression is an aid to the clarification of the client's problem and it is not necessary for him first to release frustration-instigated behaviors. Whether or not a state of confusion can exist without frustration is a question that need not concern us here. In any case the client gains a clarification of his problem by expression regardless of whether this clarification is an initial contribution of expression or is a second contribution that follows the relief from frustration. In talking about his problem the client places all his feelings in the open; in so doing it is possible for him to gain a more complete picture of the problem and his reactions to it. As writing may clarify one's thoughts, so talking things out makes it possible to see the situation as a whole. The value of clarification is perhaps quite readily recognized by all clinicians, but it seems important to separate the contribution that expression makes to clarification and insight from the contribution it makes in giving relief.

Two Functions of the Permissive Attitude

Another important distinction that must be made is the function of acceptance, or a permissive attitude (on the part of the counselor), as a factor which releases expression and as a factor which has therapeutic value in its own right. When the client finds that anything he may have done, said, or thought is accepted and that he as a person is accepted, he feels free to unburden himself of his innermost secrets and so may gain relief through catharsis. In being accepted by the counselor, the client also may feel less rejected and isolated, and since rejection and ego degradation frequently are sources of frustration, any change of this kind would directly benefit the individual. The value of an acceptant attitude on the part of the counselor is generally recognized and it is an important aspect of counseling procedures. The nature of its value, however, is not fully agreed upon by different writers. On the basis of psychological principles, however, it is reasonable to expect the technique to serve in both capacities, one in which it reduces tensions because of the release of frustration-instigated behaviors and the other in which a change in the perception of the situation in which the client finds himself is produced. In both capacities acceptance reduces the condition of frustration and therefore permits the motivation process to influence his behavior again.

Phases in the Counseling Process

Rogers's Two Phases in Counseling

Rogers (93) regards releasing expression as the first phase in counseling and the achievement of insight as a second phase. Our analysis would make the reduction of frustration by expression and acceptance a characteristic change within the frustration process but would place any clarification of the problem gained by expression as part of the function of

the motivation process. Gaining insights would clearly describe the function of the motivation process since problem-solving activity introduces variability and attempts at solutions. Thus except for the clarification gained by expression, Rogers's two phases, (*a*) releasing expression and (*b*) achieving insight, readily describe the transition from the frustration process to the motivation process.

Rogers's Analysis of Insight

Rogers's discussion of the process of achieving insight is an excellent psychological analysis and he finds it unnecessary to fall back on mere words to account for the results achieved. Since his point of view is based upon psychological concepts of motivation, it is not surprising that this analysis should be adequate, because in this phase of the therapy the client is in a state of motivation. It is not at all surprising that his terminology and analysis should be similar to that used in psychological analyses of problem-solving behavior. In solving new problems one must gain new insights. This is another way of saying the person must discover new relationships and meanings that in turn are experienced as insights.

Relationship between Reasoning and the Later Stages of Counseling

Comparison of Results of Reasoning Studies and Studies of Therapy

It is rather interesting to find that Rogers's studies in counseling have led him to distinguish two stages, one which shows a lack of constructive behavior and one which is characterized by constructiveness. For many years the author has worked on problem-solving behavior in an attempt to study the creative process. This interest in problem-solving behavior has led him directly into the study of frustration since frustrated behavior is also a reaction to

problems. Thus a problem situation may arouse two distinctly different types of behavior, one in which the behavior is directed toward overcoming a difficulty and one in which the behavior ceases to be directed toward removing a difficulty. The sequence begins with problem-solving behavior and, if this fails and the pressures are adequate, ends with nonconstructive behavior. In successful therapy the sequence is reversed. The person begins with nonconstructive behavior and ends with problem-solving behavior.

Because both types of behavior may be noted in the study of reactions to problem situations and in the study of therapy it is of interest to see how well the concepts developed in the study of creative behavior in problem situations may aid in the clarification of behavior during the final stages of therapy.

