A COMPREHENSIVE BEHAVIORAL MANAGEMENT METHOD

FOR ADOLESCENT ORTHODONTIC PATIENTS

by

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Submitted in partial fulfillment of the requirements

for the Degree of Master of Science in Dentistry

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CASE WESTERN RESERVE UNIVERSITY

May 1990

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Abstract

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The purpose of the present study was to create a structured counseling strategy for teenage orthodontic patients and to examine its possible effects on their cooperation. Twenty-two patients, 10 to 15 years of age, from Case Western Reserve University's Orthodontic clinic, were randomly assigned to six residents. The orthodontic residents interacted with the control group (12 patients) and their families in their customary manner. The experimental group (10 patients) were started after the student orthodontists had attended a three hour training session from the investigator as well as receiving a special manual and videotape prepared for this investigation. The videotape and the manual stressed the importance of creating a partnership between the patient and the orthodontist to improve the outcome of the treatment. Videotape modeling, behavioral contracting, problem-solving, self-monitoring, and parental support were all part of the counseling strategy. Patients were evaluated with an orthodontic cooperation scale (OPCS) (Slatker et al., 1980) by the residents and the investigator, one, two, and three months after appliance placement. Outcome data was collected at the end of the three month evaluation period of each group, and separate surveys were sent to the patients and the parents of both control and experimental groups.

The results of this study demonstrate that the comprehensive behavioral management method used can improve teenage patient cooperation ($p<0.0018$). Furthermore, both patients' and parents' satisfaction of the care received was increased ($p<0.0001$). Although short-term results were dramatic, long-term studies are needed to evaluate patients' response for an entire orthodontic treatment period.

DEDICATED

TO

My husband, Georges,
whose love, generosity, and humor, made our first years together so pleasurable and whose perfectionism challenged me to do my best.

My parents, Claudine and Henri Lustman,
whose unlimited love, support, encouragement and trust guided my life.

My brother, Patrick,
for his affection and close attention.

My grandmother, Fanny Sekler,
for her attachment and support of my studies.

My parents in-law, Denise and Daniel Rozencweig,
for their love and consideration,
and my sisters in-law, Eve Rozencweig and Anne Eisenberg.

All my relatives.

ACKNOWLEDGEMENTS

I would like to extend my sincere appreciation and gratitude to the following individuals:

Dr. Donald Enlow, Professor Emeritus, Past Chairman and Dean, Chairman of my Thesis Committee, for his encouragement, productive criticism and extreme patience in translating my "french" English into well written words.

Dr. Mark Hans, Chief Executive Officer and Graduate Program Director of the Orthodontic Department, for his great efforts in trying to make my education the best possible. The combination of his skepticism and enthusiasm regarding my project challenged me to do my best.

Dr. Sharon Comet-Epstein, Course Director "Issues and Trends", for her thoughtful assistance in the initial stages of this study. Our very first discussion opened my eyes to the complexity of behavior modification leading to the realization of the manual.

Dr. Dennis Drotar, Professor of Psychology, Case Western Reserve University School of Medicine, for his constructive comments and for his promptness in meeting with me when I needed it.

Dr. Varun Kalra, Director of the Orthodontic Clinic, for his suggestions and clinical teaching.

Dr Raymond Neff, Vice President for Information Services, Adjunct Associate Professor of Biostatistics, and Marylin Su, Statistical Consultant, for their assistance in processing the statistical data.

The Dental school, the Orthodontic Alumni, and Procter and Gamble, Inc., whose combined funding made the realization of this project possible.

Mrs. Laverne Vogel, Department Assistant, whose organization and promptness helped me in many regards.

Miss Gay Henderson for her skillfull and competent production of the videotape.

Miss Hannah Slodov for her talented drawings seen throughout the manual.

Mr. Karl Pfriem, for his diligent printing of the manual.

Drs. Ronald Neuger, Arthur Phelps, Douglas Amberman, David Fuller, and numerous Assistant Clinical Professors, whose kindess, professionalism, and humor made the many hours I spent in the Orthodontic department so enjoyable.

I also thank the Class of 1991 for their participation in my study, and especially Dr. Michael Taylor for his help, friendship, and encouragement.

Thanks to my classmates, Valerie Martone, Jose Chaques, Matthew Johnson, Georges Rozencweig and George Souris whose sensitive and intelligent friendships made my two years in CWRU's orthodontic residency program unforgettable.

TABLE OF CONTENTS

PAGE

ABSTRACT....ii

DEDICATION....iv

ACKNOWLEDGEMENTS....v

TABLE OF CONTENTS....vii

LIST OF TABLES....viii

INTRODUCTION....1

LITERATURE REVIEW....3

MATERIALS AND METHODS....47

RESULTS....65

DISCUSSION....91

LITERATURE CITED....116

APPENDIX I....124

APPENDIX II....185

APPENDIX III....208

LIST OF TABLES

TABLE		PAGE
I.	SAMPLES - DEMOGRAPHICS	66
II.	RATING CONSISTENCY - INDIVIDUAL EVALUATION OF EACH PARAMETER	68
III.	RATING CONSISTENCY - OVERALL EVALUATION	70
IV.	COMPARISON OF THE OVERALL LEVEL OF COOPERATION	72
V.	COMPARISON OF THE OBJECTIVE PARAMETERS OF PATIENT COOPERATION	72
VI.	COMPARISON OF THE SUBJECTIVE PARAMETERS OF PATIENT COOPERATION	74
VII.	COMPARISON OF THE PARAMETER " APPOINTMENT KEEPING"	74
VIII.	COMPARISON OF THE PARAMETER "APPLIANCE CARE"	76
IX.	COMPARISON OF THE PARAMETER "HYGIENE CARE"	76
X.	"APPOINTMENT KEEPING" AND "APPLIANCE CARE" CONSISTENCY	78
XI.	"APPOINTMENT KEEPING" AND "HYGIENE CARE" CONSISTENCY	78
XII.	"APPLIANCE CARE" AND "HYGIENE CARE" CONSISTENCY	80
XIII.	"APPLIANCE CARE" AND PATIENTS' COMPLAINTS ABOUT TREATMENT CONSISTENCY	80
XIV.	PATIENT OBJECTIVE SIGNS OF COOPERATION AND PATIENT BEHAVIOR CONSISTENCY	80
XV.	OBJECTIVE AND SUBJECTIVE SIGNS OF COOPERATION CONSISTENCY	82
XVI.	COMPARISON OF CONTROL AND EXPERIMENTAL GROUP SURVEYS MANN WHITNEY WILCOXON TEST	84
XVII.	COMPARISON OF CONTROL AND EXPERIMENTAL GROUP SURVEYS CHI SQUARE TEST	85

LIST OF TABLES (continued)

TABLE		PAGE
XVIII.	PATIENT SURVEY PARAMETER "4" AND "8" CONSISTENCY	87
XIX.	PARENT SURVEY PARAMETERS "1 & 2 & 3" AND "4" CONSISTENCY	89
XX.	PATIENT SURVEY PARAMETER "4" AND PARENT SURVEY PARAMETER "6" CONSISTENCY	89

INTRODUCTION

The question of why teenage orthodontic patients do or do not cooperate at a satisfactory level during treatment requires more than a single answer. Many authors have tried to predict it (Kreit, Burstone, Delman, 1968; Allan, Hodgson, 1968; McDonald, 1973; Crawford, 1974; Starnbach, Kaplan, 1975; Weiss, Eiser, 1977; Swetlik, 1978; Clemmer, Hayes, 1979; El-Mangoury, 1981; Elgolf, Begole, Upshaw, 1989). However, anticipating patients' cooperation during their whole treatment depends on so many variables that it has proven difficult to give an accurate evaluation of the particular factors that could predict good cooperation.

Why do not we try, instead, to modify patient behavior?
Weiss and Eiser (1977) stated: "Most orthodontists would admit they know less about and are less skillfull in motivating their patients than in anything else they do. One way to remedy this deficiency might be to utilize operant conditioning methods which have already trained mute schizophrenics to speak and taught pigeons to operate torpedos. A technique which can accomplish that much might someday entice children in wearing rubber bands, brushing their teeth, and abandoning bubble gums. But that time has not yet arrived. No one has designed the proper schedule of reinforcement or the right system of rewards to shape the desired behavior". Such a technique

requires a working combination of effective communication, social psychology and clinical orthodontics. In 1979, Miller and Larson pointed out that, considering psychology and orthodontics, "One is mental, the other one is dental". On the other hand, Story (1966) and L. Graber (1980) stressed that interdisciplinary considerations may not only be useful but also necessary. In recent years, behavioral modification utilizing videotape modeling has evolved rapidly as teachers began to exploit the distinct advantages of "live" and simulated presentations as teaching aids. At the same time, psychologists and psychiatrists started to define and emphasize the importance of interpersonal relations.

The purpose of the present study is twofold. First, to synthesize and begin to utilize the research already done in different areas of medical care using videotape modeling and behavioral modification, and create a structured counseling strategy for teenage orthodontic patients. Second, to statistically test a hypothesis that this counseling strategy can modify and effectively control the behavior of teenage orthodontic patients leading to improved cooperation during treatment.

LITERATURE REVIEW

The research done in different areas of medical care on behavioral communication and videotape modeling constitute the theoretical basis of the method experimented in this study. This literature review contains six sections:

1 - factors affecting adherence

2 - motivation techniques in orthodontics

3 - effective communication

4 - importance of the team effort

5 - counseling principles

6 - importance of audiovisual modes

To facilitate understanding of this review, we must first define two terms. **Compliance** connotes a passive role with the patient faithfully following the directions and advice of the health care provider. The term noncompliance often presumes that failure to comply is the patient's fault. **Adherence** implies a more active, voluntary, collaborative involvement of the patient in a mutually acceptable course of behavior to produce a desired therapeutic result (Meichenbaum, Turk,1987)

Influencing patient's cooperation, over a prolonged period of time, is a very important task of the orthodontist. The incidence of patients failing to cooperate properly is alarming (Oliver, Knapman, 1985). Patient noncompliance can destroy the best treatment planning and the most promising treatment mechanics; it is always a source of frustration and anxiety for the orthodontist (Gross, Samson, Sanders, et al., 1988).

1 - FACTORS AFFECTING ADHERENCE

1.1 - Patient variables

Many orthodontists attribute nonadherence to patient characteristics. The search for stable factors that characterize the nonadherent, uncooperative patient has met with little success (Gabriel,1968; Allan, Hodgson,1968; Burns, 1970; Crawford,1974; Starnbarch, Kaplan,1975; Weiss, Eiser, 1977; Clemmer, Hates, 1979; Slatker, Albino, Fox, et al., 1980; Gross, Samson, Sanders, et al.,1985; Woodlass, Shaw, Viader, et al., 1988; Gross, Samson, Sanders, et al., 1988). Starnbach (1975) found that the excellent patient tended to be a female Christian with a working class father. Crawford (1974) found no relationship between age and rating of cooperation. Broeckman (1969) noted greater cooperation among girls over 14 years of age; on the contrary, Weiss and Eiser (1977) found more cooperation by patients under 12; older children were held to be psychologically resistant to the demands of orthodontic treatment because of their involvement in Oedipal

conflict (Graber, 1971). Allan (1968) stated that "the patient more likely to be termed uncooperative is more than 14 years of age, of superior intelligence, hard-headed, independent, aloof, often nervous, temperamental, impatient, individualistic, easy-going, self sufficient, intolerant of prolonged effort or attention, and tends to disregard the wishes of others when his own desires are involved".... Graber (1980) has observed a strong relationship between self-satisfaction with dental appearance and self-esteem, but a number of studies have failed to establish a significant relationship between self-concept and cooperation (Jarabak, 1965). In contrast with the absence of correlation between any of the above mentioned variables, ratings of patient cooperation in the orthodontic office seem to be related to patient's cooperation in school (Kreit, Burstone, Delman,1968; Burns, 1970; Clemmer, Hayes,1979). This last variable reflects the mature attitude of a generalized personality trait.

As Clemmer and Hayes (1979) mentioned, ratings of patient cooperation may or may not reflect actual patient behavior. Typically, the predictive ability of the various studies is minimal because ratings based on refined global criteria are subject to considerable imprecision and experimenter bias (Woodlass, Shaw, Viader, et al., 1988). Setzer and Hoffman (quoted in Meichenbaum,Turk, 1987) conclude that even the most unmotivated and uncooperative patients are not necessarily the most nonadherent. Even if these preselection methods could be proven effective, the "anti-democratic bias inherent in their use would make them unattractive to many practitioners" (Graber, 1971).

Most of the time an orthodontist's appraisal is done through his subjective feelings and his background e.g. " this child is a nice boy, this one is excited, or this one is aggressive...". The reactions of the patient will depend on his age, his maturation, his background, his ability to respond to long term consequences of behavior, his oral-care past and his psychological and affective past. In general, it has been shown that there is a strong relationship between the degree of patient satisfaction, the health care provider, the treatment regimen, with the level of adherence. Satisfaction is closely related to the degree to whitch the patient's belief and expectations have been met (Meichenbaum, Turk, 1987). Nonadherence, that is to say the patient rejection to adhere to the practitioner's suggestions can be viewed as:

- A response to the negative features of therapy as too demanding; "I feel pressured".
- A self perception of not having any problems; " I don't need it ".
- The perception of not having the choice about whether to seek treatment.

Meichenbaum and Turk (1987) conclude that regardless of the source of beliefs contributing to nonadherence, there is a critical need for the health care provider to give patients the opportunity to express their point of view, goals, nature of the problem, how they feel they should be treated and to recognize that all aspects of the perspective will change over time. This is why two important behavior determinants are introduced: The locus of control and the locus of responsibility.

