Summarized by David L. Crouch, Editor

A new paradigm of motivation

Most efforts in the past to motivate orthodontic patients, knowingly or not, have been modifications of the medical model popularized by Freud," stated Dr. Larry White. In his presentation to the audience at the annual PCSO meeting Dr. White reviewed previous perspectives of various principles of motivation. Based on clinical observations from his private practice Dr. White made recommendations for *a new paradigm of motivation.*

Medical model

The medical model assumes an inner cause for an outer symptom. Discovering and eliminating the cause has become the traditional method for treating emotional or behavioral disturbances. Although the medical model has been useful in curing physical diseases, there is much evidence that it is inadequate in dealing with behaviorally derived problems. The application of behavioristic principles offers more hope to orthodontists for modifying patient behavior than any other current psychological discipline.

Behaviorism

The underlying theme of behaviorism is that consequences dictate behavior. There are three broad classes of consequences — positive reinforcers, negative reinforcers, and punishment. Since punishment is useful only in extinguishing behaviors, it has limited value in orthodontics. Punishment must also be quite severe to be effective and is incapable of teaching new behavior. Counterproductive behaviors such as resentment, aggression, emotional arousal, and avoidance techniques can be side effects resulting from punishment.

The most useful method of increasing patient compliance is to increase the positive consequences while limiting the negative (aversives). The chief aversive consequences that orthodontists should limit are pain, fear, frustration, and humiliation. Simultaneously, the orthodontist and staff should provide patients with positive consequences such as acknowledging and rewarding their movements toward compliance targets. Small learning increments (*shaping behavior*) should be provided so patients are not overwhelmed with tasks that are clearly beyond their abilities. More teaching and learning failures occur from violating shaping principles than from any other cause.

Positive reinforcers that are relevant and have meaning for patients are more effective. The more people know about their behavior the more they learn, so feedback should be immediate, accurate, and specific. A system like a token economy can consistently and effectively reward patients for helpful orthodontic behaviors. An example of a token economy is to give patients points (tokens) as a reward for desirable behavior, and the points can be accumulated for items of value.

Dr. White demonstrated that a token economy system in his practice resulted in an improvement in his patients' oral hygiene levels. However, some patients

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still seemed impervious to its attractions. This led to the discovery that poorly compliant toothbrushers apparently had a lower sensory tolerance for oral pain. White measured toothbrushing pressures with a strain gauge and showed that poor brushers used *4.5 times less* brushing force than compliant patients.

Biofeedback toothbrush

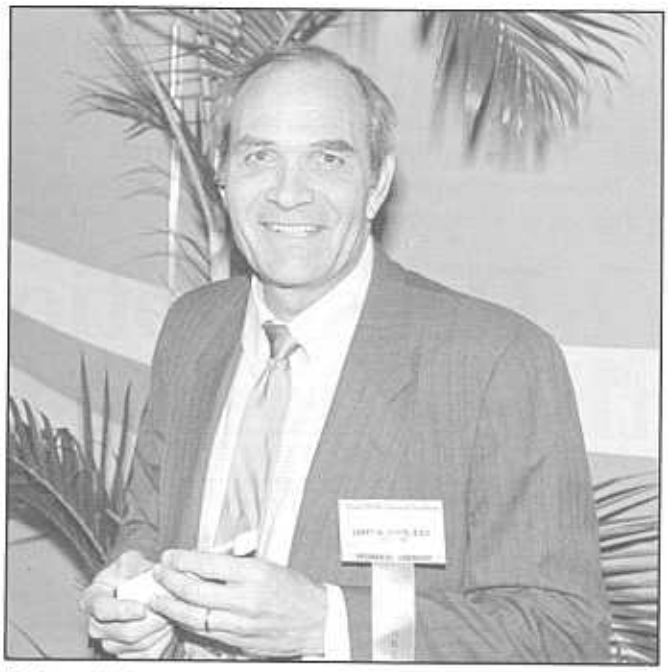
Based on his clinical experiences, White developed a biofeedback toothbrush that lights up on one end when the patient uses a certain pressure of the brush against the teeth. The pressure needed to turn on the light can be increased so the patient can use progressively higher toothbrushing pressures.

Subsequent clinical observations indicated that some patients find even the lowest toothbrushing pressures intolerable. This led to a search for a softer bristled toothbrush. Most commercially available toothbrush bristles range in diameter from .006 to .009 inches. This size bristle proved too stiff for use against inflamed gingiva. "After substituting a toothbrush with a .003 inch bristle diameter, non-compliant patients have been able to greatly increase their toothbrushing pressure and improve their oral hygiene," exclaimed White.

"Tame the pain"

Orthodontic therapy, by its biologic nature, involves some oral discomfort. Dr. White recommends that the pain (aversive consequence) be limited as much as possible to enlist more patient cooperation. He listed these suggestions to help "tame the pain."

- Use bonded brackets as often as possible
- Use the smallest brackets possible to increase interbracket distance
- Use small resilient wires
- Shape the orthodontic forces by starting with small forces and gradually increasing them
- Use segmented arch when possible to involve fewer teeth
- Use continuous forces rather than intermittent
- Prevent strangulation of periodontal capillaries after adjustments with a bite wafer or chewing gum
- Prevent formation of prostaglandins after adjustments with non-steroidal anti-inflammatory agents (ASA, Motrin, etc.)
- Improve patients' oral hygiene with an effective, non-punishing brushing technique
- Decrease gingival inflammation with a .12 percent Chlorohexidine rinse or gel



Dr. Larry White

Sensitivity threshold

Dr. White discussed a recent study by Chess and Thomas[1] which suggests that people are endowed at birth with at least nine temperament characteristics. The most important of these related to orthodontic therapy is the sensitivity threshold. Some people are born with low sensitivity thresholds for all the senses and orthodontists will probably be unsuccessful in radically altering these patients' great intolerance for pain.

This high pain sensitivity may explain many of the behaviors associated with non-compliant orthodontic patients such as poor oral hygiene, chronic complaints, easily fatigued jaw muscles, copious salivation, frequently broken appliances, extreme gag reflex, chronic oral ulcers, and frequently missed appointments. Dr. White suggested, "Rather than seeing these patients (low sensory threshold) as having character defects, the orthodontist would be well advised to view them as turtles without shells." He recommends trying to identify the low sensory threshold patient and design their treatment modalities so they can cooperate enough to achieve an acceptable result.

References

1. Chess, Stella and Thomas, Alexander: Know Your Child, Basic Books, Inc., New York, 1987.