Behavior Theory and Problems of the Deaf

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The object of this paper is to describe the general principles of behavior theory and to give some indication of how they might be applied to the problems of the deaf.

Behavior theory is a system which allows us to describe, analyze, and control the behavior of man. It has been extensively examined up and down the phylogenetic scale and it has been successfully applied to various kinds of normal behaviors as well as abnormal behaviors emitted by the brain damaged, the schizophrenic, the autistic, the retarded, the educationally disadvantaged, the socially delinquent and of course, the deaf. The theory derives its importance from the fact that the principles of reinforcement always operate on the behavior being emitted, whether applied purposefully or not. The primary question becomes one of whether the principles are applied to the appropriate behaviors and, if so, whether they are applied in the most efficient way. Although this approach to the study of behavior originates in the laboratory in which we control the behavior of the rat, the pigeon, the fish, the monkey, the dog, the cat, and even the lowly earthworm in addition to many other varied animals such as the dolphin and the octopus, I would like to underscore the fact that this genesis gives it a better foundation than other systems of describing behavior which are based only on the study of man.

Where Man Belongs

Rather than constituting an oversimplification as indicated by some of its critics, this approach has survived the exacting standards of the laboratory before being applied to man; it has greater validity because it is based on biological continuity as opposed to other views of man which derive their importance from their ability to separate man from other animals. I submit that it is not the task of science to show the superiority of man over beast but rather to investigate, in an unprejudiced manner, where in the scheme of things man belongs. Animals surpass man in many qualities. The dog has more acute hearing and a better sense of smell; the dolphin has his own sonar equipment allowing him to "see" in the dark, and the bird can fly without the help of the large and costly machines which man must construct to accomplish the same end. The fact that man has manual dexterity, ability to make and use tools, as well as an exquisite ability to communicate both with himself and others by means of language, certainly sets him apart enough for us to look at the remaining similarities of man to other animals without panic or prejudice and to gain thereby a better understanding of ourselves.

In what way can behavior theory be helpful in the study of the deaf? First, it provides us with a method of analysis; that is, it allows us to state the variables which systematically influence the behavior of the deaf in a differential way. The most obvious fact about variables that control the deaf is that auditory stimuli constitute neither the discriminative stimuli (the occasions on which a particular behavior is likely to be rewarded or punished) nor the reinforcements, positive (rewards) or negative (punishments). More precise definitions of these key terms will be given below.

Secondly, behavior theory is of importance for the deaf in that it has been successfully used to train speech deficient children to speak. Behavior theory has yielded both a
theory for the acquisition of language and a method for the training of speech.

Thirdly, behavior theory has been applied to the problem of education, particularly after Skinner's article on the science of learning and the art of teaching. Text material is programmed in such a way as to make correct answers highly probable at all stages of learning, providing the learner with constant positive reinforcement, thus making learning an efficient and happy procedure. With deaf children who lack a very important type of feedback, namely sound, not to speak of its discriminative role in calling the learner's attention to relevant stimuli, such programming may well turn out to be critical in providing an adequate education. Of course, in those areas where no programs have been written, behavior theory has a contribution to make in that it provides the teacher with the procedures for modifying the behavior of a child so that he learns through his interactions with his teacher.

The fourth way in which behavior theory relates to the problems of the deaf is in its use with respect to personal and social adjustment problems, whether these problems are peculiar to the deaf or not.

All these applications of behavior theory for the deaf are important, and all are based on the principles explained below. Because of space limitations it is not possible to explain these principles in great detail. Therefore you are referred to the following texts for a more complete description of behavior theory.

A comment needs to be made concerning the question of who is to be the user of behavior theory in dealing with the deaf. The answer is that anyone in contact with the deaf should learn the principles. The person who spends the most time with the individual suffering from the ameliorative operant conditioning is obviously the best candidate, but as many as possible of the people having any contact at all with the person in question should use the principles so as to obviate the deleterious effects of extinction of desirable behavior or the conditioning of behavior incompatible with desirable behavior.