"The health locus of control" (HLOC) is one's individual belief of who or what can influence one's own health (Jacob, Plamping, 1989). It is a

multidimensional concept that consists of three dimensions :

- "Chance HLOC" is the belief that, in general, health outcomes are largely controlled by chance or fate.
- "Powerful others HLOC" is the belief that, in general, the world is ordered and predictable and that health outcomes are largely controlled by powerful others like dentists.
- "Internal HLOC" is the belief that, in general, one's own actions can lead to the attainment of various health outcome in a fairly predictable way.

The HLOC is not a personality trait. For each person it will vary between situations and over time, because it is a dynamic expression of one's current beliefs. It is only one determinant of behavior. If a patient doesn't value the outcome of his behavior, he is unlikely to act to achieve that outcome (Jacob, Plamping,1989). Studies have placed a person on a continuum relative to internal and external locus of control. These studies show a significant relationship between internal locus of control and motivation (Rozencweig,1988; Clemmer,Hayes,1979; Crawford,1974; DiMatteo,M.R., DiNicola, 1982; El Mangoury,1981). On the contrary, Swetlik (quoted by Clemmer, Hayes,1979) did not find a relationship between headgear wear and a measure of locus of control. He indicated that patients concerned about how they were regarded by others would initially resist headgear wear but were more likely to wear headgear nine weeks later. According to Egolf, Begole and Upshaw (1990), this internal/external locus of control concept is limited because it does recognize all the personality traits necessary for a

construct of orthodontic patient personality. It cannot be assumed that "internal" HLOC is always better than "chance" or "powerful others" HLOC for two reasons. First, HLOC refers to the beliefs about one's influence over outcomes such as external events and the behavior of others; it does not refer to one's beliefs about the ability to control one's own behavior. Second, HLOC is only one determinant of behavior. A person's psychological status and situational constraints must also be considered (Jacob, Plamping, 1989). This is the reason why these authors describe another behavior determinant, the Locus of responsibility.

"The Locus of responsibility" refers to the ability to control one's own behavior.

- "Person-centered" individuals generally emphasize the understanding of a person's motivations, values, feelings and goals. They believe that success or failure is attributable to the individual's skills or personal inadequacies. A person-centered patient takes credit for healthy teeth and blame for caries.
- "Situation-centered" persons view the social environment as more potent than the individual. A situation-centered patient will not assume responsibility for her dental health, focusing instead on the price of healthy food, the rising cost of dental visits etc... (Jacob, Plamping, 1989).

Anxiety is another "patient" variable affecting treatment adherence. Anxiety may exist because the orthodontist is identified with dentists who

give shots or do extractions (Maj, Grilli, Belletti, 1967). Patients are not only anxious about pain and uncertainty, they also fear the practitioner's judgments of them. When people are not anxious at all, they may not listen well or try to learn, because interest and motivation are low. A small amount of anxiety promotes attention, learning, attitude change and behavior change. However, as anxiety grows, it blocks the ability of people to attend to the relevant stimuli and to think clearly (Jacob, Plamping,1989).

1.2 - Treatment variables

Of the many areas where adherence is needed during the orthodontic treatment, the intrusiveness of the regimen applied and prescribed on the patients' lives, and the duration of the treatment play a significant role in influencing adherence. In contrast, there seems to be minimal association between the amount of information patients have about their problem and adherence (Meichenbaum, Turk,1987). In order to better understand the questions of why do patients cooperate and why do they suddently may fail to adhere, the reasons for motivation as well as the problems that may interfere with the cooperation are reviewed.

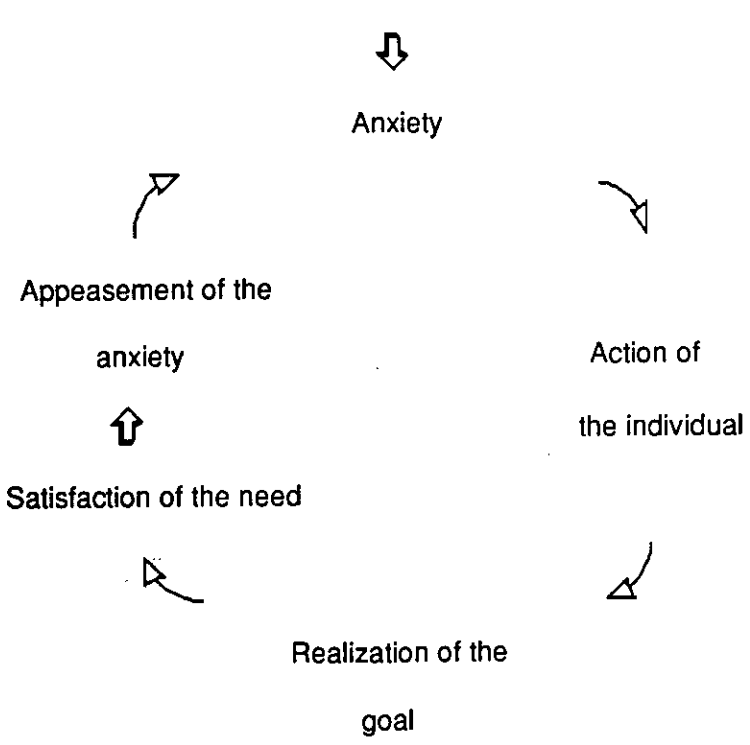
1.2.1 - The reasons for motivation

"Action springs out of what we fundamentally DESIRE...and the best piece of advice which can be given to would-be persuaders, whether in business, in the home, in the school, in politics, is: First, arouse in the other person an

eager want. He who can do this has the whole world with him. He who cannot, walks a lonely way" (Harry A. Overstreet).

More specifically, as defined by Eurich (quoted by Gabriel,1968): "motivation" refers to any force or drive within the individual that impels him to some sort of activity in response to some sort of incentive or stimulus in his environment. For Weinstein (1982), the force or drive is: "generating interest, showing concern, listening and providing information". The patient becomes aware that a problem exists and that he owns that problem. He must understand the problem and its implications, and he must believe that his behavior can produce desirable outcomes. He must agree upon an acceptable and reasonable course of action (Chiodo, Rosenstein, Clarke,1986).

Motivation is a cycle (Derbyshire, quoted in Rozencweig,1988):



Recognition by a parent or child of an occlusal anomaly is one of the many factors which may influence a desire for orthodontic treatment. Gosney (1986) noticed in her study that, although parental influence was not indicated by most patients to be a major factor in motivation to have treatment, greater indirect parental influence seems having been operating at a subconscious level. The initial recognition of the dental anomaly by the parents is greater than their involvement in the suggestion for treatment. Even when orthodontic irregularities are recognized by the parents, many think the severity of the irregularity does not warrant specialist treatment. Luffingham and Campbell (1976) found that parents in Glasgow may more readily appreciate severe malocclusion than moderate irregularities. Their results contradict Oliver and Knapman's (1985) study which demonstrates a close agreement between the patient's and the parents' estimation of the severity of the malocclusion prior to treatment.

The decision to seek treatment often originates with the mother. Some mothers seem to feel guilty about passing on inherited traits to their children. While impaired function of the teeth is a factor for some parents, most of them focus on psychological and social handicaps due to perceived or actual facial disproportions (Lee, Friedman, Mc Tigue, 1981). Parents recognize that it can be viewed as more important for a female to have straight teeth and pretty smile than it is for male (Baldwin, Barnes, 1966). Other parents will react in the opposite way. Parents of a dentofacially abnormal child can indicate that the defect in appearance does not matter, that some other qualities are much more important, and decide not to seek

treatment. Their child may be able to set up self-concept defenses (Janis, quoted by Graber,1980). All these studies demonstrate how parents' conscious or unconscious reasons influence patients' motivation.

Is the decision to seek treatment always made by the parents? Gosney (1986), in an experimental study, has demonstrated the following order of importance for various factors which influence patients to accept orthodontic treatment. The first two parameters are "improve dental appearance" or "follow a dentist's advice". Third is the mother's wishes. Fourth, the father's wishes. Fifth, seeing others wearing appliances. Although most of the adolescent patients fail to identify their malocclusion, they are not always satisfied with their dental appearance. An individual child's personality, his/her background can influence his/her perception of an orthodontic problem. Some of them with severe irregularities would be satisfied with their teeth, while others with negligible irregularities would not. The accuracy of a patient's description of his malocclusion is not related to age, sex, intelligence, social class, general self esteem, teasing or mirror viewing habits. It is related to regular visits to their dentist (Shaw,1981), (Lindsay, Hodgkins, 1983). Parental wishes may be more important for dependent adolescents, but more self-reliant adolescents may be less influenced by parental or peer approval than by the severity of malocclusion (Lewit, Virolainen,1968).

Gosney (1986) observed that the main factors influencing the child's desire for orthodontic treatment were the presence of crowding, and especially the presence of an overjet; She found that almost half of the

patients with severe overjet had teasing experiences. On the other hand, Graber (1980) stated that the need for peer approval is not found to be a detrimental factor in adolescents' desire for orthodontics. This may be due to the increased number of youngsters wearing appliances and their value as a badge of higher socioeconomic status. Patients expect increased popularity, improved speech, better looks, less teasing about appearance, and more friends as a result of orthodontic treatment. For girls, physical attractiveness is seen as a means for social advancement, specifically in obtaining a suitable marriage partner. For boys, it is considered important in obtaining jobs that require personal influence. The desire for orthodontic treatment will be completely different between a child who relies on parental opinions and a child more responsive to self generated ideas. It seems quite probable that once a child has been made aware of a defect by someone such as a parent or a dentist, attention is focused increasingly on it, and progressive concern about the defect develops.

1.2.2 - Barriers to motivation

General knowledge does not appear to be related to better adherence. Adherence is related to the extent to which the patient knows what behaviors the treatment requires along with how and when to perform these behaviors. Adherence also relates to a patient's ability to anticipate problems and knowledge of what to do if problems arise (Meichenbaum, Turk, 1987). To be successful, the orthodontist must understand his/her patient. He must know the factors which may deter him/her from undergoing orthodontic treatment,

and try to anticipate any failure of cooperation by informing both the child and the parents (Gross, Samson, Sanders, et al., 1985).

Patients and families experience an appreciable degree of inconvenience associated with orthodontic treatment. For example, patients are accompanied by a working parent who must take often time out of their work day to transport the child to the orthodontist. Most of the children experience anxiety over their orthodontic treatment, especially when it involves the use of a fixed appliance. Anxiety is experienced more often by girls than boys. Another source of anxiety is the anticipation of dental extraction. Discomfort is mentioned as the main worry over speech difficulties even when removable appliances are used. Head gear is uncomfortable and embarrassing. The distribution of factors causing concern to those patients who expressed worry about their orthodontic appliances were first, discomfort, second eating or visibility, and last, forgetting to insert appliances (Gosney,1985). One major adjustment factor relate to eating habits and the experience of food getting caught in their appliances (Tayer, Burek,1981). It is interesting that the major reason for stopping treatment, among teens who have undergone orthodontic treatment, was pain. The major reason for continuing treatment was anticipated aesthetic benefit (Oliver, Knapman,1985). Thus, a balance must be reached between the benefits of treatment and the psychological distress caused to patients. This is especially true if the decision to have treatment followed parental pressure.

1.3 - Effective communication

Most people take verbal and non-verbal behavior for granted. Many of us may not be effective or natural communicators (Corah, O'Shea, Bissel, 1986). Individual communication styles often develop largely as a result of role-models observed and the reactions of others to the efforts made.

Communication is a process, a shared responsibility. Communication skills are both important and learnable. Improving them will increase job satisfaction and will frequently lead to a mutually satisfactory outcome for the patient and the practitioner (Jacob, Plamping, 1989). Meichenbaum and Turk (1987) have stated: "Patient satisfaction resulting from good communication and rapport and continuity of care increases the likelihood of adherence. It is without saying that a caring attitude, and a warmth, approachable, personalized treatment approach can significantly enhance patient satisfaction and treatment adherence.... Insofar as we adopt an open, honest, supportive style, demonstrate, respect, praise the patient and provide clear explanations, treatment adherence will increase". As a matter of fact, preventive activities are no longer viewed from a compliance perspective, an authoritarian doctor-patient relationship, but rather from a patient-oriented frame of reference (Weinstein, Getz, Milgrom,1983), (Barkley, King, Mathewson, et al., 1977).

1.4 - The role of the orthodontic team in patient motivation

A team which works well together has members who are secure in their own roles and are therefore more comfortable sharing power and decision making with patients (Jacob, Plamping,1989).

2 - MOTIVATION TECHNIQUES IN ORTHODONTICS

Although no structured program to enhance patient motivation for orthodontic treatment has been described in the literature, techniques are described to help the patient to keep his appointments, maintain good oral hygiene, and wear his removable appliances.

2.1 - Appointment keeping

"Irresponsible behavior" concerning scheduled appointment may result in less effective treatment or unnecessarily extended treatment periods because of discontinuous care. When patients fail to appear for a scheduled visit or arrive late for an appointment, this results in staff frustration and a waste of valuable resources.

Sometimes, failure to keep appointments is an expression of fear which can relates to the relationship between patient and practitioner. Sometimes

it is just a problem of agreement. Graber (1971) informed his patients at the beginning, in a pleasant manner, "we accept only patients on one condition only: all appointments must be done during school time if the patient is in grammar school or every other visit if he is in high school...This way, we can motivate better, we can get the treatment done more quickly, and we will not be keeping the patient waiting for long periods of time". Gross et al. (1988) describe successful results in improving patient compliance with appointment keeping by entering in a lottery system the patients who kept their appointment and appeared on time.

2.2 - Maintaining a good oral hygiene

The presence of metal bands, arch wires, springs... in the oral cavity predisposes the orthodontic patient to enamel decalcification, dental caries and gingivitis. Behavioral self-management on oral hygiene adherence among orthodontic patients seemed to result in significant improvements for an experimental time of three months (McGlynn, Lecompte, Thomas, et al., 1987). Clark (1976) felt that nearly every patient had the inner capability for achieving excellent oral health and that as orthodontists we had the opportunity to help patients recognize this potential. This author observed that patients' self-respect increased as their interest increased in caring for themselves. The method he implemented in his office consisted of giving information through illustrations, use of a phase contrast microscope, and demonstration of hygiene during initial examination by a trained staff, as

well as emphasizing understanding of the responsibilities during the consultation. He suggested that the orthodontist, the child and the parents all must agree to discontinue the treatment if the proper level of health is not maintained. During treatment hygiene care is reinforced.