Comparison of Insight in Reasoning and in Therapy

The author's investigations of creative problem solving (46, 47, 48, 49, 50, 51, 57, 59) have led him to define reasoning as the combination of elements in experience that have not previously been combined. In learning, the combinations are derived from past experience, but in reasoning a group of previously unrelated experiences combine spontaneously. Spontaneous combinations of elements of experiences are brought about by forces that are operating in the problem situation and cannot be supplied by past experiences alone. A child who cannot understand that one can multiply a number by 25 by adding two zeros and dividing by 4 will not understand it better by working a number of problems by this formula. He must first see that $25 = {}^{100}/_{4}$ before he has this insight. To tell the child that one can simplify multiplication in the above manner will not make him ready to use the method. He must first be made to experience the solution if we wish him to act on it from his own free choice.

In discussing the process of insight in counseling, Rogers

states that an interpretation must not be imposed but must be achieved by the client. For the counselor to state the existence of a relationship carries no true conviction because the relationship is not experienced. Thus the counselor who imposes an analysis or a solution on the client confuses him more than he helps him, for the same reason that a teacher who talks about short cuts in arithmetic may do more harm than good if she insists upon their use.

How Expression Influences Insight

Familiarity Is Gained

A number of factors contribute to the experience of new relationships. One of these is familiarity with all the aspects of the situation. Thus a person who is very familiar with the spelling of words can do more in a game of anagrams than one who knows words but is less experienced with their spelling and less familiar with the game. Likewise a person who is very familiar with engineering principles can find more uses for them than one who knows them less well. By repeatedly going over the feelings experienced in connection with emotional disturbances the feelings become less unique and they can be recognized in more situations. Thus they become more and more generalized and clear cut. Rogers's cases frequently show a spread in the implications of an attitude or feeling. Not only does a confused student say that he cannot make up his mind about a career but he discovers that he has a similar difficulty in other things. When this is recognized his inability to decide on a career has new meaning. It now becomes "he cannot make up his mind," which is a greatly extended meaning. The process of seeing the counselor on different occasions permits the patient to repeat himself many times and gain this essential familiarity and extended meaning.

New Proximities Are Established

Another factor in the gaining of insight into a problem situation is the arrangement of the experiences. An important aspect of this factor is proximity. The principle of proximity is a well-established principle in perceptual organization, and it is the organization that supplies much of the meaning to our perceptions. Thus the combination "time flies" gives *flies* a different meaning than the combination "kill flies," and the word *bread* produces a different feeling tone when it is placed next to *butter* than when placed next to *water.*

In problem solving the factor of proximity is a matter of the arrangement of the materials or the facts with which one must work. How the materials are arranged will influence the solution achieved. Suppose, for example, that a screw must be turned and no screw driver is present. If a dime lies beside the loose screw, the dime is more likely to achieve meaning that makes it a screw driver than if the dime is in one's pocket or is placed on a cash register and the screw is part of the cash register. On the other hand, an ice pick placed near the screw will cause it to be selected as a tool for tightening the screw.

One may have similar experiences in solving problems in which other human beings and emotions are involved. In repeatedly expressing his feelings and his experiences the patient presents them in different orders so that different events and experiences are placed side by side on various occasions. Some of these are recurring feelings, but they occur in different contexts and arrangements. This degree of variability in expression permits the experience of new relationships.

A woman employee expressed the following sentiments, but the order has been changed so that the developmental sequence is destroyed.

1. I never get a raise around here unless the top is raised.
2. If I were pretty they would give me a raise.
3. This company gives all the breaks to the young girls.
4. All my trouble started after my father died.
5. If all of us girls would get a raise we would do more work and they wouldn't have to hire more help.
6. I've had to fight for every increase I ever got and that's what I'm doing now.
7. I wish I could find someone to share my apartment, but I can't find anyone I like.
8. A girl should get an increase for good attendance.
9. I've been buying a war bond every week and my savings have mounted up.
10. No one pays any attention to me.

