A Theory of Psycho-Orthodontics with Practical Application to Office Techniques

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What do the fields of clinical psychology and orthodontics have in common? Most would say "very little" or "one is mental and the other is dental." One fellow is supposed to straighten teeth with wires, the other straightens people out with God knows what.

We propose that clinical psychology and orthodontics share many attributes. We are interested, in this paper, in demonstrating how psychological techniques might be employed effectively in the practice of orthodontics.

Orthodontics is the science of correcting nature's mistakes in the services of both esthetics and health. Clinical psychology is the application of behavioral science to day-to-day behavior with the objective of modifying that behavior in a direction more acceptable to the individual and to the society in which he or she functions. Thus, both disciplines attempt to improve the individual by physical correction and enrich his enjoyment of life through self-understanding and performance. Neither field has set standards for society, but both disciplines operate in service of cultural norms. Were it acceptable in our culture to have grotesque, misplaced teeth, the science of orthodontics might well be unnecessary. Were it also considered acceptable in our culture to "let it all hang out" or "do as you please," then most human behavior would be happily tolerated and clinicians in psychology would be unnecessary.

Focus for a moment on the orthodontist. It has been noted that orthodontists by the nature of their profession tend to be rather compulsive. It takes a very compulsive person to be able to complete orthodontic training, enjoy working with such minutiae, and be concerned about order and control in such a slow-moving process as the rearrangement of teeth. Closely associated with compulsion is a need for control, a respect for authority, and a need to be in an authoritative position. Thus, it is no surprise that the orthodontist may experience difficulty as he deals with adolescents who themselves are working out conflicts with authority. Is the very nature of his work psychological? Indeed it is. He alters the lines and proportions of the face. He changes the form of a key social instrument, the human smile. He introduces foreign metal objects into the mouth thus intruding upon and sometimes traumatizing the body. He institutes a doctor-patient relationship that may have parental implication and may, in fact, be occurring at the behest of authority figures. His role often is to intrude on the life of the prepubescent or early adolescent youngster with the statement "something is wrong with your smile, your teeth, and your face. We are going to fix it." While none would make such a bold statement, by behavior, role, and function, these are precisely some of the ingredients of the orthodontist's tasks that have powerful psychological implications.

It is not uncommon for there to be little or no training in the field of psychology for the orthodontic specialist. Yet, in the approach to the patient as well as in the conduct of treatment, there is marked psychological impact that will affect the results of therapy. Are there techniques that can be devised to ameliorate the negative aspect

of the orthodontist's work? Are there processes that could help with the troublesome, recalcitrant and unwilling patient? Were this possible, not only would the work be easier, but it would also be more successful both in quality and in length of time needed to achieve desired clinical results.

The interest and the process for achieving some of these desired goals grew out of the authors' discovery of a number of shared patients. Children who were seeing a clinical psychologist for ongoing consultation or psychotherapy were often mentioning their orthodontist and discussing their "braces." Conversely, the orthodontist was hearing remarks from his patients about the other "doctor" they saw for troubles and problems. In shared observations the orthodontist and psychologist discovered that these patients were frequently the more difficult ones in the orthodontic practice.

For purpose of our research and discussion we have characterized the "difficult" patient according to the following criteria.

1. Frequent absence from scheduled appointments.
2. Frequent damage to orthodontic appliances.
3. Unpleasant or negative office behavior.
4. Failure to attend to proper hygiene.
5. Failure to wear headgear and/or elastics.
6. Failure to wear retaining devices.

In short, these are the youngsters who simply do not cooperate with the program for correcting their orthodontic problems. The question is why? To this there could be several answers.

First, orthodontics may frequently be an unwilling tool in a parent-child conflict. The mean age for orthodontic treatment places most youngsters in prepubescence to early adolescence. Classically, these are the ages when repressed conflicts toward parent figures come into full expression. Thus, whether the child really wants the work done or not is not the main issue. The struggle is basically between the child's ownership of his or her own body and the parents' demands that the child does as he is told. Through orthodontics, then, the parent may be saying, "we will fix your body the way we like it." The child, in turn, may be revolting in a passive-aggressive way by saying, "It's my body and I shall resist any efforts you might make to change it."

Second, it has long been recognized that human beings have different pain thresholds. More important, there are very different reactions psychologically to pain. Pain, particularly in the oral region, has great psychological significance. The mouth, per se, is the organ for the ingestion of food, the articulation of thoughts and feelings, an avenue for social expression, as well as an orifice of erogenous significance. Again, for the prepubescent or early adolescent youngster the intrusion of foreign devices and substances in the mouth may not produce as much pain as anticipated. Moreover, the pain that is produced may be vastly overestimated, not so much because innervation is superior, but because sensitivity psychologically is so much greater. Psychodynamically, the thinking of many young people would be "my body is trying to grow and develop, and you are hurting it."