Lee (1981) gave a chart to patients for recording the number of times patients brushed each day. They based their study on the fact that self-recording some aspect of behavior can modify that behavior or increase an individual's awareness of certain behaviors. The authors found that the visual reinforcing value of a chart increased the frequency of brushing, but not necessarily the plaque and gingival scores.

Graber (1971), after having instructed patients with a slide-tape show, gave explanations and demonstrations utilizing the "chemical neutralizer technique". His method consisted of brushing the teeth of the patient with soap in front of the other patients in his office. He believed that the unpleasant taste, the peer pressure and the embarrassment are strong weapons against a repeat bad oral hygiene performance. The same approach is reported by Hickam (1977).

2.3 - Patient compliance in wearing appliances

Failure to adhere to prescribed removable appliance wear schedules will result in either slow treatment response or no response at all. This is true, not only for clinical alteration of facial bone development with removable functional appliances and headgear, but also for achievement of desired

dentoalveolar change with removable intraoral elastics. Behavioral methods seem to offer an easy and effective way to alter patient response (Gross, Samson, Dierk, 1985). Parents have indicated that a reward program increases pleasant parent-child interactions, which has a positive effect on the parent-child relationship.

Banks and Reed (1987) have tried to measure the cooperation of the patients in wearing headgear with a "Timing Headgear Motivators System". This is an appliance which provides interesting feedback to the patient but does not give a consistently dependable recording of headgear usage. Other authors proposed a totally different approach. For example, Hickam reported that if a patient does not wear his rubber bands, he will tell the child not to come back to the office unless he has worn the rubber bands for three weeks in a row. The patient is dismissed without an appointment if he hasn't called for six weeks. When a patient doesn't wear his headgear fourteen hours a day (reported on a chart), the author ties in the appliance. Hickam (1977) stated that patients don't have the maturity to decide whether they will cooperate or not. Tying the headgear in relieves them of having to decide for themselves and as a result, they are happier.

2.4 - Other motivational techniques in orthodontics

Rubin (1983) emphasized the importance of selecting patients depending on their readiness, of increasing patient's sense of responsibility, and of signing a contract with the teenagers. Harrington (1986) gave the patient the

choice between two alternative treatment plans. This is a way to get patient's interest and an increased treatment acceptance. Bradley (1986) motivates his patients by sending personalized computerized reports to them.

Graber dramatized ideas by showing treated cases or audiovisual sequences, or by making the patient pay a fee after multiple appliance breakages, is Graber's method (Graber, 1971). Bass (1987) took pictures of Class II div 1 cases in an optimum protrusive position of his patient. By giving the pictures to the child, he throws down a challenge, and then gives a set of goal for the patient to work toward and to discuss with his family and friends.

3 - EFFECTIVE COMMUNICATION

Interpersonal relationships is more and more viewed as "the single most important factor in patient's commitment" (Wright, LeBloch, Lapin, 1986). In order to better understand this parameter, an outline of what the communication process consists of will be given, followed by the description of effective communication skills.

3.1 - The communication process

3.1.1 - The "transactional analysis"

Berne (1973) was one of the first to analyse the communication process.

He described each confrontation with another person as being a transaction. A transaction in the psychological sense consists of a stimulus and a response to that stimulus. Communication results when either a verbal or non-verbal response to a stimulus occurs.

According to the transactional analysis, when a person communicates, he or she expresses an internal response of the ego state within which he/she is operating. These ego states consist of three functioning psychological parts of everyone's personality: child, parent and adult.

The "Parent ego state" comes from our real parents and other authority figures. It operates without explanation or rational justification but with our values and principles, and may involve moral judgments. The "Adult ego state" is the rational, objective part of our personality. It will give explanations for decisions and actions. Only the adult knows what other states are doing. By analyzing the other states, the adult is made stronger. The Adult is always a positive winner. The "Child ego state" functions largely via emotions and feelings such as joy, panic, happiness, rage, humor, fear and grief. It is the intuitive part of us which experiences awareness, spontaneity and fun. We can shift from one ego state to another, and by careful observations we can determine which ego state is largely in control.

In his analysis, Berne (1973) found that successful transactions are generally those in which the ego state that responds or answer is the same one that was originally addressed. Complementary transactions (Parent-Child) are also considered successful. In Preventive care, however, these transactions are unlikely to produce a long-term behavior change. People can

learn effectively when they choose to learn or try to change. Crossed transactions are very unsuccessful(Parent-adult), they lead to communication failures.

Berne's analysis can help gain new awareness of interactions in the orthodontic setting (Jacob, Plamping, 1989; Stephens,1985). Berne believed that people can analyze their own behavior in order to work towards personal change.

3.1.2 - Practitioner-patient relationship models

(Weinstein, Getz, Milgrom, 1983; Jacob, Plamping, 1989)

An awareness of one's own use of power in interactions with patients is only the first stage to promote participation in communication (Jacob, Plamping, 1989). There are three primary models of practitioner-patient relationships:

a) The activity-passivity model

The "activity-passivity" model applies when the carer does something to, or operates upon, the patient, with no input from the patient.

b) The guidance-cooperation model

The "guidance-cooperation" model refers to instances in which a patient actively seeks help and is capable of cooperating with the recommended treatment. In this case, while both participants are active, they operate with the understanding that the dentist is in a position of power. It is the model that most patients assume will operate and have been conditioned by experience to accept.

c) The mutual participation model

The "mutual participation" model assumes that both participants have equal power, need each other and will work towards choices and actions satisfying to them both. This last model is particularly appropriate to work toward long term behavior changes. Achieving it requires considerable learning on the part of the practitioner and may involve giving up covert ways of controlling the patient, of overemphasizing our professional distance and inhibiting our patients, and of creating an environment which reduces people's capacity to be involved and ask questions.

3.1.3 - Factors facilitating communication

Rozencweig (1988) said that a practitioner has to enter the motivation aspect of his/her practice as he/she enters into religion. Interest and commitment are, indeed, important factors. Not being enthusiastic and not believing in the efficacy of motivation, will communicate a negative attitude to the patient (Corah, O'Shea, Bissel,1986; Weinstein,1982). The practitioner's proper attitude is essential to make the other person happy about doing the things he suggests or at least relieve the child's fears and encourage him (Maj, Grilli, Belleti, 1967). If one desires to work *with* one's patients rather than *on* them, building a relationship must be a goal. To do so it is important to accept a patient in spite of his exasperating characteristics (Jacob, Plamping,1989).

Practitioners often find motivational suggestions offered to be sensible

and potentially useful, but it all boils down to a question of who has the time to do what is being proposed. The few minutes required, in fact, can end up saving time for the doctor (Meichenbaum, Turk, 1987). The first step is to check if the practitioner believes that communication is an important clinical tool, which can be learned even in adulthood. Then, with appropriate understanding and training, clinicians often realize that communication skills are psychological tools which enhance their use of technical skills (Jacob, Plamping, 1989). "Being aware, craving, and being skillful " are the keys for "Motivation" (Carlier, Shittly, 1989).

3.1.4 - Barriers to communication

Jacob and Plamping (1989) describe two main barriers to communication: First, "we expect our patient to act to promote health and when they don't, we can think they act illogically. Most of the people don't have health-directed behavior, but act depending on a variety of other reasons, such as feeling or looking good or living within their budget. When patients don't organize their whole lives around dental health by behaving logically, or willing to expose their shortcomings to us by communicating openly, we are sometimes prone to judge them harshly and become distant and authoritarian". Anxiety is the second reason involving not only the apprehension of the orthodontic treatment but also the concern about the orthodontist's judgement. Meichenbaum and Turk (1987) list the many reasons that interfere with effective patient communication, "the Art of being a facilitator of nonadherence" :

- Act unfriendly,distant, demonstrate a lack of warmth, concern, interest. Be unapproachable and impersonal. Demonstrate disagreement, formality. and rejection. For example, fail to introduce yourself.
- Look and act busy-watch clock.....
- See patients in chaotic setting where there are many interruptions..
- Mumble, use medical jargon when speaking to the patient. Never ask if the patient understands.
- Ask patients specific close-ended questions requiring "yes" or "no" answers.
- Cut off or interrupt patient statements.
- Ignore patient's questions.
- Don't allow patients to tell their stories in their own words, to express thier ideas and concepts.
- Fail to take into account patient's concerns and expectations.
- Treat the disease instead of the patient: "What is the problem?" instead of "How are you?".
- Omit to give clear-cut explanation of diagnosis, fail to precise treatment regimen to be followed or state it in an unclear or too technical a fashion.
- Fail to sollicit feedback from the patient, ignore opportunities to give patient feedback. Provide little support.
- Adopt a hostile, suspicious, moralizing, low empathy and high-power-struggle stance. Fail to make eye contact or to sit at the same level as the patient, keep a desk or some other physical obstacle between you and patient.
- Abruptly terminate a consultation.

3.2 - Communication skills

" Satisfaction of the patient is more likely when the doctor discovers and deals with the patient's concern and expectations; when the doctor's manner

communicates warmth, interest and concern about the patient; and when the doctor volunteers a lot of information and explains things to the patient in terms that are understood" (Pendelton quoted by Meichenbaum, Turk, 1987).

Effective communication depends on the attitude of the communicator as well as the way the message is transmitted.

3.2.1 - Persuasion - the communicator

Social psychology research has identified two forms of social power that the practitioner has at his disposal (Jacob, Plamping, 1989): the first is the "expert power" which comes with qualification. Most health care providers have traditionally relied on expert power to influence patients, viewing the situation as a one-sided delivery of information; the second is the "referent power" which is more effective for helping patients internalize recommendations. It stems from the ability to demonstrate patients that they are accepted, and offer them an unconditional positive relationship. Communication skills that respect patient's intelligence, acknowledge their needs, accept their feelings, value their openness and promote collaboration in decision making must be cultivated (Meichenbaum, Turk, 1987). Demonstrating referent power is characterized by three core qualities: *warmth, empathy,* and *respect.*

Conveying warmth is communicating an interest in and a concern for the patient. Non verbal communications are more powerful than the verbal ones (Schoonover, Bassuk, Smith, et al., 1983; Ingersoll, 1982; Graber,1971;

DiMatteo, DiNicola, 1982; King, Novik, Citrenbaum, 1983; Meichenbaum, Turk, 1987; Brandon, 1988). If the two are perceived to be in conflict, the non verbal will dominate: the patient will not feel cared for if we say *"great to see you again* " without a smile. On the other hand, evidence is mounting that practitioners who talk to their patients have more satisfied patients. This reduces anxiety, distracts the patients and lets them know that we are interested in the person as well as the patient (Jacob, Plamping, 1989).

Empathy is the attempt to perceive and understand a situation from the point of view of the patient is usually considered the most important characteristic of facilitative communication (Ingersoll, 1982). It precludes arguments, creates good will, and encourages the patients to listen more attentively (Carnegie, 1982). It is demonstrated by active listening and by showing concern (Meichenbaum, Turk, 1987; Ingersoll, 1982; King, Novik, Citrenbaum, 1983).

Respect implies that no one has a monopoly on truth. "I have found it of an enormous value when I can permit myself to understand the other person....Our first reaction to most of the statements (which we hear from other people) is an evaluation or judgement rather than an understanding of it. When someone expresses some feeling, attitude or belief, our tendency is almost immediately to feel "that's right.., that's stupid..., that's abnormal..., that's unreasonable.. incorrect.. not nice". Very rarely do we permit ourselves to understand precisely what the meaning of the statement is to the other person" [Carl Rogers, quoted by Carnegie, 1982]. Patients must view the orthodontist as an ally who is accessible, non judgmental,

respectful, and sincere in his or her desire to cooperate with them as well as knowledgeable and competent. Patients have to feel comfortable to ask questions, raise concerns, and be willing to acknowledge when they do not understand (Meichenbaum, Turk, 1987). Respect is demonstrated by giving information and not advice (Ingersoll, 1982), building the practitioner's office on discipline (Graber, 1971; Meichenbaum, Turk, 1987), offering clean and quiet surroundings, having a room decor reflecting a practitioner who is keeping with time and is keen to create a relaxing atmosphere (Bellavia, 1986).

3.2.2 - Persuasion - the message

Most of the suggestions practitioners make for behavior change require patients to spend a lot of time or give up pleasurable behavior. To avoid these efforts, patients may unintentionally distort or minimize any suggestions that isn't perfectly clear (Jacob, Plamping, 1989). To enhance the understandibility of suggestions, the message must be clear and brief (Mittelman, 1985; Meichenbaum, Turk, 1987), link suggestions to what the patient considers important, emphasize the connection between behavior and susceptibility (Jacob, Plamping,1989).

Jacob and Pampling (1989) encourage practitioners in communication skills training. The benefits are building a more successful practice, increased effectiveness with patients and a growing satisfaction with work.

4 - THE ROLE OF THE PROFESSIONAL TEAM IN PATIENT MOTIVATION

Many authors emphasize now the fact that behavior modification in orthodontic settings requires more than the practitioner's competence (Bellavia, 1985; Bellavia, 1986; Fields, 1980; Schulhof, McFarland, Jacoby, 1985; Patterson, 1985; Moawad, 1988; Mittleman, 1985; Mindwak, 1987; Lefler, 1985; Lefler White, 1986; Kulis, 1983; Harrington, 1986; Griffin, 1987; Brandon, 1988). A positive image must be continuously reinforced through the doctor's personality, attitude of the staff, decor, scheduling, patient conferences and written communication.