If statements 1 and 5 are placed side by side, statement 1 has a different meaning than if it is placed next to item 10. In the first instance a pay increase indicates that motivation would be increased, and in the second instance a pay increase would give the girl attention. Item 3 would tend to bridge sentiments 1 and 10 whereas item 6 would not. Items 1 and 9 placed side by side would appear contradictory, whereas items 4 and 7 would serve as a development toward a solution.

The order of a group of statements as expressed by a person is determined by the general background of feeling, and in this sense the order is a logical development. Thus the actual order of the above statements was 1, 8, 6, 5, 3, 2, 10, 4, 7, 9. The sentiment changes as new statements are made, and these new statements serve to change the meanings of the earlier ones. Thus the above statements finally indicate a very lonesome person and when this is discovered the desire for an increase in pay has a different meaning. It is this new meaning that Rogers calls *the achievement of insight*, and the process is similar to the attainment of new

meanings that arise in any problem situation in which previously separated experiences spontaneously combine to form a relationship.

Reversed Relationships Are Discovered

Meanings in a problem situation also may change when previously related experiences have a reverse relationship added to them. Thus we may have related nails with the building of boxes but may have an experience of insight when we experience that taking boxes apart may be a way of getting nails. The process of talking about building boxes may permit this reverse relationship to be experienced. Thus insights are not only derived from combinations of new elements of experience but from new combinations within old relationships.

When a mother reports all the disagreeable things her child does and follows it with a description of the way she feels toward the child she may see a relationship between her attitude toward the child and his behavior. Previously the connection she experienced was child's behavior → mother's feelings; now it may be mother's feelings ↔ child's behavior. The double-headed arrow indicates a two-way relationship that has replaced the one-direction relationship. Thus the process of reporting or expressing oneself not only relieves frustration and clarifies the problem, but it permits the experience of new relationships because different feelings may fall in varied orders on successive interviews. This is a third function of the expressive technique.

How the Reflective Procedure Influences Meanings

Although the process of merely listening is highly important in therapy, the method of nondirective counseling also

makes an active contribution. The counselor is trained to reflect the sentiment expressed by the client. At first one may have the impression that the counselor merely repeats what the client has said, yet a careful analysis of the counselor's remarks in Rogers's reports show that the skilled counselor rewords the sentiments in a small but major way and at the same time he condenses or summarizes the statements expressed. Thus a paragraph may be reflected in a sentence.

For example, the client is telling the counselor what he considers an ideal person. He says (93, Rogers, page 201):

" 'Uh, well, some scientist. That is what I consider an ideal person, preferably a physical scientist, in chemistry or physics or an engineer, one who—one who serves society by constructing or making things more convenient. I like everything modern.' "

The response of the counselor is, " 'Someone who deals only in things, and not emotions.' "

In this case the counselor is reflecting a sentiment but in condensing it he is bringing things closer together and at the same time is emphasizing the contrast between things and emotions.

This leads the client to remark, " 'That's right, something tangible.' " Obviously something new has been added to the client's experience.

This contribution on the part of the counselor seems to be an important one and is akin to hints that might be dropped in an ordinary problem-solving situation. Suppose a person in trying to tighten a screw says that he wishes he had a screw driver. If one responded by saying, "You would like to have something you could use as a screw driver," the hint that other things might be used in place of a screw driver would have been given. But if one tossed the person a dime he might reject it and say, "The dime store is closed," or "Screw drivers cost a quarter."

The Concept of Direction Applied to Counseling

The Nature of Direction in Reasoning

This analysis leads us to another aspect of problem solving, which the author has called *direction* in problem solving (47, 53, 72). In all thinking there is a tendency to approach a problem from a particular angle. For example, the problem of the prevention of the spread of a communicable disease might be approached from the point of view of immunizing people so that the germ will not affect them or from the point of view of preventing the germ from reaching people. The steps taken to solve the problem would be very different from these two points of view and there might be little in common between the activities and thinking of men working from these two approaches. Some diseases might be successfully conquered by one line or direction of thinking, and others by the second direction. The best direction would be the one that solved the specific problem most effectively. Likewise a social psychologist, a psychiatrist, an expert in the field of testing, and a time-and-motion engineer would approach the problem of increasing production in a plant from very different angles. Differences in training would influence what various people see to be obstacles and what they would do to overcome the difficulties they see.