Third, appliances in the mouth are visible and do alter the appearance of the smile and attract attention. Whether this social attention is positive or negative is entirely within the mind of the individual toward whom the remarks are addressed. For instance, youngsters are greeted with "tinsel tooth," "metal mouth," "tracky smile,"

and so on. Such remarks may produce anything from total withdrawal to a punch in the mouth. However, it is clear that there is always some sort of reaction. Some youngsters may actually wear the braces as a badge of pride; for them, being different is something to cherish and be proud of. Additionally, the increasing popularity of orthodontics over the past two decades probably makes a subculture of its own in the junior high or high school years. There are enough "other kids" who either are, or were, wearing appliances to make it not only acceptable but also a badge of having gone through a specialized tribal ritual.

However, it would be reasonable to expect that any social recognition can be construed by some children as negative. Long before any orthodontic device is ever applied, these youngsters may have been unwilling to accept any recognition, positive or negative, in their environment. They are fearful of it and withdraw from any situation which singles them out and produces any significant social feedback. Thus, day in and day out, the appliances become a means for negative reinforcement. The patient's hope is that somehow through inattentiveness or passive rejection of the process the whole thing will go away.

Fourth, there is a belief that the basic aim of the orthodontist is essentially an esthetic result. It is intended to make one more attractive and pleasant; one would, in effect, be more socially pleasing. On the surface it would appear that this is a pervasive value held by most people. Yet, there are many whose self-image is essentially negative. They could not possibly be made attractive because they do not feel so to start with. All the perfumes of Arabia could not wash away the odor of such pervasive negative self-concept. It is not possible then for such youngsters to become invested in the orthodontic process because it is not possible for them to own the results. They actually do not want to look better, because they do not feel better. They do not want to be more attractive, because they feel themselves to be basically unattractive. This feeling of self-deprecation and negativism has little to do with the teeth and mouth but is locked within the attic of many past experiences and has to do with the nature of that child's being. Of all of the possible reasons for difficulty, this is the most troublesome. What these youngsters are saying is that any external cosmetic improvement will not make me look better and is an unwelcome assault on my self-assumption which is not only negative but has become, over the years, rather gratifyingly so. It is hard to win fighting such an uphill battle.

Whatever the problem, it is clearly primarily one of attitudes. Attitudes may be defined as either conscious or unconscious fixed-belief systems that may center about any issue or thing and tend to have either a positive or negative valence. Research has demonstrated that it is easier to take a mildly positive attitude and make it more positive or a mildly negative attitude and make it more negative, rather than to switch valence entirely.

The task with the difficult patient is to do three things:

1. Conceptualize, describe, and define the various attitudes toward orthodontics in young patients.

2. Develop instruments which will assess attitudes before treatment. Predictive psychological devices have long been used in industry, government, education, and the like. Attitude surveys and attitudinal instruments are widely employed in a variety of fields, both medical and nonmedical. Devising such an instrument would allow the ortho-

CHART I

3. I'm really looking forward to what I will look like when the braces are off.
7. I'm worried about being called "tinsel mouth" at school.
18. I'm not the least bit frightened about getting braces.
24. Having a lot of wire in your mouth seems pretty uncomfortable to me.

Disagree strongly	Disagree	No Opinion	Agree	Agree strongly

dontist to predict which patient would require greater attention in combating destructive or harmful attitudes and patterns toward the treatment process.

3. Once the patient has been identified, the next task is to develop plans and processes to modify or counteract the results of a negative attitude pattern. This process should be effective for office use and we have termed it "Brace Yourself."

A variety of hypotheses were considered, based upon the above theoretical considerations: 1) Negative reaction to *authority* will be higher in noncompliant than in compliant patients. 2) Noncompliant patients will show greater concern over orthodontic appliances as they affect their *social appearance.* 3) Noncompliant patients will show greater concern over the *invasive* quality of orthodontic appliances than will compliant youngsters. 4) Females, generally, will be more concerned about their *appearance* than will males. 5) Males will be more frightened of the *invasive* process than will females.

Materials and Methods

To evaluate these hypotheses an instrument was developed called the Orthodontic Attitudinal Test Survey, or OATS. The OATS test consisted of 28 items designed to tap patient attitudes with regard to appearance, authority, and invasion. A high interjudge concordance was registered with regard to agreement of the placement of each item in the three scale categories. A sample of four items and the scale of the OATS test is seen in Chart I.

To test the hypotheses the OATS test was administered to ninety subjects. Thirty children were selected based on their generally noncompliant attitude toward orthodontics. Noncompliance was measured utilizing the criteria outlined in the discussion: namely, damage to appliances, missed appointments, refusal to observe hygiene, refusal to wear headgear and elastics, and general inappropriate behavior in the office or with the office staff. Thirty patients were selected by the office staff as being "compliant," measured by the same criteria. Additionally, to conduct a more careful item analysis of the OATS instrument, thirty more patients were chosen who could not be classified, thus giving the group more of an appearance of a normal curve. Information with regard to age and sex was also collated for the study.

The results of the OATS were processed in the psychology department of the Massachusetts General Hospital and fed into the Harvard University computer.

Ages and frequencies on the compliant and noncompliant subjects are presented in Table I. One can see from the table that the sample utilized would be typical for most orthodontic practices.

Compliant and noncompliant means on the various sub-tests are presented in Table II. T-tests were performed between the groups with statistical significances being noted.