4.1 - The well functioning team

Jacob and Plamping (1989) state most of the reasons why the orthodontist should be involved in team leadership: a team which works well will facilitate participation by allowing its members to influence how health care is delivered. It will be more able to encourage participation by patients because team members will be in agreement with their goals and can give consistent messages to patients. A well functioning team has clearly assigned tasks and little duplication of effort and so is efficient in terms of time and money (Lefler, 1985; Lefler White, 1986; Brandon, 1988).

Kulis (1983) reported that there has been increased interest in delegating patient education and office communication to treatment

coordinators. This special staff member is present at the initial consultation, introduces the patient to the content of the diagnostic records at the second visit, conducts the conference visit, dictates a conference letter to the referring dentist, completes the insurance claim form and is the person that stays in contact with the patient and the family during the treatment if any questions arise. Delegating conference is efficient for both doctor and staff because it accomplishes necessary communication with the least amount of time and effort.

Written communications are also practice builders (Bellavia, 1986; Schulhof, McFarland, Jacoby, 1985; Mindwak, 1987). Letters can convey that one is competent, that he/she cares about his/her patients, and sees them as people rather than as orthodontic cases. A letter system can plan to send communication to the patient, before the exam as well as during and after the treatment, and to referring patients as well as professional referral sources. Kids are thrilled to get mail, and cooperation letters are very effective for behavior modification (Schulhof, McFarland, Jacoby, 1985).

4.2 - Team leadership : the orthodontist

There are different management style. Two dimensions are particularly useful to consider: the degree of formality and the degree of structure. Jacob and Pampling (1989) described four management styles they have named "Headmaster", "Tennis coach", "Absent minded" professor and "Hippie". The one that promotes ideal behavior modification settings like orthodontic

offices, is the "Tennis coach". It is an informal style but structured. This practitioner is clear about his tasks and will generally work with his team to develop and clarify their goals and responsibilities for tasks. He knows to give clear feedback based on observation and is focused on work-relevant behavior. In spite of this disciplined atmosphere, the "Tennis coach" may engage in personal interaction with team members, not just because learning about people can help in motivating them and make work more satisfying for them, but also because with this informal approach, it is not necessary to establish rank in areas that are not work related. This style gets people personally involved and helps them feel comfortable in trying new things.

Enhancing team functioning requires the action of the orthodontist in goal setting, decision making, feedback and coping with conflict in the team (Barkley, King, Mathewson, et al., 1977; Jacob, Plamping, 1989; Silversin, 1987; Mindwak, 1987; Kazdin, 1980). The extent to which the team can appreciate patient's perceptions is dependent on the extent to which they can sense their needs and help them to value what the practice has to offer. It plays also an important part in the extent to which they feel they have chosen the right practice. The practitioner must be an effective role model, that is communicate effectively with all patients, staff and all other providers in the health care system (Barkley, King, Mathewson, et al., 1977). He should be able to coordinate, match internal (staff, office design...) and external (service, fees, delivery, and communication) marketing strategies, and also be consistent (Bellavia, 1985; Bellavia, 1986).

5 - COUNSELING PRINCIPLES

Because biological, psychological, social environmental and economic factors are all likely to influence the decision to adhere, a strategy which integrates several approaches is most likely to produce useful techniques for change . (C. Lee & Owen quoted by Meichenbaum and Turk, 1987).

5.1 - A structured educational program

Because a structured educational program may be more effective than a program based on the only intuition of the practitionner, a review of the techniques described in the literature follows.

There are three groups of contemporary counseling theories (Rozencweig, 1988; Weinstein, Getz, Milgrom, 1983; Williams, 1983; Weinstein, 1982; Young, Jorgenson, Shapiro, 1986):

- The psychodynamic or Freudian theory involves multiple counseling sessions which a patient's unconscious motivations for specific behavioral problems are uncovered. It is a long term therapy that requires specialized training and does not have practical applications for orthodontists.

-The humanistic approach emphasizes the patient's responsibility for the way things are and the way they will be in general. The therapist tries to increase the patient's awareness of both problems and options. Being empathic and demonstrating unconditional positive tone create a climate

in which the patient lowers defenses and becomes open to new ideas.

-The behavioral therapies concentrate on eliminating faulty behavior and accepting new, more adaptive ones. Specific behavior is expected to increase when paired with positive reinforcers, and to decrease when paired with negative reinforcers.

A combination of the humanistic and behavioral approaches can be employed within a general conducive manner designed to foster adherence; it can combine several strategies, and be flexible and adaptable to the dental environment. Applying counseling techniques to preventive dentistry is easier when using a three or four phase problem oriented model (Weinstein, 1982; Rozencweig, 1988; Chiodo, Rosenstein, Clarke, 1986).

5.1.1 - The exploration phase

The patient becomes aware that a problem exists and that he "owns" that problem. This phase is essential in order that a significant change occurs. Certain parameters are essential in order to gain patient confidence such as:

- establishing a confidential, non-threatening, non-judgemental environment of trust (Carnegie, 1982; Meichenbaum, Turk, 1987; Jacob, Plamping, 1989),

- encouraging the patient to express his/her beliefs about the orthodontic treatment (Graber, 1980; Jacob, Plamping, 1989); "hearing the patient's message is the *sine qua non* of a great physician; asking open-ended questions can establish a collaborative approach between the orthodontist and the

patient and one way to nurture this collaboration is to try to see the patient's problem from the patient's perspective" (Pickering quoted by Meichenbaum, Turk 1987),

- assessing intent and readiness of the patient for treatment cooperation (Weinstein, Getz, Milgrom, 1983; Weinstein,P., 1982; Meichenbaum, Turk, 1987; Rubin, 1983),

- making the patient "think in a new way" to solidify his/her needs: a long term significant change in patient behavior is not likely unless the patient's fundamental feelings, attitude, and beliefs have changed (Weinstein, 1982).

The quick approach to move directly into the active phase of counseling is likely to have few short-term successes, often resulting in practitionners' frustration. Even if it is time consuming, the patient must first understand and accept that he has a problem, understands what the problem is and grasps its implications (Chiodo, Rosenstein, Clarke, 1986). Barkley's philosophy (1972) was helping patients *to think*: "to think is to develop a plan, to believe. And to believe is to be willing to act". The patient must recognize how dental health or dental problems affect his life and the lives of other members of his family. The patient must learn to think "for" himself but not "by" himself. The practitioner must help the patient to discover how dental health or malocclusion affects his life, leading the patient to come to his own decision (Williams, 1983). Asking questions will involve the patient in the decision-making process (Jacob, Plamping, 1989).

5.1.2 - The understanding phase

The doctor and the patient discuss the problem and its implications. The patient must believe his preventive behavior can produce desirable outcomes, and the doctor and the patient should mutually agree upon an acceptable and reasonable course of action (Rozencweig, 1988; Williams, 1983; Weinstein, 1982; Chiodo, Rosenstein, Clarke, 1986). During the understanding phase, the practitioner needs to:

- clarify the etiology and the prognosis using language suitable for the patient's level of understanding, but always avoiding a condescending tone which can infuriate any patient or parent (Rozencweig, 1988; Chiodo, Rosenstein, Clarke, 1986), customize each instruction individually to the level and the needs of the patient with audiovisual, books, slides (Meichenbaum, Turk, 1987); the knowledgeable practitioner will not only target the cognitive domain (learning of facts and intellectual understanding of ideas), but also present information meant to challenge and modify current attitudes, values and beliefs; intervention in the behavioral domain (skills, behavior, habits) consists of describing a new skill step by step, emphasizing what is important about the materials and technique used,
- lead the patient to comment and to ask questions; patients are often reluctant to ask questions for fear of appearing stupid and because they may not even be sure of what to ask; by the patient asking questions, his awareness, as well as his convinctions are being increased (Rozencweig, 1988; Meichenbaum, Turk, 1987),
- build a mutual agreement on a course of action; patients need to be

perceived as active participants in the clinical decision making process and as collaborators and allies who share responsibilities in the treatment regimen; practitionner-patient agreement about problems is associated with expectations for improvement and with better outcome as perceived by patients and practitioners (Starfield, Wray, Hess, et al., 1981); goal setting involves working with our patient to choose a workable target behavior (Jacob, Plamping, 1989); many authors believe that written contracts elicit more cooperation than verbal agreement (Weinstein, 1982; Jarabak, 1965; Starfield, Wray, Hess, et al., 1981; Meichenbaum, Turk, 1987; Rubin, 1983). Such contracts also serve as a reminder of the original agreement.

- involve "significant others" (DiMatteo, DiNicola, 1982; Meichenbaum, Turk, 1987; Jacob, Plamping, 1989); important "significant other", especially for teen patients, are the parents; it is important to realize that orthodontic treatment affects not only the patient but his family; a family members wearing braces alters everyone's eating habits, diet, and so forth....; parents or peers can collaborate in identifying and implementing ways in which the patient can be helped to adhere to the treatment regimen (e.g. encourage, remind, assist, supervise and reinforce the patient for on-going engagement in self-care behavior) as well as possible obstacles and high-risk situations that might interfere with patient adherence (Meichenbaum, Turk, 1987); Baldwin (1989) stated how important it is for the parents not to dominate their children, but to be supportive and to shift responsibility toward them. The involvement of family members in a reward system is detailed in following pages.

5.1.3 - The action phase

This phase is aimed at helping the patient change behavior to achieve a new goal. This phase provides a rationale as to why self-monitoring is important. It gives feedback, with periodic checks on the accuracy of the self-monitoring, and solicitates patient's thoughts and feelings about completing the task. All of this contributes to greater adherence (Meichenbaum, Turk, 1987). This phase comprises different steps:

- modeling and practice: guidelines should be described step by step. Critical factors include demonstration and descriptions of the new behavior by the practitioner or the staff; practice by the patient ; and taking nothing for granted (Jacob, Plamping, 1989),

- problem-solving, decision making approach that actively involves the patient in the education and treatment process can be used to foster adherence (Meichenbaum, Turk, 1987); a general problem solving orientation must be reinforced by having the patient acknowledge that unforseen problems will probably occur but that the patient is competent to deal with these as they arise,

- self-monitoring (Weinstein, Getz, Milgrom, 1983; Williams, 1983; Weinstein, 1982) to foster the patient's self-image of being an effective self-manager; it is argued that one is unlikely to change unless one can *notice* present behavior and become *aware* of what one is and is not doing (Meichenbaum, Turk, 1987);

- positive reinforcements (immediate feedback and encouragement); not only must patients possess skills, they must also believe in their effectiveness; in

addition patients must have a sense of confidence that they can implement those skills (Meichenbaum, Turk, 1987); depending on the patient, self-reinforcement procedures or material rewards can be used (Patterson, 1985; Jacob, Plamping, 1989; Kasdin, 1980; DiMatteo, DiNicola, 1982),

- involving relatives (Meichenbaum, Turk, 1987; Jacob, Plamping, 1989)in self-reinforcement,

- producing a motivated group who will share experience and exchange information; the exclusion of unmotivated patients who show little progress is a valuable addition to the adherence enhancement regimen (Meichenbaum, Turk, 1987; Sueur, 1981; Jarabak, 1965),

- giving the patient the opportunity to motivate somebody else (Rozencweig, 1988; Weinstein, Getz, Milgrom, 1983; Weinstein, 1982; Oliver, Knapman, 1985),

- teaching patients how to anticipate and prepare for high risk situations (i.e. peer-induced temptations, boredom or frustration, conflicts with parents), and to cope and even benefit, from such lapses (Meichenbaum, Turk, 1987; Jacob, Plamping, 1989).

5.2 - The non-adherent patient

Graber (1980) has done an extensive report of the literature about the difficult child. Patients, during adolescence, are likely to be more combative and questioning of authority. Miller and Larson's (quoted by Graber, 1980) study describes four reasons why some patients are exceedingly unresponsive

to the clinician's ministrations:

- The orthodontist is frequently a causality of the natural parent-child conflict. Whether the clinician is seen as an alternate parental figure , or whether resenting the parent's demand to submit orthodontic treatment, a young adult wants to have more control over his own destinity, including his own physical development.

- The psychological importance of the mouth is such that the placement of appliances may be viewed by the adolescent as an invasion of his own body, and resultant negative feelings toward the clinician can emerge, especially in boys. Any discomfort in this area may, then, become amplified.

- A "funny", grotesque perception of orthodontic appliances by peers may induce teasing and, as a result, negative attitudes by the patient. Others will be willing to wear them as a mark of high socioeconomic status.

- A very negative image of themselves makes an external cosmetic change into an unwanted assault on the individual's negative self-concept.

In such cases it seems that there is a significant correlation between attitude toward authority and compliance in orthodontic care.

The orthodontist not only needs to understand how to deal with angry patients (Ingersoll,1982), but also to know how to assess the reasons for nonadherence (Meichenbaum, Turk, 1987; Jacob, Plamping, 1989). Different procedures to motivate non-adherent patients can be used:

- negative consequence procedures (Kasdin, 1980; Patterson, 1985; DiMatteo, DiNicola, 1982; Meichenbaum, Turk, 1987)

- emotional inducements: guilt induction and fear inducement (Meichenbaum, Turk, 1987),

- emotional role playing: involves creating a scenario in which the patient is confronted with an "as if " experience, such as exposing the patient to a list of excuses, or taking a reversal of roles (Meichenbaum, Turk, 1987).

For Rubin (1983), some patients' treatment should never be started. They may have particular emotional problems that make them inappropriate for receiving orthodontic care and which could require therapy in themselves. There may be so much hostility within the family that a behavioral approach cannot penetrate.

6 - IMPORTANCE OF AUDIOVISUAL MODES

6.1 - Videotape and behavior modeling

Can good audiovisual modes designed for the purpose, whether alone or included in a motivation program, be effective and worthwhile in modifying behavior? According to Weinstein (1982), audiovisual materials are helpful in providing information but are no substitute for the practitioner's personal interest and concern for the patient. Although, we understood from the previous review that the practitionner-patient relationship is essential, it is very difficult to conclude any specific values about "audiovisual" in general.