The characteristic of direction in thinking is that when a line of thinking has been adopted it tends to persist. In all problem solving, individuals vary their procedures, but the variation is primarily confined to a particular point of view. The scientist interested in immunization will work many years trying out different serums, but it is not usual for him to change his basic approach. He will not be inclined to let successive failures take him through the following sequence: (*a*) work with different chemicals or serums, (*b*) work with possible carriers of a germ (rats, insects, etc.), and (*c*) investigations directed toward finding cures for the disease.

Not only will he tend to think along a particular line and persist, but he will also tend to be blind to and will even actively resist suggestions that do not conform to his direction of thinking. If we tell a doctor who has failed to find a way to immunize against a certain disease that he might solve his problem by keeping germs from people, the suggestion will fall on deaf ears. To him the idea will sound about as ridiculous as telling a ballplayer that he can increase his batting average by hitting the ball out of reach of the opposing players. Much of what is regarded as ridiculous is ridiculous from a point of view of a specific direction in thinking. Since the direction is a predisposition on the part of the organism it cannot easily be imposed from without.

The Process of Direction and Attitudes Compared

In emotional life the factors determining the way our feelings and emotions are integrated have not been investigated to the same degree as in reasoning, but the terms *attitude* and *emotional set* have been used to designate some selective and integrative functions. As these terms have been used, however, they have a less dynamic meaning than the term *direction* and at the same time their meaning is more general. Direction in thinking designates an active organizing process and it is specific for the problem at hand. Attitude is more general in that it describes a predisposition for or against something. This general predisposition would determine, for example, whether one would help Negroes or interfere with improving their social or economic status, but it would not go so far as to develop solutions as to how one would solve specific problems on the Negro question. For our present purposes the term attitude is sufficiently similar in meaning to direction that the implications of their functions can be understood, particularly if we think in terms of what might be called *subattitudes* within the general attitude. Thus the general attitude of a group of people toward

Negroes may be unfavorable and their subattitudes may be indicated by such predispositions as (*a*) the tendency to interpret them as inferior; (*b*) the tendency to interpret them as untrustworthy; (*c*) the tendency to see their actions as a threat to our security; and (*d*) the tendency to regard their character as weak. These subattitudes determine quite specifically how one would handle Negroes if one were required to employ them, since the subattitude would indicate the nature of the difficulty that had to be overcome in solving the problem at hand.

The Place of Direction in Counseling

In the area of thinking on problems of interpersonal relations, attitudes and subattitudes greatly influence behavior. A person's general attitude, as well as his more specific subattitudes or directions, toward a company, a person, a race, or a situation influence the way he will perceive these objects as well as the manner in which he will interpret their activities or functions. Unfavorable attitudes toward a company, for example, make a person more prone to see faults where others see virtues. Persons with opposed attitudes, therefore, react to different sets of facts and they may interpret the same facts in opposed manners. A man's subattitudes will influence his specific interpretation of an event and consequently will determine how his many feelings will be related or structured. Because a person's predispositions greatly determine his interpretations of reality, the problem of adjustment frequently is one of altering the interpretive process. As long as a person's attitudes and directions in thinking color the nature of his universe, persons who find their universe too difficult for them may profit by procedures that change their interpretations of things.

