

# Behavior Modification of Orthodontic Patients

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The most dominant emerging force in the psychological disciplines of the 1970's has been behaviorism. Behaviorism, which is literally a study of how and why behavior occurs, hasn't always enjoyed such eminence. Its earliest American apologist was Dr. John B. Watson, who had been greatly influenced by Pavlov's work in the early 1900's. In our own time, it has been one of Dr. Watson's students, Dr. B. F. Skinner of Harvard, who has been the most notable protagonist of the behavioristic approach. This new prominence has not been without justification because behaviorists have been able to demonstrate quick and successful results with a high percentage of their patients.

The purpose of this paper is to present some behavioristic principles and to demonstrate how they can be incorporated, naturally and effectively, into an orthodontic practice.

It has been observed that behavior occurs in a sequence of events: 1. Antecedent or those events that come before a behavior; 2. The behavior itself; 3. The consequences of that behavior.<sup>1</sup> If we were to try to capture the essence of the behaviorist's concept in a single phrase, it would be that "behavior is controlled to a large extent by its consequences."<sup>2</sup>

There are two broad classes of consequences—rewarding and punishing events—that serve as important determinants.<sup>3</sup>

The punishing consequences of behavior are well known by everyone, because most of life's teaching is by negative reinforcement rather than positive reinforcement. These are the no-no's of life to which we are early and, according to Skinner, sadly introduced. His studies show that learning is quicker and easier when positive reinforcers outweigh negative reinforcers.<sup>4</sup>

Obviously, in learning any behavior, negative consequences can be highly instructive but it has been effectively demonstrated that the degree of learning through punishment is directly related to the intensity of that punishment.<sup>5,6,7</sup> That is, mild punishment generally produces little change in behavior, while intense punishment typically results in large and stable adjustments of behavior.

This explains why nagging or arguing seldom produces any change in the behavior of a misbehaving child while corporal punishment generally effects a sudden and dramatic change. And, in fact, simple nagging and arguing can actually become a positive reinforcer for the youngster.

The intense punishment that has been referred to is exactly that—

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intense. And ordinarily in the form of electrical shock, emetics, and hypnotic imagery.<sup>8</sup> Clearly these types of reinforcers are too drastic to be considered part of any program for the modification of mild behavior aberrations. Therefore, for orthodontic applications of behavioristic principles we must consider the positive reinforcers.

There are three essential features in the successful application of reinforcement procedures. First, one must select reinforcers that are sufficiently powerful and durable to maintain responsiveness over long periods while complex patterns of behavior are being established and strengthened. Second, the reinforcing events must be made contingent upon the desired behavior if they are to be optimally effective. And third, a reliable procedure for eliciting or inducing the desired response is essential.

### The Incentive System

It is generally acknowledged that motivation is crucial for behavioral change. In most personality theories, motivation is conceptualized as enduring energy systems within the organism, variously labeled as needs, drives, or motives which begin and sustain responsiveness. When motivation is conceived as though it were a persisting internal entity, we find a certain pessimism about successfully treating people who presumably lack this requisite motivation. And it also provides a convenient rationale for failures that primarily result from reliance upon weak methods of behavioral control. In the parlance of the young, it is a cop-out.

Incentive theories of motivation assume that behavior is largely activated by anticipation of reinforcing consequences. One such positive reinforcement system is the token economy where tokens or points are accumulated and later exchanged for a variety of rewarding objects and privileges.<sup>9</sup> A token system has many advantages over other forms of material rewards. Tokens are independent of momentary deprivational states; tokens do not easily satiate and thereby lose their incentive properties over long periods; they can be easily and immediately presented upon appropriate performance; and, finally, since individuals can exchange their token savings for a variety of attractive items of their own choosing, motivation and responsiveness are likely to remain at a consistently high level.

### Arrangement of Contingencies

After appropriate reinforcers of sufficient incentive value have been chosen, the contingencies between specific performances and reinforcers must be established. That is a "target behavior" must be selected and the incentives arranged in such a way as to reward the desired performance. The temporal aspects of reinforcement become important at this point because it has been shown that behavioral changes proceed best when reinforcement is immediate.<sup>10</sup>

### Response Induction and Evocation

Powerful incentives and skillful management will be of little consequence unless methods are available for producing the responses to be reinforced. If the reward criteria are initially set too high, most if not all of the person's responses will go unrewarded and his efforts and motivation will diminish. Consequently, a system needs to be derived that will reward responses that are within the patient's capabilities. In other words, one should be reinforced only for success, so a level for some success must be discovered before more complex behavior learning can be gradually introduced.

Fortunately, behaviors which orthodontists wish to occur are usually present to some extent from the outset, so incentives can maintain desired responses at a high level and increase them.