The Principles of Behavior Theory

The Principle of Reinforcement. — The basic principle of behavior theory (and here the reader should be made aware of the fact that we are talking about operant conditioning; a few comments are made later about respondent or Pavlovian conditioning) is the fact that behavior has consequences, that is, things happen after a response is made. Thus the consecutive placement of one's legs in a given direction will eventuate in a change in scenery and location. The application of a paint brush may result in a masterpiece or a cleaner looking wall. The application of pressure to the keys of a typewriter may result in a paper such as this and finally, the speech of a lover to his girl may result in marriage or a breach of promise suit, and so on. The fact is that behavior generally has consequences; the reason we refer to behavior controlled by the voluntary part of the nervous system as operant, is that it operates upon the environment. This operation on the environment is what controls the behavior; it is what in the case of delivery of positive reinforcement causes an increase in the rate of the behavior, and in the case of delivery of negative reinforcement causes a reduction in the behavior (with respect to cessation or avoidance of negative reinforcement it causes an increase in rate). It is critical to view the process of reinforcement as one which includes the notion of contingency.

One of the errors made by uninformed practitioners of operant conditioning, who are trying to modify aberrant behavior, consists of being generally "kind and loving". It is also necessary to know when to be kind and loving (and it is important to consider whether that is the most appropriate positive reinforcement for that particular response). For example, precisely the wrong time to be kind and loving is when a child is having a tantrum, since positive reinforcement at that point merely increases the strength of the tantrum behavior. This is true even though, at that moment, submission to or hugging the child or giving him...
candy at the time of the tantrum often stops that tantrum. Unfortunately, that cessation of the undesirable behavior is temporary only and constitutes the post-reinforcement pause which can be shown for much behavior which is positively reinforced. Soon the tantrum recurs. At the time of the tantrum, extinction is the most appropriate procedure, that is, to avoid giving the child any kind of attention.

Positive reinforcement of love and kindness (again only if that is appropriate) should be administered to the child after he has stopped his tantrum for a behavior which is clearly incompatible with the undesirable tantrum behavior. Furthermore, it is usually more effective to reinforce the incompatible behavior before the tantrum arises, thus eliminating any possible association between the tantrum and the positive reinforcement. One of the incorrect ways in which mothers, or for that matter teachers, counselors, etc. administer positive reinforcement is to await the occurrence of troublesome behavior before they present the child with the opportunity to do something which earns him positive reinforcement. In such a situation the child merely learns that the opportunity to receive reinforcement will not occur until he has emitted the troublesome or aberrant behavior.

Positive Reinforcement

What constitutes a positive reinforcement is not always obvious from knowing the consequence of the behavior. We must know some of the other conditions surrounding the child. While a spanking or a dressing down might ordinarily constitute a negative reinforcement, it does not always function in that manner. In a situation in which a child receives no attention at all except when he indulges in some undesirable behavior, the spanking and the dressing down may well act as positive reinforcements, since these events may comprise all the attention which the child receives. This is an example of the vicious circle in which some people find themselves when they have difficulty in controlling behavior of their children. They often dare not interact with their children when the latter are not being trouble-some for fear that the interaction itself might precipitate the unwanted behavior. Yet, because the parents are giving no positive reinforcement for reasonable behavior, such behavior becomes rarer providing the parents with fewer opportunities for enjoying the child’s company and giving him positive reinforcement. Further deprivation of attention (a very important reinforcer), consequently makes the attention he receives for his aberrant behavior more powerful. The only way to break the circle is to deliver positive reinforcement for minimally reasonable behavior at first so that eventually the child’s presence becomes pleasant enough for positive reinforcement to be given easily and naturally for appropriate behavior.

Whether given events are positive reinforcements or not must be determined empirically. When the behavior which is followed by a given event increases in strength, then that event is a positive reinforcement. Some of these positively reinforcing events are primary because they are reinforcing independent of conditioning history. Reinforcements which are originally neutral stimuli become reinforcing only through their association with primary reinforcing stimuli and are called conditioned. For human beings most reinforcing stimuli are conditioned and usually social, but originally the important reinforcements are the primary ones of food, and body comfort, such as heat and soft contact. In severe cases of poor behavioral control, meals have been used as positive reinforcements to change behavior. In many cases social reinforcements, delivered through verbal remarks or point systems which ultimately result in a toy or a special privilege, such as staying up late watching a television show, have been found effective.