How the videotape is constructed, to whom is it presented, where is it shown, in what context ...are some of the variables that are not always described (Goldberg, 1983).

Since many non-verbal cues and even the most simple physical interactions can be observed only on a videotape or film, many behavioral experts feel that effective interpersonal skills training requires the use of visual aids (Schoonover, Bassuk, Smith, et al., 1983). It has been shown that television has a major impact on children's knowledge, attitudes, and behavior (Zuckerman,D.M., Zuckerman,B.S., 1985). Many Americans have been exposed to increasing audiovisual communication. Therefore, they as well as many professionals, may absorb health care and scientific information more readily and comprehend it more completely if it is infused via an audiovisual route (Paegle, 1978) Television, a medium familiar to adolescents, has been successfully incorporated into group therapy (Rubin, Locascio, 1985).

Geertsma (quoted by Rubin, Locascio, 1985) described three processes involved in viewing one's self and environment: 1) "observation" (theprocess of sensory registration); 2) "perception" (the process of recognizing stimuli); and 3) "cognition" (the process of making inferences from observational and perceptual data). Video feedback allows the patient access to objective information regarding their personal behavior. Self-perceptions and meanings attached to perceptions, which are often distorted, can be corrected through video feedback. Videotaping offers benefits as a reinforcer in behavior therapy . Brooks (1976) uses "teletherapy" and discusses how to

use video feedback to enhance the group process. Videotapes of the group are shown during the three stages of the group process. When portions of videotape to be shown to the group members are selected carefully and purposefully, are discussed by the group, and are incorporated in goal directed process, "teletherapy" not only provides a learning modality, but becomes in itself a therapeutic intervention to enhance and speed the group process .

Although the effect of a motivation videotape in an orthodontic office has not been tested, it has been mentioned by Graber (1980). He presents a 7 minute videotape illustrating problems of diet, appliance breakage, treatment objectives and methods. According to Graber, it fits nicely into the office routine. In dentistry, the use of audiotaped material has been reported as effective by pedodontists and general dentists in reducing fears. The contingent use of videotaped cartoons resulted in statistically and clinically significant reductions in uncooperative child behavior during dental treatment (Ingersoll, Nash, Gamber, 1984). Gatchel (1986) reported that even a brief exposure to a videotaped fear reduction program (of less than half an hour) illustrating behavior modification techniques had a significant impact on stimulating moderately fearful people who avoid dental treatment to seek treatment. Ingersoll reports that several studies of filmed behavior modeling have shown that this method can produce considerable improvement in attitude and behavior of young inexperienced dental patients. Filmed modeling can be as effective as the use of live models (Ingersoll, 1982). Holtz (1988) has proposed a very interesting systemized behavior shaping

method for acceptance of dental treatment in children. His training program includes a video film, a manual, and a case form. There are no very little descriptions of the method. The manual and the video developed a two way communication (message and return message), considered empathy and focused on achieving good rapport. He describes the behavior modification method called "tell-show-do". He found statistically significant increases in positive acceptance of dental treatment in children. His method required training but no extra time in the dental chair. Rozencweig uses a slide projector during the understanding phase, to explain, stimulate discussion, and to reinforce patients' convictions about improving their periodontal condition (Rozencweig, 1988).

5.2 - Videotape production

Schoonover et al. (1983) have tested the use of videotape programs to teach interpersonal skills. Verbal communications often cannot convey behavioral subtelties and may even distort the meaning of important concepts and interventions. This is particularly true when human interactions are involved. Because of the unique advantages of videotape and film and their efficacy in producing long term behavior change, many teachers now use them as a primary means of teaching interpersonal skills.

- The use of symbolic modeling techniques can increase the credibility of a videotape presentation. For example, any deviation in the wearing apparel of the standard orthodox emergency medical technician uniform (e.g. wrong

kind of shoes) distracts the learners. Model-observer similarities (e.g.age, appearance) and the warmth of the model tend to increase learning. Researchers have also shown that "struggling" models seem to be more effective than "ideal" models. By seeing characters who exhibit a wide range of feelings and behaviors the "student" develops a more realistic approach.

- Videotape teaching material that seems more like a TV "soop box" serial is more likely to increase audience receptivity, attention, and ongoing interest. Although all types of videotapes can increase interest, the dramatic type of videotape is generally more compelling than live or role played interactions. The presentation is an illustration of key skills within a framework of some life-like story. Viewers tend to become involved with characters having a problem. Pacing of the drama is a primary tool for regulating the "comfort-tension" level of the viewer. It must be fast enough to maintain interest but slow enough to absorb new ways of behaving.

- The script should consider each component aspect (dialogue, verbal messages, nonverbal cues, interactional sequences).

- The shooting must be developed in a manner that enhances teaching points, camera focus, movement, shot sequences, and position in relation to each character. A long shot might best illustrate whole body language interactions, while a close up shot can portray the facial expression, voice tone and speech cadence comprising an empathic response. Important information, responses, or behaviors can be reinforced by changing focus and by using different voice levels, additional audio effects (sound effects, back ground dialogue, music), "cutting choices" and color schemes (hot or cool) to

reflect general mood. Since the combination of videotape sequences that effectively depict training points are often discovered during postproduction editing, the producer should also make multiple recording of some scenes using several shot selections and methods of portrayal.

Behavior shaping by advertisements has demonstrated that the ads that people remember were those that generated both positive and negative feelings. Eliciting an emotional response is more important than simply convincing them that the product is better. Some methods used to draw peoples attention to an ad is to use loud noises, and sudden movements of light, which trigger an automatic response in the brain that causes it to focus the eyes and the ears toward the direction of the stimulus (Allman, 1989).

Lebel (quoted by Schittlly et al., 1989) has shown that "sensitization" videotapes must respond to different characteristics than "knowledge-giving" ones:

- "Sensitization" videotape characteristics include :
  - Concise format
  - Contains only key factors
  - Coherent
  - Makes people react
  - Does not contain too many elements to analyze
  - Does not contain unnecessary redundancies
  - Is realistic and not caricatural
  - Presents familiar situations
  - Is simple, without useless complications

- Fertilizes imagination
- Is short (less than 15 minutes)

• "Knowledge-giving" videotape characteristics include:

- Follows a sensitization step
- Begins at a certain knowledge level
- Aims at attaining certain goals
- Is realistic
- Is structured, precise
- Is slow enough to allow thinking
- Is illustrated
- Is slightly redundant
- Goes along nicely with dreams and shows
- Ends on faith and synthesis of the main ideas.

MATERIALS AND METHODS

1 - MATERIALS

The counseling strategy was designed to be both simple and easily incorporated into a busy orthodontic practice. It consists of a videotape along with a manual to assist the orthodontic team in the successful implementation of the program. Additional information, such as charts and handouts are used as monitoring aids and reminders for the patients and their families.

1.1 - The manual (cf. Appendix I)

The manual is a general approach to most topics concerning the facilitation of treatment adherence in teenagers. It emphasizes the importance of believing in, and being enthusiastic about the efficacy of motivation. The principle is to establish a partnership between the orthodontic team and the patients. It is composed of four parts. Understanding the first two ones " How to create a winning team" and "How to become an effective communicator" is essential for the successful implementation of the counseling strategy described in the third section, as well as the appropriate tailorisation of communication styles to adapt to different types of patients.

1.1.1 - "How to create a winning team"

This section outlines the marketing approach of treatment adherence enhancement. As reviewed in the literature, many authors now stress that behavior modification in any setting requires more than the practitioner's competence. It also requires pleasing current patients and attracting new ones by sensing, serving and satisfying their needs. Those patients and their families who feel personally welcome, important and cared for at every visit, will be more open to new ideas. This section describes the role of each member of the orthodontic team: The orthodontist, the receptionist, the treatment coordinator, the chairside assistant and the hygienist. It highlights the importance of each individual on the team for creating the tone of the office and assessing treatment adherence.

1.1.2 - "How to become an effective communicator"

This section defines the basic aspects of interpersonal skills and describes the techniques of persuasion. As reviewed in the literature, successful persuasion depends on how the persuader (any member of the orthodontic team) behaves and on how the message is transmitted to the patient. The three core qualities of an effective communicator are studied and discussed.
Guidelines concerning how to present the information in such a way that the patient understands and remembers the new knowledge is explained and meaningful examples are offered. Being an effective communicator helps building trusting relationships between the patient, his family and each member of the orthodontic team. It creates the kind of rapport that leads to

greater acceptance of suggestions.

1.1.3 - "How to implement the counseling strategy"

As reviewed in the literature, a behavioral modification program should :

- Be structured
- Be broken into three or four phases
- Integrate several approaches
- Use a mutual participation model where both patient and practitioner hold responsibility for the outcome of the treatment.

The goal was to create a structured counseling strategy that would be easily integrated into the routine of a busy orthodontic practice. It is composed of three main phases that constitute the normal steps in orthodontic treatment:

- The Exploration Phase : Initial clinical examination and diagnostic records.
- The Understanding Phase: The consultation :
  * The conference
  * The presentation of the videotape
  * Behavioral contracting between the patient and the orthodontist.
- The Action Phase: Active orthodontic treatment.

This counseling strategy emphasizes the patient's responsibility for his treatment progress, and his active participation in the clinical decision making process. It integrates several approaches. Specific psychological procedures are combined within a general framework designed to foster

adherence. For example, treatment monitoring (cf. the flow chart), problem solving (cf. problem solving road), behavioral contracting, videotape modeling, group reinforcing process, and family involvement in a reward system etc...

1.1.4 - "How to meet the challenge"

This last chapter describes how to tailor communication style to adapt to different patient attitudes.

The booklet was edited with a desktop publishing computer program "Page Maker® version 3.02" (Aldus corporation). The drawings were prepared by Miss Hannah Slodov on a drawing computer program "Mac Draw II® version 1.0" (Claris corporation).

1.2 - The videotape: "A Do-It-Yourself Home Videoguide for Teenagers"

Videotape modeling is a method of learning or modifying behaviors by the observation of others. Because of the proven effectiveness of this technique (cf. literature review), a videotape was realized to be presented during the consultation to the patient and his family.

As reviewed in the literature, several characteristics of the videotape are important to increase learning:

1- Model-observer similarities (age , appearance, etc...)

Simulations of multiple models provide a variety of alternative behaviors from which the learner can choose. Struggling models seem to be more effective than ideal models because they encourage the observer to react.

2- The illustration of key skills within a framework of a " lifelike story" or familiar situations contribute to skill acquisition. This presentation should be slightly redundant and fertilize the imagination of the observer.

3- Pacing is a primary tool. It must be fast enough to maintain interest, but slow and repetitive enough to allow the patient to consider new ways of behaving. The videotape should last less than fifteen minutes.

4- The videotape should end on positive thoughts and conclude by a synthesis of the main ideas.

The possible anxiety of the new patient is a barrier to communication. This anxiety involves apprehension about orthodontic treatment often due to negative distortions, uncertainty and concern about the practitioner's judgement.

The goal was not to provide sophisticated explanations about appliance wearing or hygiene motivation. Rather the goal was to diminish patient anxiety, to involve him with multiple models, and to engage himself in the "braces situation". The aim was to emphasize the importance of wearing appliances as prescribed, maintaining good oral hygiene, keeping appointments, taking care of braces and, mainly, to make the patient feel responsible for his treatment.

Rather than showing an orthodontist giving advice to patients, the scenario portrays teenagers with braces making a humorous and serious

videotape for their peers about orthodontics. These teenagers, Laura, Diana, Indira, David and others are motivated patients. They answer "all the most popular questions about braces" to Keith who needs braces and John who "can't stand braces". They answer questions such as such as : "Why do I need braces?", "How do braces work?", "Why does my mouth feel sore after the appointment?"," Why does this headgear make me look like I have a basketball hoop on my face?", "Why do I have to wear rubber bands?", and finally "How is life with braces?". They also share with Keith and John some secrets they have learned along the way . Topics such as how to make the appliance time breeze right by, what happens when a bracket comes off, how to brush with braces, how to avoid getting bad breath, how a tooth moves, and what eating habits need to be modified.

We tried to fertilize the imagination with several animation sequences to highlight the main concepts. This was done within a framework of familiar or funny situations. The purpose of the tape was to make the patient react to the behavior of John and to present the orthodontist as a friendly partner. The videotape lasts eleven minutes thirty five seconds. It ends up on hope by showing John becoming a motivated patient , on the synthesis of the main concepts, and on the idea that it is up to the patient to be happy during his orthodontic treatment and obtain a nice smile (cf. script Appendix II).

The videotape was produced by the "EDUCATIONAL MEDIA DEPARTMENT, Baker Building, Room 6, Case Western Reserve University, Cleveland, Ohio 44106". It was directed by Miss Gay Henderson, and the following equipment

was used:

• **In production:**	Hitachi Z-31A color video camera
	Sony VO-6800 portable video recorder
	Lowell softlights and portable light kit
	Sennheiser shotgun microphone
	Sony Lavalier and Electrovoice microphones
• **In post-production :**	Sony VO-5850 and 5800 editing machines
	Sony RM-440 edit controller
	AT&T Truevision Image Processing computer
	Graphics software and Tandon computer
	Intergroup 9310 video switcher
	TEAC 5 audio mixer
	Teac A3440 reel-to reel audio recorder
• **For film animation :**	Oxberry 16 mm animation stand
	Arriflex 16 mm camera
	Elmo Transvideo 16 mm film transfer machine

- **Videotape stock:** 3M UCA 20s (3/4 " tape)

  Sony 20 BRS (edited master:3/4 " tape).

2 - EXPERIMENTAL DESIGN

The study sample consisted of 24 patients,10 to 15 years of age, from Case Western Reserve University's Orthodontic clinic. The patients had no previous orthodontic treatment and received full banded orthodontic therapy. No attempt was made to screen them on the basis of their possible cooperation. The patients of the University setting are from the lower middle socioeconomic class. They may have a variety of personality characteristics and a wide range in the severity of the malocclusion. The control group consisted of 12 new patients randomly assigned to six graduate orthodontic residents (two per resident). The experimental group comprised 12 new patients, randomly assigned to the same residents (two per resident), after completion of the control group evaluation. The experimental group was started once the data of the control group patients was completed and after the orthodontic residents had received a three hour training session by the investigator. The patients were evaluated successively one, two, and three months after their appliance placement. The outcome data was collected at the end of the three months evaluation of each group.