The person who needs therapy often cannot solve his problem because his interpretation is such that it permits no solution. His insoluble problem is similar to a purely objective

reasoning problem that cannot be solved by a person who has the wrong direction. For example, if man cannot be immunized against a germ, the problem is insoluble as long as the immunization approach is used. However, a new approach or direction makes the problem soluble. How can one get a person to change his direction? Repeated failures in attempts to solve a problem frustrate, but a recounting of all the things that have been tried may organize the evidence and show the futility of the approach. The procedure of telling the counselor about one's failures to correct a situation may make the approaches used seem ineffective. This stage must be reached before the old direction loses its strength; as long as the old direction dominates, it cannot be replaced by a new one.

Suppose a person is trying to solve a problem in which he must tie the ends of two strings together. If the strings are suspended from the ceiling and are far enough apart, he cannot tie them together without the aid of a tool because he cannot reach one string while holding on to the other. All his attempts may be methods of extending his reach, such as seeking a broom, a pole, etc. Suppose now that someone hands him a pair of pliers and asks him to use them. This suggestion will be rejected while the direction of thinking is one of extending the reach if the pliers are only 6 inches long. At a later stage, however, the presentation of a pair of pliers may stimulate him to use them as a weight. Tying the pliers to one string will make a pendulum and when this is accomplished the string can be swung back and forth. The man can now go to the second string, hold it, walk toward the moving string and catch it as it swings toward him. But the suggestion has no value until the first direction of thinking has shown itself to be hopeless.

Rogers cautions against giving advice in counseling. In giving advice one offers suggestions that are likely to be useful from a different point of view. From the client's

point of view some suggestions are seen as having no value because they do not fit the dominant attitude. If the client's problem is to get her husband to see things her way, any hint that indicates that the client should see things her husband's way is beside the point. In addition it revives the frustration because the counselor as well as the husband has become a critic.

However, it seems reasonable to suppose that the influence of hints might become greater, when, in the later stages of counseling, some weakening of an attitude has occurred. It is possible that some form of directive counseling might be developed and used as the client progresses in the problem-solving stage. This point could readily be tested.

Withholding Advice and Its Relation to Problem Solving

Rogers insists that the counselor reflect only the feelings expressed, but he does not compare the responsiveness of clients to certain directing hints in the later stages of the counseling process to the responsiveness obtained in the earlier stages. Perhaps directiveness that was in line with the client's development would serve to hasten insight or improve solutions.

Another reason why the giving of advice or suggestions, as commonly understood, is poor practice in counseling arises from the fact that emotional adjustment problems are very specific to the individual. The client has his own special needs, some of which he recognizes only from his desires. Thus a patient may so describe her relations with her husband that an outsider sees divorce as the only solution. Any affection that the patient still may have for her husband will not be apparent to the counselor during the discussion of her problem. Divorce, however, would not be a solution for a woman who had hopes that her husband would change and consequently it would not be any solution to her specific problem. Needs and desires are within a person. Another

person cannot solve problems in terms of those needs, but rather he solves them in terms of what he thinks are the needs of the person seeking help. Every counselor recognizes that new needs and desires continue to come to expression even after the case seems to have become perfectly clear. Thus the counselor who gives advice may find that he offers solutions, but not solutions to the client's specific problem.

Frequently a person will plan to take advice because the counselor has sold him on the solution. The follow-up on such cases is discouraging, according to Rogers. As long as the solution belongs to the counselor the only motivation to practice it is a desire to please the counselor, and this is often insufficient. When the solution is in terms of the person's problem, however, then meanings and values have changed and the solution fits the person's own needs. If these needs were originally great enough to disorganize the person, behavior that is seen to satisfy those needs best will have sufficient motivation to be expressed. Thus a solution to the person's specific problem will lead to action.

Every true solution to a problem is satisfying, and its discovery results in a change in values. When the pair of pliers in the string problem is seen as a weight instead of a tool, behavior undergoes a marked change and the person has strong motivation to try out the pendulum. His previous searching for ways to make his reach longer are completely abandoned and the nature of his difficulty has changed. When the client discovers that she loves her husband and that this has made her more readily frustrated by him, she may try to win him back rather than attempt to make him give up certain irritating habits. As long as the frustration process dominates, however, or even later on during the problem-solving phase when a particular direction in her problem solving dominates, this solution cannot be experienced. When the client solves her own problem, action is consistent with the solution. Rogers find that such solutions

are practiced in a much greater number of instances than the solutions that are suggested by an outsider and are sold to the client.