Negative vs. Positive Reinforcement

The other kind of reinforcement, negative reinforcement, is used much more frequently than the positive one in the control of the behavior of children. The reason for this is to be sought in behavior theory. A “good smack on the behind” is enough to stop the disruptive behavior of many children. The parent’s
behavior of “smacking” or otherwise punishing a child is positively reinforced and is likely to be repeated again. However, the behavior punished is only momentarily stopped by the administration of negative reinforcement; it soon returns in full strength. Negative reinforcement eliminates behavior only when used in such strength that it produces a traumatic experience for the child. This use is obviously not recommended. Negative reinforcement can also cause an emotional response to the person who administers it, thus interfering with that person becoming a source of positive reinforcement. If a person becomes established as a source of positive reinforcement he can more easily control the behavior of the child than if he becomes established as a source of negative reinforcement. In the latter case the child merely learns to avoid being with that person.

This is not to say that one should never use negative reinforcement. Its use is beneficial when the punishment is non-traumatic and when the delivery of negative reinforcement is followed by the opportunity for the child to make responses which can be positively reinforced. Under these conditions, the temporary suppression of the unwanted behavior makes way for the occurrence of the more desirable behavior which can then be positively reinforced with a consequent strengthening of desirable behavior whose very increase in strength makes the undesirable behavior less probable if only because it is difficult to omit many behaviors at the same time.

Avoidance Paradigm

Negative reinforcement can also be used in an avoidance paradigm. This means that rather than using it to suppress ongoing behavior, the parent, teacher, counselor, or any other purveyor of reinforcement, sets up a contingency in such a way as to make it possible for the child to avoid receiving a negative reinforcement provided he does something which is desirable. The negative reinforcement might be an activity such as having to clean the house or having to take a test at a particular time. The response being reinforced might result in neat, orderly living in the first case and improved study habits in the other. The avoidance in both cases is appropriate and, more important, it gets the job done which the person giving reinforcement wants done, namely to teach the child to be neat or to develop good study habits. Finally, when the correct or desirable response occurs it can also be followed by positive reinforcement. Control of behavior is transferred from the negative reinforcement contingency to a more desirable positive one.

Before leaving the discussion of negative reinforcement it is important to add that there are two types, primary (requiring no special conditioning to be negative) and conditioned (requiring the association with a primary negative reinforcement or with the withdrawal or absence of positive reinforcement to be negative).

Since behavior is generally controlled by reinforcement, it is important to make use of the process of reinforcement in an intelligent and explicit way. By analyzing exactly what is being reinforced in a particular situation one often discovers that the behavior one is trying to eliminate, or at least not to strengthen, is the very behavior which is being reinforced. For example, a boy has discovered that when he admits he has broken something, he is punished, but that when he does not admit it, he avoids the punishment. Under these conditions the parent who first extracts an admission from his child, and then punishes him, is following the behavior of telling the truth, rather than the breaking behavior, by negative reinforcement. The child thus learns to lie to avoid being punished because the contingency relates to the lying and not the breaking.

EXTINCTION.—The effect of positive or negative reinforcement can be undone by the reverse procedure. The behavior in question is allowed to be emitted but no reinforcement is allowed to occur. The child who learns to get his way by whining will have his whining behavior extinguished because no one gives in to it. The child who has learned to avoid punishment by lying about his behavior should be given his punishment independent of his
lying. It is important to note that at first the process of extinction often elicits emotional behavior as well as an intensification in rate and magnitude of the ongoing undesirable behavior before it begins to decrease in strength. In other words, the process of extinction is not generally a happy one. As with the use of punishment, however, it can be made more bearable by allowing the child, while he is being extinguished for one response, to receive positive reinforcement for emitting other classes of responses. In that way the child does not lose out entirely on receiving positive reinforcement; he simply has to learn to receive it for doing something else.