2.1 - Measures: Orthodontic Patient Cooperation Scale (OPCS)

The OPCS is a list of 10 patient/family behaviors frequently considered in evaluating a patient's cooperation. It has been shown to possess good internal consistency and validity (Slatker, Albino, Fox, et al., 1980) (cf. Appendix III). The OPCS was slightly modified by clarifying most of the criteria, so that each parameter could be rated as objectively as possible.

For each item, the youngster's orthodontic resident was presented with either five numerical ratings (0,1,2,3, or 4: 0 being the most negative and 4 the most positive), or five descriptive statements corresponding to the same scale. The resident was asked to choose which statement or number best described the parameter. Since the attending orthodontic residents had a good understanding of their patient/parent's orthodontic attitude, they could evaluate the 10 different parameters. To avoid any statistical bias, the evaluation of both control and experimental groups was also conducted independently by the author. Because of lack of knowledge about the patients and their families, the author did not feel confident about rating objectively some of the criteria. Therefore, for the control group, her rating was limited to the evaluation of the five first cooperation indicators.

The following parameters OPCS were used to evaluate patients' adherence:

I - Keeping appointments

A criterion-referenced scale was used to determine this measure.

- 0: Missed appointment. The patient either does not show up or cancels the same day.

- 1: Cancelled appointment. The patient calls 24 to 48 hours before the appointment. If the patient cancels more than 48 hours before, a new appointment is given, and the cancellation is not taken into account.
- 2: Late with no excuse.
- 3: Late with excuse. The patient excuses himself as he enters the clinic.
- 4: On time.

II - Dietary restriction

Cooperation with dietary restrictions was determined by monitoring appliance breakage. Two criteria were used. First, bands and/or brackets were broken and second, whether or not the patient called to schedule an appointment to correct the problem. The following criterion referenced scale was used:

- 0: Bands and brackets loose/ no call
- 1: Brackets loose/ no call
- 2: Bands and brackets loose/ call
- 3: Bracket loose/ call
- 4: Everything was allright.

III and IV - Cooperation with auxillaries

Headgear wear and elastic wear were differentiated because it was estimated that a patient could demontstrate a different level of cooperation for each one of them. The same criterion-referenced scale was used to determine these two measures. It was based on both objective criteria (physical signs proving the use of the auxillary) and subjective criteria (patient and family reports).

- 0: No wear/ will not admit
- 1: No wear/ will admit
- 2: Very minimal wear, but not as much as requested
- 3: Significant wear, but not as much as prescribed
- 4: Perfect wear.

The criteria for evaluating compliance with headgear were:

- information from the patient
- information from the parents
- tooth mobility
- tooth movement
- wear and tear on the headgear pads or straps
- ease with which the patient could place and remove the facebow or the J hooks

The criteria for evaluating rubber bands wear were:

- information from the patient
- information from the parents
- interarch discrepancy correction
- number of rubber bands left in the package
- ease with which the patient could insert and remove the rubber bands.

V - Oral hygiene

Children were rated on the level of success they displayed concerning

their oral hygiene programs by means of a criterion-referenced performance scale:

- 0: • plaque and tartar
  • inflamed and swollen gums
- 1: • plaque
  • inflamed and swollen marginal gingiva
- 2: minimal amount of plaque and swollen papillae
- 3: no brushing before the appointment (e.g.food debri on braces)
- 4: good oral hygiene (e.g. no food debri and pink healthy tissues)

VI, VII, VIII, IX - Patient general behavior

Some criteria were rated with a numerical scale (0 being the most negative and 4 the most positive) :

VI - This patient acts enthusiastic and interested in treatment

VII - This patient's behavior is cooperative and easy going

Other criteria were rated with simple statements coreesponding to the same scale (always= 0, frequently, sometimes, rarely, never=4):

VIII - This patient complains about treatment procedures

IX - This patient complains about having to wear braces.

X - Parents' attitude toward orthodontics

X - The parents of this patient are observed to be interested and involved in treatment.

This criterion was rated with the same numerical scale (0,1,2,3, and 4).

A general rating of each youngster's level of overall adherence to

treatment recommendations was obtained by summing and averaging these scores. The possible scores could range between zero and forty. A patient not showing up the day of the appointment was assigned a zero for total score.

2.2 - Procedures

2.2.1 - The control group

The teenager's orthodontic resident interacted with his patients and their families in the fashion in which they customarily do, with no influence from the author. The successive procedures used in communicating and working with each patient were as follows:

a) Phase I: Initial interview of the patient and their families, clinical examination, medical history and orthodontic records.

b) Phase II: Diagnosis and plan of treatment described to patient and parents.

c) Phase III: Banding and bonding of teeth and beginning of orthodontic therapy.

2.2.2 - The experimental group

Before the study commenced, the 6 orthodontic residents received a three hour training session from the author concerning facilitating treatment adherence in teenagers. The manual (cf Appendix I) was distributed to each resident. An outline of the three different parts was presented. Special emphasis was placed on developing effective communication skills. Role playing exercises were organized to help them demonstrate warmth and

enthusiasm, empathy, respect and transmit a persuading message to their patients. A half hour meeting was held with each resident individually to explain the different steps of the counseling strategy before he implemented it with the experimental group patients.

The author played the roles of the treatment coordinator and the hygienist.

The successive procedures used with the patients and their families were as followed:

a) The Exploration phase: First clinical examination and diagnostic records

The pretreatment meeting was the opportunity for the resident and the author to explore the prospects of obtaining the patient's agreement to take responsibilities for his treatment. The patients were asked open ended questions to facilitate the communication process. These questions were designed to determine what made the patient decide to have orthodontic treatment, what concerns he had about his smile, and if he held any misconceptions about braces.

After the clinical examination, the orthodontic resident took standard orthodontic records and explained the purpose for taking pictures, radiographs, models, etc... This process involved the child from the beginning in orthodontic procedures.

The resident gave a simple report of the preliminary examination findings to the teenager and his parents and introduced the treatment coordinator (the author) to them.

The treatment coordinator stated the partnership approach of the Clinic

and the fact that she would be conducting the conference visit in which the treatment plan and the use of orthodontic appliances would be presented. She also explained that, at the same time, a videotape would be shown that would help both patient and parents become familiar with orthodontics. All their questions concerning orthodontics would be invited and answered during the conference.

Before the consultation, the author and the orthodontic resident discussed the different steps of the treatment plan with the attending instructor. The author an individual *flow chart* for each patient showing the different steps of the treatment plan, the amount of time expected for each phase, and the occlusal results to be obtained. Around the flow chart, *the problem-solving road* was divided into the same number of intervals, each portion of the road representing the length of one treatment phase. Finally an personalized *behavioral contract* was prepared that stressed the equality between the orthodontist's and patient's responsibilities for the outcome of the treatment.

b) The understanding phase: The consultation

• The conference

The resident and the treatment coordinator seated the patient and his family in the conference room. The meeting handled by the author consisted of the following steps:

- Description of the orthodontic problems
- Provision of reassurance concerning the future of the patient's smile
- Explanation about the use of the flow chart; treatment monitoring by

the patient

- Report of orthodontic treatment inconveniences
- Explication about the use of the problem-solving road
- Anticipation of forgetfulness
- Closing summary.

• Presentation of the videotape

The patient and parents were told that they would watch a videotape presenting other teens' experiences in orthodontic treatment. After the presentation, the orthodontic resident would stay with the patient and ask questions to ensure understanding and reinforce correct responses. The author would speak with the parents about the patient partnership philosophy of the clinic, the importance of their support to their child and how to built a reward system. The hand out "Child's treatment success and parental support" was given to them with an invitation to openly discuss it, at any time, with the treatment coordinator.

• Behavioral contracting between the patient and the attending orthodontist

In private, the orthodontic resident emphasized the importance of the patient's responsibilities telling him that he controls the prospects for successful treatment. If the patient agreed to accept accountability for his treatment, the contract was signed by both parties. Then, the orthodontic resident would elicit a public commitment and strenghten the patient's adherence related attitudes by asking him to explain to his parents, in his own words, what he agreed upon.

c) The Action phase

- Appliance placing day

The attending resident and the author discussed the patient's feelings about braces and ask him to determine his understanding of tooth brushing and the modification of eating habits. The patient was asked to demonstrate proper tooth brushing and the hand out "How to brush with braces/ How to take care of your braces" would be given to him (cf. Appendix I).

- Auxillaries giving day

The auxillaries (headgear, elastics...) were given only if the patient seemed ready based on oral hygiene level. Increased compliance was expected by breaking the complex tasks of the treatment into simpler demands. Explanations and demonstrations were given to the teenager on how to place the headgear or the elastics. The treatment coordinator repeated the process until the patient acquired the necessary skills.

At each appointment the orthodontic resident would get his patient's feedback and praise him for the slightest improvement. The patient would bring his flow chart/problem-solving road and discuss with his orthodontist any difficulties he encountered, any solutions he found. A point reward system was created in the clinic in case the parents did not feel comfortable evaluating their child's performance.

2.3 - Patient and parent surveys

At the end of the experimental period, two surveys were sent to the patients and parents of both the control and the experimental groups (cf Appendix III). The replies were anonymous to encourage unbiased response from the subjects. Each family received a stamped envelope for the survey return. A number written on the envelope under the stamp allowed the author to identify the belonging to either group. No attempt was made to identify patients or their parents as individuals, only as parts of the control or the experimental groups.

Most of the questions were adapted from the Dental Marketing Planner of the American Dental Association (1983), except the questions 4 and 8 of the patient survey, and the questions 5 and 6 of the parent survey, which relate directly to the tested procedures. A criterion-reference scale was used to determine the answers: "true", "mostly true", "don't know", "mostly false" and "false". These criteria corresponded respectively to the following five numerical ratings "4", "3", "2", "1" and "0".

RESULTS

The results of this study are presented in two sections:

1 - Results of the patients' evaluations

2 - Results of surveys

1 - RESULTS OF PATIENTS' EVALUATION

1.1 - Description of the resulting sample

The original experimental design called for 12 patients in the control group and 12 patients in the experimental group all randomly assigned to 6 graduate residents of the Orthodontic Department of Case Western Reserve University. However, it was possible to gather only 10 patients for the experimental group. The demographic information pertaining to the control and experimental group samples is presented in Table I. As seen in Table I, the two groups were homogenous considering the age of the patients, but not for sex. Most patients did not wear rubber bands or headgear during the first three months, so the ratings of the parameter III and IV were not included in the statistical evaluation. One patient "102"of the experimental group received a banded rapid palatal expander at the beginning of his treatment. As

Table I

Samples - Demographics

(M = Male, F = Female)

Control group patients

	Sex	Age	
		years	months
1	M	13	8
2	M	12	0
3	M	12	5
4	M	11	8
5	M	11	9
6	M	14	5
7	F	13	5
8	F	13	3
9	M	12	2
10	F	13	7
11	M	12	7
12	M	10	8

Average= 12 years, 8 months
Standard deviation =
1 year, 3 months
Gender %:
M : 75%, F : 25 %

Experimental group patients

	Sex	Age	
		years	months
101	M	13	5
102	M	13	4
103	M	13	1
104	F	12	7
105	F	13	11
106	M	11	0
107	M	12	6
108	M	12	7
109	F	14	6
110	F	11	11

Average= 12 years, 11 months
Standard deviation=
1 year
Gender %:
M : 60%, F : 40%

this appliance is very resistant to breakage, parameter II (distorted wires and/or loose bands & brackets) was not rated for this particular patient, and the scores of this patient were not included in the statistics each time the parameter II was considered.

1.2 - Residents and author rating consistency

The rating consistency was first evaluated for each of the 7 parameters individually. The results are presented in Table II. For parameters I, II, and V, the rating consistency was studied for the control and experimental groups. As the author did not evaluate the parameters relating to the parent or patient behaviors (VI, VII, VIII, IX and X) for the control group, the rating consistency of these parameters was determined for the experimental group only. As seen in Table II, the observation of the diagonals of the tableaus show that there is a good rating consistency except for parameter VI (parent interest), 26% of error, and VII (patient enthusiasm), 17% error.

The overall rating consistency was also studied (Table III). To test the reliability of the residents and author ratings, a Mann-Whitney-Wilcoxon test was used. This nonparametric test compares two independent samples supposing that the measurements are not normally distributed. The null hypothesis is true when there is no difference between the two samples.

n= number of residents' ratings (sample 1)

m= number of author's ratings (sample 2)

Table II

Rating consistency - Individual evaluation of each parameter

E = Experimental group, C = Control group

a = author, r = resident

I - Appointment keeping

C	0a	1a	2a	3a	4a
0 r	3				
1 r					
2 r			2	1	1
3 r			1		
4 r					28

E	0a	1a	2a	3a	4a
0 r	1				
1 r					
2 r					
3 r					
4 r					29

II - Distorded wires/bkts

C	0a	1a	2a	3a	4a
0 r	4				
1 r		7			
2 r					
3 r		1			
4 r					24

E	0a	1a	2a	3a	4a
0 r	1				
1 r					
2 r					
3 r				1	
4 r					25

V - Hygiene care

C	0a	1a	2a	3a	4a
0 r	3				
1 r	1	5	1		
2 r		4	10	1	
3 r				2	
4 r					9

E	0a	1a	2a	3a	4a
0 r	1				
1 r					
2 r			2	1	
3 r				1	2
4 r					23

VI - Parent interest

26% error

E	0a	1a	2a	3a	4a
0 r	1				
1 r					
2 r					
3 r				6	8
4 r					15

VII - Patient enthusiasm

17% error

E	0a	1a	2a	3a	4a
0 r	1				
1 r					
2 r					
3 r					5
4 r					24

VIII - Patient behavior

E	0a	1a	2a	3a	4a
0 r	1				
1 r					
2 r					
3 r				1	1
4 r					27

IX -Patient complaints/treatment procedures

E	0a	1a	2a	3a	4a
0 r	1				
1 r					
2 r				1	
3 r				1	1
4 r					26

X - Patient complaints/ treatment

E	0a	1a	2a	3a	4a
0 r	1				
1 r					
2 r					
3 r				1	
4 r					28

$W = w^3 - w$, where w is the number of tied observations at a given level and ΣW is the sum of W over all tied sets.