### Ethical Implications of Reinforcement Practices

The deliberate use of positive reinforcement, particularly in the form of tangible rewards, often gives rise to ethical objections and concerns about harmful effects that may result from such practices. Many equate positive reinforcement with bribes, deceptions, or manipulations that insult human dignity.

The fact that behavior is strongly influenced by its consequences is not a phenomenon created by behavioral scientists, any more than gravity is created by physicists. Nevertheless, members of the healing arts have the responsibility of using every bit of knowledge and skill that has the potential of improving whatever therapies their patients require. Behaviorism is simply a new instrument in dentistry's armamentarium and we would do well to use it where and when it is possible.

### A Behavioristic Orthodontic Concept

Few orthodontists are any better than their patients will allow them to be, or we might say that good patients will make good orthodontists. At any rate, just about every orthodontist I've known openly confesses his dependence upon the patient's cooperation.

A token economy that awards points to patients for the performance of desired behavior has been developed for our patients. Obviously "target behaviors" might differ from practice to practice, but the ones that seem to best suit our purposes are as follows:

Arriving on time	— 1 point
Wearing headgear into office	— 1 point
No broken wires	— 1 point
Absolutely clean mouth	— 2 points
No broken or loose bands	— 3 points
Correct wearing of headgear	— 3 points
Correct wearing of elastics	— 3 points

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A display of this point system and the rewards available were placed in a prominent area of the office so that every patient would be aware of the possibilities. But two important contingencies were also listed in the display. Before any points can be scored, the patient must have an absolutely clean mouth and no loose or broken bands. These two features were considered to be the most important "target behaviors" and, in reality, the entire token system is contingent upon the learning of these behaviors. If these two "target behaviors" are satisfied, the patients qualify for points and in addition can choose any one of a variety of motivational buttons. The buttons are rewards that are immediately reinforcing and hence, quite effective in teaching behaviors (Fig. 1).

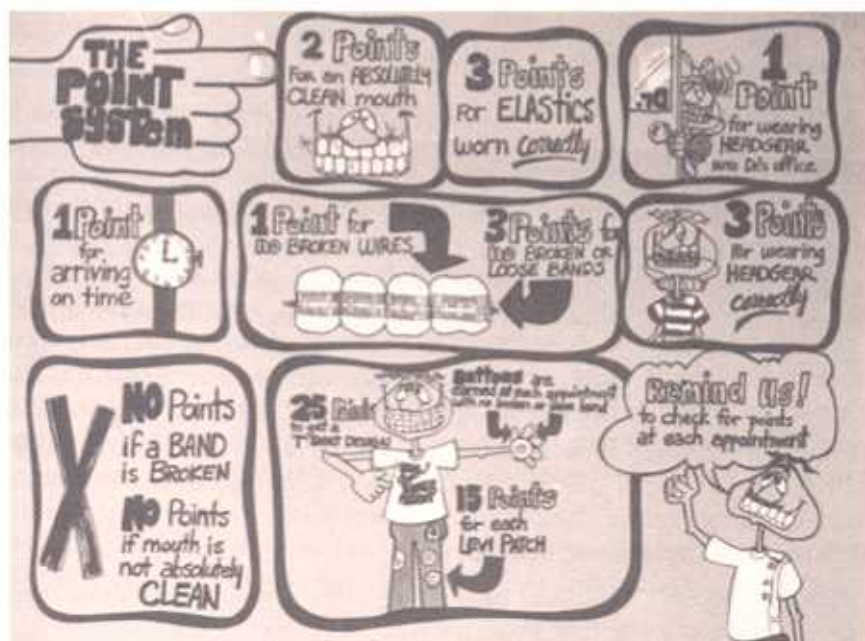


Fig. 1. Token economy point award system.

As patients accumulate points, they can exchange them for orthodontically designed Levi patches when 15 points are saved, or they can wait and select an orthodontically designed T-shirt when they have 25 points.

In any behavioral program highly disciplined administering personnel is required. If they are negligent in their assessment and recording of points or unenthusiastic, the program will never become effective. The chairside assistants were made the administrators of this program, and they were carefully instructed in what we were trying to achieve and how fairly they would have to evaluate the patients and verbally make them aware of their earned points. Patient awareness has consistently been shown to be associated with higher achievements and faster learn-

ing, so this should be part of a behavior modification program.<sup>11,12</sup>

Two additional immediate positive reinforcers are used, but they too are contingent upon having no loose or broken bands and having an absolutely clean mouth. A free juke box with patient selected pop music and a free pinball machine are available in the "on deck" area and signs defining their use are attached (Fig. 2).



Fig. 2 Two positive reinforcers—pinball machine and juke box.

Orthodontic behavior modification programs are limited only by the imagination of the orthodontist. Obviously, different orthodontists may want different "target behaviors" and different token economies.

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