THE DISCRIMINATIVE STIMULUS. — The other part of the reinforcement contingency is the discriminative stimulus. Most behavior is reinforced only on certain occasions rather than at all times. A child may learn to whine when his father comes home because whining in his father’s presence gives him exactly what he wants (positive reinforcement), whereas when he whines in the presence of his mother, his teacher, or his friends he is not given what he wants. Therefore his whining behavior is extinguished in the presence of these stimuli. Further, while the child’s parents may forgive him for behaving in an unreasonable way merely if he apologizes, he reinforces his behavior of apologizing to his parents. The teacher or camp counselor may punish him no matter what he says by way of an apology, thus extinguishing his apologizing behavior to the stimuli of teacher and camp counselor while maintaining that behavior toward his parents. This process of receiving reinforcement in the presence of one stimulus but not in the presence of others is called discrimination, and it means that each person learns to emit some responses in the presence of some stimuli and others in the presence of other stimuli. The process of discrimination produces discriminative control. A beautiful example of this is to be found in the adult world of smokers. Any number of chain smokers have found it easy and natural to go into a subway to ride for an hour without smoking (and without complaining) despite the fact that they will go to great lengths under other conditions to “have” a cigarette.

Many of the discriminations which we learn are much finer than the ones just cited; thus, we learn the difference between plus and minus signs; we learn to read, and we learn by looking at the expression in one’s face when to ask for a favor and when to let well enough alone. It is important to note here that a discriminative stimulus works only under particular conditions; when there is a “no smoking” sign with several people smoking right next to it, its effect is immediately nullified in that there are contradictory discriminative stimuli. If there is a stimulus and the behavior is consistently reinforced in its presence, however, then a stimulus, such as a “no smoking” sign, can exert a great deal of control. For the smoker, the stimulus of a cigarette is very powerful in evoking the response of smoking and while the removal of cigarettes from his visual field does not eliminate smoking altogether, in many people it does reduce the frequency of this response.

RELATION BETWEEN THE DISCRIMINATIVE STIMULUS AND CONDITIONED REINFORCEMENT. — The stimulus in the presence of which positive reinforcement is forthcoming for a particular response establishes that stimulus as a desirable stimulus, or in the language of behavior theory, a conditioned reinforcement. The discriminative stimulus consisting of a uniformed policeman for a lost child may constitute a positively conditioned reinforcement, if the presence of a policeman has provided an occasion on which he was safely returned home. Because a policeman has returned the child to his parents, the policeman himself satisfies the conditions of being a reinforcement and the child will subsequently make responses to get to the policeman. In the same way, a child who derives pleasure from reading a book finds the receipt of books positively reinforcing. Good parents, good teachers, or good counselors become more effective in controlling the behavior of children when, having been the dispensers of positive reinforcements, they then become re-
inforcements because they were established as discriminative stimuli. The situation which is produced when the mother or the father constantly dispenses negative reinforcements demonstrates the other side of the effect. These parents become established as discriminative stimuli for negative reinforcement. Result: parents who become conditioned negative reinforcements avoided by their children.

THE INTRODUCTION OF NEW BEHAVIOR.
— So far we have talked about the strengthening or weakening of behavior already in existence. The question remains as to how to produce new behavior. There are essentially two procedures available. One consists of reinforcing response matching, i.e., imitation. The child is reinforced for doing what someone else is doing. Any family with normal children has discovered that young children do, as a rule, imitate their parents, sometimes to their acute embarrassment, and seemingly without any special training. In fact, however, the production of responses like those made by the parents are typically positively reinforced by the parents because the children look cute or because of genuine pride (positive reinforcement from being imitated) on the part of the parents.

There are some children who do not imitate to any appreciable extent. Such children must be trained to imitate, for otherwise they will not learn any of the important skills necessary to survive. Typically, the child without speech, who, in addition, fails to imitate, is not as easy to train to speak as the child who already imitates but has no speech. The process of imitation is critical in the acquisition of language. It should be noted here, however, that we do not mean a parrot-like imitation, although this form may be necessary initially. Learning generally takes place in terms of response classes, rather than in terms of single response units. Both stimulus and response generalization are the rule in learning. It is only through further refinement of the reinforcement contingency that one trains an organism to emit more circumscribed responses and prevents the occurrence of the stimulus generalization that ordinarily takes place. The child learns not only to imitate "Give me candy," but he learns to generalize such a sentence frame as "Give me ———" so that he places in that blank other words appropriate to his wishes at that time, such as "Give me ball," "Give me toy," and later on in his training "Give me no cloudy again." Examples of stimulus generalization in speech are to be found in the use of the child's word "daddy" to refer not just to his father but to men in general. The fact of generalization makes the process of language acquisition rapid and efficient.