If T is the rank sum of the sample of n ($n \leq m$) randomly distributed among m+n measurements, then the mean of T is:

$$\mu T = \frac{n(m+n+1)}{2}$$

and the variance of T is:

$$V^2_{T,\,ties} = \frac{mn(m+n+1)}{12} - \text{correction}$$

$$\text{correction} = \frac{mn}{12(m+n)(m+n-1)} \Sigma W$$

We compute:

$$z = \begin{cases} (t+1/2-\mu T)/vT \text{ for } P(T \leq t) \\ (t-1/2-\mu T)/vT \text{ for } P(T \geq t) \end{cases}$$

In our study the null hypothesis stating that there is no difference between the residents ratings and the author's cannot be rejected ($p > 0.94$).

Therefore, the scale used is reliable and there was good consistency between the different raters.

1.3 - Comparison between control and experimental groups

To compare the two groups, Mann-Whitney-Wilcoxon tests were also

Table III

Rating consistency - Overall evaluation

Mann-Whitney-Wilcoxon test

n = 22 group II
m = 22 goup I
ΣW = 1662
μT = 495
correction = 35.4
V ties = 42.2
z =-0.07
p > 0.94

Ho cannot be rejected

	I	II
Mean rank	22.36	22.64

used.

1.3.1 - Comparison of the overall level of patient cooperation

To determine the effect of the counseling strategy on the overall level of patient cooperation, the total points obtained by the control group patients for the three visits, for the 7 parameters were compared versus the total points obtained by the experimental group patients (Table IV). As the author did not rate the 6 last parameters in the control group, we used the residents' ratings only. For the reason previously explained, we did not include the ratings of the patient "102". In this study, the null hypothesis H_0 states that there is no difference in the overall level of cooperation between the contol group and the experimental one. As seen in Table IV, H_0 stating that there was no difference in the level of cooperation of the control and the experimental groups can be rejected at a high level of confidence ($p<0.0018$).

1.3.2 - Comparison of the objective parameters of patient cooperation

To study the effect of the counseling strategy on the objective variables of patient cooperation (appointment keeping, appliance care, hygiene maintainance), the total points obtained by the control group patients for the three visits, including parameter I, II and V and for both resident and author ratings , were compared versus the total points obtained by the experimental group (Table V). Patient "102" was not included. As seen in Table V, H_0 stating that there was no difference between the two groups in their objective

Table IV

Comparison of the overall level of cooperation

Mann-Whitney-Wilcoxon test

Eliminate ratings of patient "102"

n = 9 (II)
m= 12 (I)
$\Sigma W = 12$
correction = 0.257
$\mu T = 99$
VT = 14.06
t = 147
z = - 3.12
p < 0.0018

Ho rejected

	I	II
Mean rank	7.33	15.89

Table V

Comparison of the objective parameters of patient cooperation

Mann-Whitney-Wilcoxon test

Eliminate ratings of patient "102"

n = 9
m = 12
$\Sigma W = 128$
correction = 2.74
$\mu T = 99$
VT = 14
t = 153
z = - 2.72
p < 0.0065

Ho rejected

	I	II
Mean rank	7.83	15.22

cooperation level can be rejected at a high level of confidence ($p<0.0065$).

1.3.3 - Comparison of the subjective parameters of patient cooperation

To determine the effect of the counseling strategy on more subjective variables of patient cooperation (parents' interest, patient's enthusiasm, patient's behavior, patient's attitude toward braces or treatment procedures), the total points, as rated by the residents, obtained by the control group patients for the three visits for the parameter VI, VII, VIII, IX and X were compared to the total points obtained by the experimental group (Table VI). Patients "1", "2" and "105" missed appointments and were not included because the "0" attributed for these visits to all the parameters would too strongly influence the results. As seen in Table VI, H_0 can be rejected at a high level of confidence($p<0.0049$).

1.1.4 - Significance of parameters I, II, and V

To study if there were some parameters more significant than others, the total points obtained by the control group patients for the three visits for appointment keeping (Table VII), appliance care (Table VIII), and hygiene maintainance (Table XIX) were individually compared to the total points obtained by the experimental group for these parameters.

As seen in Table VII, H_0 stating that there was no difference between the two groups concerning appointment keeping cannot be rejected ($p> 0.225$).

Table VI

Comparison of the subjective parameters of patient cooperation

Mann-Whitney-Wilcoxon test

Eliminate ratings of patients 1 & 2 & 105
Residents' ratings are only taken into account

n = 9 (II)
m = 10 (I)
$\Sigma W = 186$
correction = 4.08
$\mu T = 90$
VT = 12.1
t = 124
z = -2.81
p < 0.0049

Ho rejected

	I	II
Mean rank	6.60	13.78

Table VII

Comparison of "appointment keeping"

Mann-Whitney-Wilcoxon test

n = 10 (II)
m = 12 (I)
$\Sigma W = 4902$
correction = 106
$\mu T = 115$
VT = 11.14
t = 128.5
z = -1.21
p < 0.225

Ho cannot be rejected

	I	II
Mean rank	10.38	12.85

In the study of the patient appliance care, the ratings of the patients "1" and "2" and "105" who missed one or more appointments were eliminated. As seen in Table VIII, H_0 stating that there is no difference between the two groups concerning appliance care can be rejected ($p< 0.047$).

In the study of the patient cooperation for good oral hygiene maintainance, the rating of patient "2" who missed two appointments out of three was eliminated. The assumption that "1" and "105" had the same level of oral hygiene for the second appointment (missed) as the one seen at the third appointment was also made. As seen in Table IX, H_0 stating that there was no difference between the two groups concerning good oral hygiene maintainance can be rejected at a high level of confidence ($p<0.0059$).

1.4 - Study of patient consistency

To correlate one patient's level of cooperation for one parameter to another, the Spearman's Rho method was used. For each parameter, the points obtained for the control and experimental group patients were summed for the three appointments, as rated by the author and the residents.The two variables were sorted and ranked. The square of the difference "D" between the ranks of the two variables was computed.

$$T_x = \Sigma\ [(\#\text{of ties})^3 - (\#\text{ of ties})]^2/12 \text{ for the first variable}$$

$$T_y = \Sigma\ [(\#\text{of ties})^3 - (\#\text{ of ties})]^2/12 \text{ for the second variable}$$

Table VIII

Comparison of "appliance care"

Mann-Whitney-Wilcoxon test

Eliminate ratings of patients 1 & 2 & 105

n = 9 (II)
m = 10 (I)
ΣW = 2208
correction = 48.4
μT = 90
VT = 10.1
t = 110
z = -1.98
p < 0.047

Ho rejected

	I	II
Mean rank	8	12.22

Table IX

Comparison of "hygiene care"

Mann-Whitney-Wilcoxon test

Eliminate ratings of patient 2
Assumption: oral hygiene level of patients 1 & 105 at missed second visit equals oral hygiene level of third appointment

n = 10 (II)
m = 11 (I)
ΣW = 516
correction = 11.3
μT = 110
VT = 13.8
t = 148
z = -2.75
p < 0.0059

Ho rejected

	I	II
Mean rank	7.55	14.8

$$C = \frac{n^3 - n}{6}$$

$$D = \Sigma \text{ (Rank variable 1 - Rank variable 2)}^2$$

$$r = \frac{(C - Tx - Ty - D)}{2\sqrt{(\frac{C}{2} - Tx) \times (\frac{C}{2} - Ty)}}$$ correlation coefficient

$$SE\ r = \frac{\sqrt{(1 - r^2)}}{\sqrt{(n - 2)}}$$

$$t = \frac{r}{SE\ r}$$

d.f. = n-2

The null hypothesis H0 stating that r=0 is tested with a Student t distribution and n-2 degrees of freedom.

1.4.1 - **Parameters I versus II consistency** (Table X)

As seen Table X, H_0 can be rejected ($p<0.004$). The correlation coefficient was also significant ($r=0.56$). Therefore a correlation existed between patients who kept their appointments and the ones who cared for their appliances.

1.4.2 - **Parameters I versus V consistency** (Table XI)

As seen in Table XI, H_0 can be rejected ($p<0.017$). The correlation coefficient was fair to good ($r=0.45$). There was a significant correlation between patients who kept their appointments and the ones who maintained a

Table X

Appointment keeping and appliance care consistency

Spearman Rho test

Eliminate rating of patient "102"

n = 21
Tx = 340.5
Ty = 144
D = 475
r = 0.5598
SE = 0.19
t = 2.944
df = 19
p < 0.004

Table XI

Appointment keeping and hygiene care consistency

Spearman Rho test

n = 22
Tx = 408.5
Ty = 44.5
D = 744.5
r = 0.4527
SE = 0.199
t = 2.271
df = 20
p< 0.017

good level of oral hygiene.

1.4.3 - Parameters II versus V consistency (Table XII)

As seen in Table XII, H_0 can be rejected ($p< 0.015$). There was a significant correlation ($r= 0.47$) between the patients who cared for their appliances and the ones who maintained a good level of oral hygiene.

1.4.4 - Parameters II versus X consistency (Table XIII)

As seen Table XIII, H_0 can be rejected ($p<0.016$). There was a significant correlation ($r=0.46$) between patients who cared for their appliances ($\neq$ patients who distort wires or break band/brackets) and patients who didn't complain about having to wear braces ($\neq$ patients who complain about having to wear braces).

1.4.5 - Parameters I, II, V versus VI consistency (Table XIV)

Even though there was 26 percent of error in the author and resident rating consistency for the parameter VI (cf. Table I), this study could only be done based on the resident ratings. As seen Table XIV, H_0 can be rejected at a low level of significance ($p<0.035$). There was a fair correlation ($r=0.4$) between one patient's objective signs of cooperation and the parents' involvement and interest in their child's treatment.

1.4.6 - I, II, V versus VII, VIII, IX, X consistency

H_0 can be rejected at a high level of confidence ($p<0.004$). As seen in

Table XII

Appliance care and hygiene care consistency

Spearman Rho test

Eliminate rating of patient "102"

n = 21
Tx = 144
Ty = 30.5
D = 720.5
r = 0.474
SE = 0.202
t = 2.346
df = 19
p< 0.015

Table XIII

Appliance care and patient complaints about treatment consistency

Spearman Rho test

Eliminate rating of patient "102"

n = 21
Tx = 144.5
Ty = 184.5
D = 644.5
r = 0.468
SE = 0.203
t = 2.309
df = 19
p=0.016

Table XIV

Patient objective signs of cooperation and parent behavior consistency

Spearman Rho test

Eliminate ratings of patient "102"
Residents' ratings only

n =21
Tx = 13
Ty = 20
D = 898
r = 0.4
SE = 0.21
t = 1.93
df = 19
p < 0.035

Table XV, there was a significant correlation (r=0.56) between the objective signs of patient cooperation and his/her general attitude toward the orthodontic treatment.

2 - RESULTS OF SURVEYS

2.1 - Description of the resulting sample

The original experimental design included the answers of the 12 patients/parents of the control group and the 10 patients/parents of the experimental group. However, two patients and their parents from the control group did not answer. There was no attempt to identify each patient individually. The response were pooled as either belonging to the control group or the experimental group.

2.2 - Comparison between control and experimental group surveys

To compare the two groups, a Mann-Whitney-Wilcoxon test was used. The points of the patient's and patients'parent's survey were summed, and the total points for the control patients' survey versus the experimental ones

Table XV

Objective signs and subjective signs of cooperation consistency

Spearman Rho test

Eliminate ratings of patient "102"

n = 21
Tx = 18.5
Ty = 9
D = 41
r = 0.5655
SE = 0.053
t = 18.34
df = 19
p < 0.004

were compared (Table XVI). The null hypothesis stating that there is no difference in the level of satisfaction between the control group and the experimental group can be rejected at a high level of confidence ($p<0.0001$).

The Chi-square method was also used to compare the two groups of surveys. This test appraises the departure from independence. The null hypothesis is true when the variables are independent. For each cell of the table, we compute:

$$\frac{(O - E)^2}{E}$$

with: O=observed count, E= Expected count

$$\chi^2 = \Sigma \frac{(O - E)^2}{E}$$

Large values of Chi-square in a table of a given size throw doubt on the independence of the variables.

In this present study the number of answers rated as "true" or "4", "mostly true" or "3", "don't know" or "2", "mostly false" or "1", "false" or "0" were compared for the control and the experimental groups (Table XVII). The questions were phrased in such a way that the higher number of "4" answers, the greater the satisfaction. As seen in Table XVII, the patients of both groups are mostly satisfied as no "0" values appear for either groups. However the $\chi 2$ square value is large ($\chi 2 = 59.31$), showing that the distribution of positive answers does not follow a random distribution, but

Table XVI

Comparison of control and experimental group surveys

Mann-Whitney-Wilcoxon test

n = 10 (II)
m =10 (I)
$\Sigma W = 90$
correction = 1.97
$\mu T = 105$
VT = 13.2
z = -3.80
p < 0.0001

Ho rejected

	I	II
Mean rank	5.5	15.5

Table XVII

Comparison of control and experimental group surveys

Chi square test

	0	1	2	3	4
Control	0	12	41	43	44
Experimental	0	0	0	28	112

χ^2	df	p
59.31	4	<0.001

depends on their group. It can be concluded that the level of satisfaction was greater in the experimental group compared to controls at a high level of confidence ($p < 0.001$).