Spacing of Interviews and Effect on Direction

Finally, the counseling method advocates relatively short interviews spaced about a week apart as compared to fewer long interviews. This practice can also be defended theoretically. If a direction in thinking tends to persist one cannot abandon it readily by continuing to experience a given direction. Long interviews therefore show little more progress than short ones, but several short interviews are better than one long one because the spacing permits changes in direction.

Getting away from a set of views that are consistent with a direction is important. In problem solving it is good practice to leave the situation that stimulated the direction. The presence of a direction merely tends to stimulate recalls that are consistent with it. However, when the client leaves the counselor he can have other and varied experiences and he may leave his problem for the time being. New directions may spontaneously occur or be stimulated by certain events. In problem solving this has been called *incubation* by Wallas (104), a period during which one does not actively work on a problem. New relationships may be experienced during this period because interferences due to active directions in thinking are absent.

The periods between counseling interviews also permit the person to go back into his situation with partial insights gained during counseling so that in his return visit more factors are introduced into the counseling interview. The counseling situation also relieves the client of frustration so that he can now return to his life's problems in a motivated condition. In his motivated condition he can approach his problems more constructively. Things look different, he

behaves differently, and the situation changes as a consequence of his altered behavior. Thus the interim has problem-solving value both because it permits new insights and because it introduces new relations into the counseling interview. Psychoanalysts similarly space the visits and get the patient out of direction ruts, thus permitting him to adjust to the progress made.

Reliving an Experience and Reasoning Concepts

Psychoanalysis emphasizes a procedure that is not stressed in nondirective counseling. This is the value of reliving a childhood experience. Although Rogers's counseling permits this to occur, it is perhaps a more common occurrence in psychoanalysis and in many psychiatric procedures than it is in nondirective counseling. This procedure seems to have value from the theoretical point of view because reliving a childhood experience as an adult may permit a reinterpretation of the situation. For example, a child who discovered his parents having sexual intercourse may have an emotional disturbance centering in his father or his own sexual life later. If he relives this experience in an interview the situation has a changed meaning. When the experience first occurred, the client's attitude (direction) was that of a child and this attitude could have given meanings of brutality to the actions that he saw directed toward his mother. These early meanings may have persisted and affected his later life even though the details that created the meanings may have been forgotten. However, a reliving of the experiences supplies other meanings to the sexual act and these new meanings now extend throughout his later years. Consequently every related event has a changed value. This change is not unlike that which occurs when the pair of pliers is suddenly seen as a weight. Thereafter all previous attempts to use it as a means for increasing the reach become foolish errors and the new meaning is substituted for the old one.

The process of changing directions by reliving traumatic experiences undoubtedly is an important aspect of therapy. In such cases the location of the traumatic experience in the life history is important. This process, however, does not seem to require the postulation of principles other than those derived from perception and problem-solving behavior.

In reducing emotional insight to mere principles of perception in problem-solving behavior, one implies that emotional insight is not fundamentally different from intellectual insight. Yet it is a common experience that emotionally loaded interpretations are more stubborn and resistant to change than interpretations not so loaded. The property of fixation produced by frustration accounts for at least part of this resistance to change and particularly for the initial resistance. This leaves the question of whether emotional insight that follows fixation is more difficult to achieve than insight in objective problem situations.

Emotional Insight and Intellectual Insight

Quantitative Differences

From the discussion of insight one may expect emotional insight to be more difficult than intellectual insight. In the first place, in emotional problems the factors that must be taken into consideration are relatively vague; and in the second place an outsider is less able to give effective aid to a client than to a problem solver since he cannot easily grasp the nature of an emotional conflict, whereas the difficulty in an intellectual problem is more obvious.