The other process of the acquisition of new behavior is brought about by shaping. Shaping consists of the reinforcement of gradually closer approximations to the desired response. The response of swimming is not acquired full-blown, but the beginning swimmer is first taught to perform parts of the swimming stroke by watching a teacher, and then as he tries to reproduce more and more of the stroke the teacher corrects him by telling him when he is right in executing it and when he is wrong. In this procedure the good teacher changes his standard so that what he considers worthy of praise at first will, at a later stage, no longer receive any positive reinforcement. This change in the acceptable standard of performance determines which response will be positively reinforced and which not. In this way, parents gradually expect the child to speak better as he grows older. In the shaping process it is important to steer a middle course between reinforcing an approximate response enough before requiring the person to improve his performance and reinforcing an approximate response too much with the result that the person must extinguish some of his responses before moving on to the next stage of competence. Shaping occurs as a natural process in the course of bringing up a child.
thus, because they are, of all the sounds, most likely to be positively reinforced. They are also the sounds which in our culture are more likely to be found early in the speech of the child.

INTERMITTENT REINFORCEMENT. — Descriptions of precise reinforcement contingencies frequently evoke statements of disbelief from people just learning about operant conditioning. These people ask how any mother can be as precise as the experimenter in the psychology laboratory in the administration of reinforcement. They cite the many examples of omitted opportunities of reinforcement, that is, occasions when the child has emitted a response which should have been positively reinforced but which, because of the pressures of the exigencies of living, was not. The fact is that such omissions of reinforcement actually strengthen the behavior in question more than would continuous reinforcement. Results in the laboratory, where intermittent reinforcement can be administered either on a fixed or on a random schedule, have shown conclusively that it is this type of intermittent schedule of reinforcement rather than continuous reinforcement which produces behavior most resistant to extinction.

There are some practical implications of the superiority of the intermittent schedule of reinforcement over the continuous one. With respect to the reinforcement of desirable behavior, it means that after the behavior has been continuously reinforced for a period of time, it can be reinforced on increasing intermittent schedules so that very little positive reinforcement is needed to keep a response going for long periods of time. Speech is probably a very good example of this phenomenon since many people seem able to continue speaking almost without any reinforcement from the listener.

With respect to undesirable behavior, such as temper tantrums, the principle of intermittency implies that if it is difficult to carry out a period of extinction consistently, one must use other techniques of response elimination since the occasional positive reinforcement is more dangerous than its continuous reinforcement. The parent who has consistently given in to the temper tantrums of his child will be able to extinguish the behavior faster than a parent who has been giving in to the tantrums on an intermittent basis. Intermittent reinforcement can be used to maintain desirable behavior, but it also can, of course, when used incorrectly, serve to maintain undesirable behavior.

MOTIVATION. — A comment needs to be made about the concept of motivation because it has, in recent years, been used as an excuse for doing nothing for a child characterized as being low in motivation and because it is erroneously used as a way of summarizing what operant conditioning deals with. To say that a child is not learning because he is not motivated is not to give an explanation but merely to apply a label. Sometimes what is meant when a child is described as not motivated is that he is not being reinforced for behaving in an appropriate way to learn. Occasionally, the term “motivation” can be usefully employed. For example, some kind of operation which can be performed on the child to make him more amenable to a particular kind of reinforcement. A short period of being without another person has been shown to have this property. After having been left without another person for a brief period, the child can be more easily conditioned than one who has just been through a period of almost continuous positive reinforcement, or one who was not given any special period in preparation for the conditioning task.