It is readily apparent that with regard to *appearance* there is no signifi-

TABLE I

Frequency Distributions

Age	9	10	11	12	13	14	15	16	17
Frequency	1	1	9	13	10	12	9	3	2
Percentage	1.67	1.67	15.00	21.67	16.67	20.00	15.00	5.00	3.33

N = 60 Mean age = 13.15 SD = 1.73

TABLE II

Basic Statistics and T Tests by Scale

Variable Description	*Name*	*Mean*	*SD*	*Variance*
Appearance Scale	Appearance	3.500	0.347	0.121
Group 1	Compliant	3.530	0.311	0.097
Group 2	Noncompliant	3.470	0.378	0.143
		Difference	*SE*	*T-Test*
	Group 1 vs Group 2	0.060	0.091	0.659
		Significance Over .500		
Invasion Scale	Invasion	2.186	0.608	0.370
Group 1	Compliant	2.093	0.575	0.331
Group 2	Noncompliant	2.278	0.626	0.391
		Difference	*SE*	*T-Test*
	Group 1 vs Group 2	—0.184	0.158	—1.169
		Significance .248		
Authority Scale	Authority	2.212	0.607	0.368
Group 1	Compliant	1.980	0.449	0.202
Group 2	Noncompliant	2.444	0.654	0.427
		Difference	*SE*	*T-Test*
	Group 1 vs Group 2	—0.464	0.147	—3.150**
		Significance .003		
Mean All Scales	Total	2.805	0.263	0.069
Group 1	Compliant	2.724	0.235	0.055
Group 2	Noncompliant	2.886	0.265	0.070
		Difference	*SE*	*T-Test*
	Group 1 vs Group 2	—0.162	0.066	—2.463*
		Significance .017		

cant statistical difference between the compliant and noncompliant subjects. The same is also true with regard to *invasion*. However, there is a strong and clear statistical significance between the means of compliant and noncompliant subjects with regard to *authority*. The significance is at the .003 level of confidence. Thus, the hypothesis suggesting that authority conflicts would be greater for noncompliant than for compliant patients was confirmed. The hypothesis that fear of invasion would be greater for the noncompliant than for the compliant was not confirmed, nor was the hypothesis considering appearance. A comparison of the means of compliant and noncompliant populations, generally, reveals statistically significant differences at the .01 level of confidence. Obviously, the greater amount of this difference would be accounted for in the scores for authority when added into the total of all the scores for the OATS.

Although space does not permit the detailing of all additional analyses, certain findings are worthy of note.* An analysis of variance yielded significant results at the .04 level of confidence when comparing the means on appearance items on the OATS test for male and female subjects. Females, generally, showed a significantly higher concern with appearance in either a positive or negative sense than did males. The items on the OATS test do not differentiate between positive and negative aspects of appearance in orthodontics but are designed rather to measure the social implications of appearance.

Invasion items, too, yielded interesting results. It is clear that males demonstrate a significantly higher concern with the invasive process of orthodontics than do females. An analysis of variance yielded a significance level of .03. Thus, the hypothesis concerning sex differences in invasion and appearance were both confirmed.

Additional evaluation of the data showed further that males differ from females in regard to authority whether orthodontic patients or not. Boys are more likely to act out aggressively toward authority. Girls, on the other hand, are well-known to have a more passive or perhaps passive-aggressive attitude toward authoritative figures. The fact that these items on the OATS test differentiated so clearly on this variable argue favorably for the validity of the instrument. Perhaps even more interesting, however, is the difference between compliant and noncompliant patients in this regard. Noncompliant patients, generally, revealed a highly significant score with regard to authority. They are generally more resentful of authority than are compliant patients. This, too argues well for construct validity.

Discussion

An attempt has been made to evaluate and measure the impact of aggression, pain, authority, invasion and social acceptance upon patient cooperation in orthodontic treatment. From the considerable statistical data gathered, we feel the OATS test to be a reliable predictor of problems with authority, highly correlated with patient success. The orthodontist is placed in direct conflict with the unrestrained and/or indifferent adolescent.

Thus, it seems advantageous to develop programs that would address the feelings and attitudinal problems of young people entering the practitioner's office. Those presently in existence tend to take an authoritative mode in and of themselves. That is, they are geared toward telling young people that they should brush their teeth, wear their headgear, make appointments, and not

*Specific statistical data are available on request from the authors.

break their appliances. Such programs or private conversations with the orthodontist may often stress such facts as:

"You should understand how much money your folks are spending on this and be grateful to them"; or, "If you really want to do this, you had better cooperate" and so on.

Booklets, programs and personal relationships based on this approach actually serve to increase the control battles that are likely to exist between orthodontist and patient. Nowhere does there appear to be an effort to ameliorate and deal with the *feelings* of the patients who, as adolescents, are dealing with the same things all of us once dealt with. They are feeling very much as if the orthodontist is a weapon in the parents' hands. This research points the way toward the development of two things:

First, it is important to develop instruments like the OATS and to refine the OATS test itself to be used as one tool in a selection armamentarium.

Second, it is important as well to begin to develop systems and processes that will address the patient's needs and deal specifically with the hidden feelings that can so often become an obvious cause in treatment failure.

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