The Factor of Vagueness

Let us first consider the factor of vagueness. In problem solving, the data that make up the solution pattern are objective or outside the person; they can be manipulated and laid out in front of the problem solver. In finding a solution

to an emotional conflict, the data are primarily subjective or within the person. The stimuli that furnish the sensations in feelings and emotions arise inside the body and consequently cannot be readily manipulated, nor can one always point out or locate the external object that originally produced the subjective reaction. Emotional sensations are vague also in that a great part of the visceral sensations themselves cannot be localized in the body. The localizing of a sensation and its external stimulus is an important aspect of the sensation of specificity and contributes to the experience of objectivity. Thus the person who must solve a problem made up of feelings and emotions is in the situation of a problem solver who must work with materials that he cannot clearly see or imagine or place. These deficiencies would obviously handicap his ability to experience new relations and hence delay the gaining of new insights.

Differences in Locating the Difficulty

The factor of receiving aid from an outsider also favors the solving of problems involving a greater proportion of objective data. In an objective problem situation an outsider can readily grasp the person's problem and he can discover the direction of the person's thinking by noting his attempts at solutions. He can even be of help to the extent of actually solving the problem for one who is having difficulty. However, when a problem is of an emotional nature, an outsider has difficulty in grasping the true difficulty. Such problems are specific to the individual's condition. Another person may think he sees the client's problem and so offers him a solution in the form of advice, but too often such a solution fails to take all the personal factors into consideration. It is similar to the condition of trying to help a person solve the problem of tying two strings together by suggesting that a broom be used to increase the reach. If, for some reason, the person fears a broom or is unable to lift a broom, this

suggestion fails because it is not a solution for this particular person. In objective situations such errors in suggestions are not likely to be made, but in emotional conflicts this type of error is the rule rather than the exception.

The Degree of Ego-involvement

When these factors are taken into account, problem solving in one's emotional life becomes more of a personal matter than objective problem solving. In being personal, the ego-involvement is also of considerable importance because the person must defend himself while solving the problem. This ego-involvement may also be present in objective problem solving but its presence is less common. When a scientist has his own theory to defend he resists solutions to problems that conflict with his theory. If this occurs, true problem solving is delayed because an important subjective factor is introduced that ordinarily is not recognized for what it is. A face-saving factor must be added to the solution to make it complete for the individual in question. When the degree of ego-involvement is great enough, a purely objective problem becomes sufficiently loaded with subjective factors to make it a case of counseling rather than scientific objectivity.

Psychiatric Concepts and Frustration Theory

Nondirective Counseling Concepts

In analyzing the mechanisms underlying counseling, Rogers found it unnecessary to make use of psychoanalytic concepts and utilized more the concepts of general psychology. Rogers, however, did not succeed in finding and utilizing all the underlying mechanisms needed to explain the process of adjustment. This is particularly true in his treatment of catharsis. If the separation of functions into frustration and motivation has been an aid in furnishing some of the needed mechanisms and clarifying the adjust-

ment process, it now remains a question of how adequate these mechanisms are for clarifying other types of behaviors that psychoanalytic theory attempts to explain. Can the concepts here postulated be extended to cover the great variety of abnormal behaviors discussed in psychiatry in general? It is hoped that the concepts here developed may furnish a new approach or a new direction so that those familiar with problems in human abnormalities may test the concepts.

Repression and Recall Concepts

Repression is ordinarily explained by postulating that certain memories have moved from the conscious to the subconscious mind. It is supposed that a patient does this so that he will not be bothered with certain memories and that this repression constitutes the solution to a problem. When the repression is so defined, one separates this type of forgetting from the normal to the abnormal field of study.

Must repressions be placed in a different category from other memory traces that cannot be recalled? To produce recall, effective stimuli must be available. Is the frustration process sufficiently disconnected with the motivation process so that the recall of events during either of these two states may be deficient? In other words, will one condition be a more effective background for recalling certain events than the other? Certainly mental sets and attitudes exert a selective function in what is recalled, and it would not be inconceivable for frustration and motivation to have different selective functions. If such assumptions are made can the facts of repression be adequately explained?