RESPONDENT CONDITIONING. — In general, this kind of conditioning refers to the acquisition and extinction of “emotional” responses as mediated by the autonomic nervous system and manifested in such response systems as sweating, heart rate, and salivation. The stimulus which acts as a primary positive reinforcement on operant behavior acts as an unconditioned stimulus in that it elicits the unconditioned emotional autonomic response of well being and relaxation. On the other hand, a stimulus which acts as a primary negative reinforcement on operant behavior also elicits a negative emotional response of the autonomic nervous system, such as fear or anger. It must be noted that some responses
can be controlled by either (and sometimes by both) of the two conditioning paradigms, that is, either by the operant conditioning paradigm operating upon the environment or by the respondent conditioning paradigm of eliciting emotional reactions to formerly neutral stimuli. Neutral stimuli become conditioned stimuli (elicit the same emotional responses as the unconditioned stimuli with which they are paired) by having the neutral stimulus precede the unconditioned stimulus for a number of trials. The response of crying may be controlled as a respondent when the child is frightened by the mere appearance of a man who always hits the child or it may be controlled as an operant response by avoiding having to eat something he does not want to since whenever he cries, the unwanted food is removed. The point is that a respondent response may be converted into an operant by having some consequence consistently follow it. Here is a case where an exact behavioral analysis is important since it allows one to determine which kind of control is being exerted over the particular response.

Applications of Behavior Theory

Having reviewed the principles of conditioning, let us look at some areas of application.

The production of speech in the deaf is a very important and difficult problem. I will not try to set forth a complete method of teaching speech to such children. One can, however, list some of the processes which will have to be used. The most important task in getting a non-speaking person to speak is to get him to emit the first appropriate sound. The way in which one gets the child to emit such sounds initially is not important because after they are emitted one can easily transfer the control from one discriminative stimulus to another or fade out some of the stimuli which are unwanted for more advanced language production. To produce a particular sound initially, therefore, one can use a candle, a mirror, a voltmeter needle deflection, an animated puppet which moves in accordance with the sounds produced by the child, a spectrograph — anything which provides the speaker with feedback. In addition to all of this, one must include some positive reinforcements such as candy, cookies, trinkets, opportunity to go swimming etc. — anything the child will work for and which will therefore strengthen his behavior.

Eventually, the reinforcement will come in ever larger amounts from the execution of the desirable response itself, namely, from successful communication. In such teaching, perhaps the most important fact to remember is that of gradualness; new sounds must be introduced or shaped one at a time, and the types of feedback must be faded out slowly one at a time so that the performance continues at the same level even after much of the feedback, initially necessary, has been withdrawn. The process of fading out refers both to the reinforcements and the discriminative stimuli which initiate the behavior.

Beginners who use reinforcement in training children express great fear about making the reinforcements, which must often be used in massive doses, ineffective. What happens with time, however, is that the same reinforcements often take on different functions; for example, in the case of one child, the candy which was initially eagerly and immediately ingested was in time used almost exclusively for the purpose of matching colors and piling them in different groups.

With respect to educational achievement, there are programs now available for the purpose of effectively teaching such skills as handwriting, spelling, reading, etc. In the classroom the teacher needs to learn the techniques of behavior theory. It is important for the teacher to reinforce the appropriate responses. Perhaps the most important ones, at least to begin with, are the attending responses of the students. Learning is an active process and therefore the child in the class must be stimulated to make responses which the teacher can reinforce positively. This is what is wrong with the lecture method of teaching. All the responses from the students are, at best, subvocal and often irrelevant because there is no appropriate feedback to the subvocal re-
sponses. Having reinforced responses, the teacher must then proceed to reinforce participation or discussion responses on the part of the children. Once these have been established, then the teacher can proceed to reinforce responses which relate specifically to the subject matter at hand.

Personal and Social Adjustment

The literature in psychology is replete with examples of the effect of different kinds of deficit in a child on his behavior. What we need to provide is an analysis of the reinforcement contingencies which operate upon a child with some kind of handicap. Parents of handicapped children often assume improperly that the aberrant behavior (initially the same as in a completely intact child) is a function of his handicap and not under their control, with the consequence that they respond differently to such behavior in the handicapped than the normal child. This most often means that a good deal of aberrant behavior is positively reinforced and that it is further strengthened, with a resultant self-fulfilling prophecy of aberrant behavior.

In a recent study, we found this to be true of the parents of brain injured children. Only after training them in the procedures of operant conditioning, did they, in some cases, become aware of the peculiarity of some of the behavior. Another incorrect assumption made about a child with a handicap is that he will not be capable of learning to make a certain kind of response at all. Behavior theory teaches us about the danger of assuming that an organism is incapable of any response without first having tried to train him to make it by means of operant conditioning. It also tells us to look for the trouble with respect to aberrant behavior in the reinforcement contingencies currently acting upon the behavior. Clearly, this is not to say that there can never be a problem attributable to some biological flaw in the person; it means that the extent of the biologically induced deficit can only be determined through attempts at behavioral modification.

It is of some interest, in a behavioral analysis of the personal and social adjustment of the deaf, to see whether there might not be some common contingencies of reinforcement which such children share and which should therefore be looked into considering the personal and social adjustment of a deaf child. First, it is clear that a deaf child differs from other children; children who speak to a deaf child might stop playing with him because they get no response to their speech. It is likely that normal children have their conversational behavior with deaf children very quickly extinguished. Secondly, when a deaf child approaches a hearing child the speech he uses might well be very difficult to understand and the hearing child might simply not find it sufficiently positively reinforcing to continue playing with such a child. This adds up to the fact that he might frequently encounter negative reinforcement in association with other children, and therefore, in an attempt to avoid such negative reinforcement might simply avoid the company of others. The behavior in which this might manifest itself is in shyness.

There are probably other behavioral aspects which deaf children share. A likely one is the manner in which the mother reacts to the deaf child's evident disappointment in encountering other children. She might well strengthen the avoidance responses to other children by pulling the child away from hearing children.

In addition to the obvious examples of what the reinforcement contingencies might be with respect to a deaf child, there are also the ones which he must share with every other child. We have found in our study of the behavior of the parents of brain injured children who present an array of special problems, that almost all of the personal adjustment problems were at least of the same kind, if not of the same intensity as those which occur in normal children. One must examine in the deaf child, as in the hearing child, the contingencies of reinforcement. One of the important things which practitioners of behavior theory learn to do early is to observe behavior in terms of a three term contingency formula. What was the discriminative stimulus (the preceding
stimulus or the concurrent stimulus) which was present when the behavior occurred, what exactly was the response, and finally, what exactly was the consequence of the response. Behavior is always under the control of stimuli of some kind and it is important to find out what these stimuli are. There is nothing more inaccurate than the statement that a particular teacher has no control over her class, or that a mother cannot control the behavior of her children. In point of fact, the teacher's and the parent's reaction both do control the responses of the children. The task is to determine exactly how the control works, and how one can change that control to produce a more desirable response.

Let us suppose that after a bit of observation we find that a child spills his soup or drops his potates or does other things that require cleaning up at the dinner table whenever his parents have long conversations which he does not understand. Let us further suppose that this kind of behavior is followed by the mother and the father admonishing the child and then watching him more carefully so that he does not spill anything else. A side effect of this is also that the parents generally cannot pick up the thread of their conversation and because the child looks sad for having been chastised they generally talk to him. The situation I have presented is fairly obvious in that the consequences of the behavior, disturbing as it may be to the parents, do in fact maintain the strength of that behavior. What the parents must do is to provide the child with other more reasonable ways of getting the parent's attention and of avoiding his being bored by their conversation. A guest at dinner time might provide him with a person to talk to and therefore keep him from seeking his parent's attention, and the parent's attention given at times when he is eating reasonably might serve to reinforce behavior which is incompatible with spilling. At the same time they must allow the spilling behavior to extinguish by giving that kind of behavior a minimum of attention; they can also reduce the number of opportunities of spilling things by such strategies as filling his cup only half way and having him sit closer to the table. Such a procedure would in my experience very quickly eliminate the entire sequence of disturbing behavior. The moral of the story is that behavior is always lawful and that it is controlled by the consequences provided by the parents both when the disturbing behavior occurs and when it is eliminated. The question is not whether to follow the laws of behavior but rather how to take advantage of them.

Summary

This paper attempts to show why a knowledge of behavior theory would be useful to workers in the field of the deaf. Presented are the principles of behavior theory, including the concepts of reinforcement, a behavioral description of the response, and the discriminative stimulus. After presenting the principles, a number of examples of the application of behavior theory with respect to behavior common to the deaf have been given and also with respect to behavior to be found in other kinds of children, both normal and abnormal.

References