Hysteria and the Concept of Availability

In hysteria the symptom shown is frequently regarded as a patient's solution to his problem. Thus paralysis of the arm may be a boy's solution to guilt complexes derived from

masturbation. If the patient were unable to withstand his impulse to peep in the windows of a girls' dormitory, then his hysteria might have taken the form of blindness. Can the connection between symptoms and the nature of the patient's problem be substantiated? Suppose one does not regard the symptom as a solution but connects the symptom with a response's availability. Then in hysteria the deficiency might locate in the arm if the person had become especially aware of his arm through a previous injury, and it might locate in the eye if there were reasons to fear blindness or if the person had weak eyes or some other eye trouble. If one searches case histories of hysteria from the point of view of availability (see page 82), could this type of connection be substantiated? One is often led to doubt the connection between the symptom and the solution to a problem because, in many instances, any number of symptoms would have answered the purpose. Thus blindness, paralysis, heart trouble, etc., all would keep a person from engaging in activities that are part of a conflict situation. To test the validity of assumptions, investigators must search case histories for different types of items.

Johnson (31, pages 443 to 447) found that in cases of stuttering practically all were criticized in their speech when young children. It is reasonable to suppose that this criticism made speech a highly available behavior area so that emotional disturbances would tend to locate in this function. At the same time the criticism would be a source of frustration and tend to produce fixations of the behavior in progress.

The Subconscious as a Superfluous Concept

Whether or not hypnosis and dual personality will lend themselves to analysis along these lines as readily as to psychoanalytic concepts is an open question. Similarily, various forms of psychosis may raise problems that create difficulties. The extent to which present theory is adequate

to account for abnormal behavior and therapy is a question that must be answered by clinicians and research workers more familiar with clinical facts than the present author.

However, our findings do force us to question the free use of the concept of the subconscious. To what extent is this concept used to supply goals that are not apparent on the surface? If frustration-instigated behavior is not oriented toward goals and if one nevertheless seeks goals in all behavior, then it would seem that the subconscious would serve as a theoretical postulation for supporting a theory which assumes that all symptoms are goal-oriented responses and consequently are solutions to emotional problems. If we assume that availability determines the type of response expressed during frustration, then we need not probe for the goal. Without the necessity of relating a goal to the behavior symptom, the subconscious would be no more a determiner of behavior than unrecalled memories or memory traces that were below the threshold of recall. This would reduce the functions of the subconscious to the laws of recall, frustration, and problem solving. In psychoanalytic theory the subconscious is used as a mechanism in behavior and it finds its greatest use in explaining abnormal behavior. How much of abnormal behavior is frustration instigated and therefore nongoal oriented? If the concept of the subconscious is to be used as an explanatory mechanism, it would seem that it should be more than a reservoir of directions and unrecalled memories. It is possible that after these functions are removed from the concept of the subconscious there still may be a need for the concept. If this is the case the evidence favoring the concept should consist of a positive demonstration of its utility.

Because the theory of the subconscious satisfactorily explains many abnormal manifestations, it may be argued that there is no need for an alternative or supplementary theory. However, there are other areas in which present

theories are regarded as deficient. Explanations of compulsive and ritualistic behavior are vague and unconvincing. To this author's mind the terms regression and catharsis lack a conceptual reference and are mere labels for observed phenomena. It seems that in judging the relative merits of different viewpoints one must consider the scope of the phenomena explained. In addition, it seems that concepts derived from human studies must also assume the obligation of explaining the results of animal experimentation. Can the theory that all behavior is problem solving and goal oriented in nature account for the results presented in Chap. 2? If the theory based upon animal studies must be consistent with human case studies, it also follows that theories based upon case studies must be consistent with data obtained from animal experimentation.

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