2.3 - Study of the consistencies between different variables

To correlate a parameter of patients' or parents' survey to another parameter, the Spearman Rho method was used.

2.3.1- Patients' survey parameter 4 versus 8 consistency

To correlate the patients' feeling of responsibility and their feeling of having orthodontic treatment as a great experience, the results of question 4 of patients' survey for both groups were compared to the results of question 8 (Table XVIII). As seen in Table XVIII, the null hypothesis stating that there is no correlation between these two feelings can be rejected ($p<0.001$). The correlation coefficient is good ($r=0.63$). There was a significant correlation between the patients' feeling of sharing responsibility with their orthodontist for the outcome of their treatment and their feeling of having orthodontic treatment as a great experience.

2.3.2 - Parents' survey parameter 1, 2, and 3 versus 4 consistency

To correlate the parents' feeling that:

1 - the information at the consultation was presented clearly,

Table XVIII

Patient survey parameter 4 and 8 consistency

Spearman Rho test

n =20
Tx = 187.5
Ty = 63.5
D = 399
r = 0.634
SE = 0.182
t = 3.482
p < 0.001

2 - the orthodontist communicate with them regularly, and

3 - the orthodontist has told them a lot about taking good care of their child's teeth.

versus:

4 - their satisfaction with the care their child receives at the orthodontic department of Case Western Reserve University,

the results of the questions 1, 2 and 3 of the parents' survey for both groups were compared to the results of the question 4 (Table XIX). As seen in Table 19, the null hypothesis stating that there is no correlation between the feelings expressed in the questions 1, 2 and 3 and the parents' satisfaction can be rejected at a high level of confidence ($p<0.0000$). The correlation coefficient is very significant ($r= 0.76$). There was a likely correlation between the feelings expressed in the questions 1, 2 and 3 and parents' satisfaction.

2.3.3 - Patients' survey parameter 4 versus parents' survey parameter 6

To correlate the patients' feeling of responsibility for the outcome of their treatment with their parents' feeling that the orthodontic treatment has positively influenced their relationship with their child, the results of question 4 of the patients'survey for both groups were compared to the results of question 6 of the parents' survey (Table XX). As seen in Table XX, the H_0 stating that there is no correlation between the two parameters can be rejected ($p<0.004$). The coefficient of correlation is good ($r=0.58$). There

Table XIX

Parent survey parameter 1 & 2 & 3 and 4 consistency

Spearman Rho test

n = 20
Tx = 46.5
Ty = 192.5
D = 266
r = 0.763
SE = 0.152
t = 5.009
df = 18
p < 0.000

Table XX

Patient survey parameter 4 and parent survey parameter 6 consisten

Spearman Rho test

n = 20
Tx = 188
Ty = 56
D = 459
r = 0.58
SE = 0.19
t = 3.04
df = 18
p < 0.004

was a significant correlation between the patients' feeling of responsibility and their parents' feeling that the orthodontic treatment has positively influenced their relationship with their child.

DISCUSSION

Most authors have described techniques to enhance individual aspects of patient behavior. Gross (1988) related the use of a lottery system to motivate patients in keeping their appointments, McGlynn et al. (1987), Clark (1976), Lee (1980), Weinstein (1982) reported the use of behavioral self-management on oral hygiene adherence, Gross et al. (1985) described the positive effect of a reward system on patient compliance in wearing appliances. The present investigation is an attempt to present a comprehensive counseling strategy and to study its effect on the overall level of cooperation of teenage patients during orthodontic treatment. Such a study has apparently not yet been undertaken. The following considerations will be presented:

1 - Evaluation of the sample

2 - Evaluation of the methodology

3 - Evaluation of the data from the patients'evaluation

4 - Evaluation of the data from the survey

1 - Evaluation of the sample

Our selection criteria included a sample of patients 10 to 15 years of age receiving full banded therapy. The control and experimental groups were similar for patient age. The average age of the control group was 12 years, 8 months, with a standard deviation of one year and three months. The average age of the experimental group was 12 years, 11 months, with a standard deviation of one year. Of previous studies dealing with the prediction of patient cooperation, "age" is estimated to be the best predictor. Most studies (Allan, Hodgson, 1968; Weiss, Eiser, 1977; Crawford, 1974; Graber, 1971) consider patients of 12 years of age and younger as more adherent than older children. In our study, the average age was almost 13 years old. In the present study, 40% of the control group patients and 50% of the experimental group patients were 13 years old or over. 60% of these control group patients and 80% of the experimental group patients demonstrated good or excellent level of cooperation (total points for parameter I,II,V $\geq$ 60/72). Thus, "being over 13 years old" is not an indicative parameter, at least in the present sample. The significance of the parameter age is evaluated below. Classically, adolescence is divided in five substages depending on the physical, cognitive, and moral development of the teenager: preadolescence, early adolescence, adolescence proper, late adolescence and post-adolescence. As Aten and McAnarney (1981) stressed, "age" is a weak criterion because "Adolescence is an individual occurence which is initiated and terminated for each young person at a different point in time....There are multiple

differences among adolescents depending on the age within the adolescent period, race, sex, ethnic background, economic and social class, area of the country, and family value system". If "age" is considered as the best prognostic factor of patient cooperation, this raises the question of the predictive abilities of the various studies. Should patients be preselected on global criteria? Wouldn't it be a more positive approach to properly motivate them instead?

The sample groups of this study were not homogenous for patient sex. The sex proportions were 75% males and 25% females in the control group, versus 60% males and 40% females in the experimental group. Shaw (1981) reported that "girls more than boys admitted to frequent mirror viewing. More than twice as many girls as boys were dissatisfied with their dental appearance". Different sex proportions between the two groups may have had affected the results of this study, as girls tend to mature earlier than boys and may take a more adult attitude toward orthodontic treatment. However, this is a controversial issue. Of seven studies reviewed relating gender to various aspects of patient cooperation, three reported girls to be more cooperative than boys (Kreit, Burstone, Delman, 1968 ; Starnbach, Kaplan, 1975; Clemmer, Hayes, 1979), and four (Allan, Hodgson, 1968; Swetlik, 1978; Crawford, 1972; McDonald, 1973) found no difference.

Although a lower or lower-middle socioeconomic status (Starnbach, Kaplan, 1975; Crawford, 1972), as well as a high patient cooperation in school (Clemmer, Hayes, 1979; Burns, 1970; Kreit, Burstone, Delman, 1968) were found to be related to better adherence to orthodontic treatment,

no attempt was made to identify each individual patient based on these two parameters. The patients of the control as well as the experimental groups were selected at random. It was assumed that patients of University settings were from the lower middle socioeconomic class, that they may have a variety of personality characteristics and a wide range in the severity of their malocclusion. However, it would be interesting in follow-up studies to determine if parameters such as socioeconomic family status, ethnic groups, public versus private schools etc... have a bearing on the results obtained by the experimental group.

2 - Evaluation of the methodology

The effect of the experimented strategy on the patients' level of cooperation as studied in a University setting should be evaluated as it might relate to private practices. This was a study of student-patient interaction, rather than full-fledged practitioner-patient interaction. Students don't usually have a lot of experience in interpersonal relationships with teenagers, and they may not be taken as seriously by the patients as may experienced practitioners. As a result, a control group in a private practice may get a better overall level of cooperation than the one obtained by the sample of this study. As a consequence, the significance level of the results found in private offices after implementation of this method may not have been as conclusive as the one presented in this experimentation. On the other hand, the quiet and comfortable athmosphere of a private practice and the

attention of many staff members given to the patients are important parameters in patient motivation, and could not be reproduced in this study when interacting with the experimental group patients.

The group reinforcing process that has often been described (Meichenbaum, Turk, 1987; Sueur, 1981; Jarabak, 1965; Kasdin, 1980), as an being efficient procedure in motivating patients could not be implemented in the orthodontic department setting. This would be an interesting point to study, as teenagers tend to listen to and identify with their peers (Schneiders, 1967; Mercer, 1979; Rich, 1968; Aten, Mc Anarney, 1981).

In the present study, the sample goup included only twenty patients, six orthodontists and one treatment coordinator. The results presented are promising but not conclusive. Future research will need to enlarge the study to greater samples.

The patients of both groups were randomly assigned to six graduate residents of the Orthodontic Department of Case Western Reserve University. However, the selection of the patients was not "at random" in the actual statistical meaning. As a matter of fact, the experimental group was started once the data of the control group patients was completed, and after the orthodontic residents had received a three hour training session by the investigator. A random selection would have meant that both groups were started at the same time. It would have implied to either make sure that the residents don't use their new knowledge with the control group patients, or have two different groups of orthodontic residents, not exchanging any

information about the training one group received. However, the main purpose of the training session the orthodontic residents received was to alter their own behavior towards an adherence, patient-oriented goal. Thus, it would have been contradictory to require the residents to act differently with the two groups of patients. The second possibility is more difficult to address in a graduate program setting where a small number of residents share most of their time together. However, even though some statistical bias may have been introduced due to the discrepancy in time between the start of the control group and the experimental group, other design strategies such as a true "random" selection of the patients would probably have created more statistical bias in the University setting than the experimental design used.

Another source of statistical bias was that the investigator as well as the residents knew that the second group of patients was the experimental group. Although the cooperation scale of Slatker et al. (1980) used in the present study has been modified so that each parameter could be rated as objectively as possible, the ratings were not blind. This may have altered the results of this study, especially for the ratings of the subjective parameters of patient cooperation (cf. Appendix III).

By necessity, the investigator played both the roles of the treatment coordinator and the hygienist. As she was very involved in this study, she may have been more enthusiastic than other staff members may have been, monitored the patients more closely than somebody else would. If the method had been implemented by the orthodontists only, the results may not have been so significant.

However, obtaining patient cooperation is not magic. Rozencweig, D. (1988) said that a practitioner has to enter the motivation aspect of his/her practice as he/she enters into religion. This raises the two very important questions: is it easier to change the treatment goals for an anticipated "bad" patient, or try to modify and effectively control the patient behavior? Can orthodontists adhere to communication skills suggestions and implement the systems described herein? Calling non-adherent patients unmotivated is not only unhelpful, it is probably incorrect (Jacob and Plamping, 1989). Behavior change is a complicated process, and it is probably easier to change treatment goals rather than attempting to alter patients' behavior. The manual given to the orthodontic residents discusses a number of strategies and techniques for improving patient's adherence to therapeutic suggestions and recommendations. However, orthodontists need to be motivated, not only to implement this method, but also to increase its significance in the eyes of their staff members. How likely is it that orthodontists will adhere to the suggestions presented in this manual? The available research on the behavior of Health Care Providers (HCPs) does not create optimism (Meichenbaum and Turk, 1987). Why do HCPs in general, or orthodontists in particular, fail to adhere to suggestions? It is important to consider the factors contributing to the orthodontists' lack of motivation in order to modify this negative attitude. Orthodontists are unlikely to increase the rate of patient treatment adherence if they can't first increase their own motivation. The same factors that contribute to patient non-adherence can be viewed as reasons orthodontists may offer themselves, and others, as why the proposed suggestions "won't

work":

- This patient *should accept* my advice. If he doesn't, it is his problem.
- I have so many patients per hour and per day that there is *no time* to implement all this.
- It is too *complicated.*
- It takes time, and this *cost* is not included in my fees.
- I havn't been *trained* to do all this.

It is not the purpose to discuss here the first reason presented. However, it is important to consider the four last rationales so that they may be better understood, dealt with and possibly prevented.

The success of the orthodontist in an age of growing consumerism, litigation and number of both specialists and general dentists practicing orthodontics, is based upon a network of opinion and reputation. In contrast to what many HCPs (orthodontists) may believe, their interactions with their patients are more important than their technical expertise. The likelihood of being sued by a patient for malpractice is often more closely related to the quality of the HCP-patient relationship than the level of competence of the HCP (Meichenbaum and Turk, 1987). Patients are "the walking advertisements" of the orthodontist's skills. A compromised case, debanded with a bad occlusion, decalcifications, decay or gingivitis is not the best image an orthodontist may give to his/her referrals to attest to his/her standard of care. Compromised case results also contribute to the orthodontist's dissatisfaction and frustration. On the other hand, a behavioral management program combined with effective communication skills will

increase job satisfaction and will frequently lead to a more satisfactory outcome for the patient and the practitioner (Jacob and Plamping, 1989).

It is often argued that implementing behavioral strategies takes time. It is true, it both combines altruistic motives and economic demands. Behavioral strategies can only improve one's quality of care, save time, and can often result in financial benefits (e.g., reduction in time lost when patients fail to keep scheduled appointments or to wear their appliances as prescribed. The adoption of a partnership, problem-solving, negociable relationship with adolescent patients can facilitate communication and foster joint responsibility. This, in turn, helps avoid lenghty, often fruitless orthodontist-patient exchanges. Patient satisfaction and adherence are not tied to the actual length of time of the HCP-patient interaction but rather to the patient's perception of being listened to and cared for. The few minutes spent at the outset of a visit will make for a more productive relationship (Meichenbaum and Turk, 1987). Besides, the system described herein has been designed to follow the normal steps of an orthodontic treatment, and as such, is easily integated into the routine of a busy orthodontic practice. Surely, implementing many of the suggestions offered will require more effort and time, at least initially, but as described in the manual, the responsibility for patient adherence is shared by the receptionist, the treatment coordinator, the hygienist, and the chairside assistant. To be effective, adherence must permeate all aspects of care and cannot be delegated entirely to auxillaries with an accompanying expectation that the improvements will be maintained. Instead, the orthodontist must modify his/her own behavior to maximize both

patient adherence and the significance of this issue in the eyes of the staff members. Discussion during staff meetings can help the orthodontist as well as the auxillaries to monitor their usual manner of interacting with and treating patients.

The lack of training orthodontist receive in behavior modification, or even sometimes the lack of awareness that such modification is possible, are problems that need to be solved. Physicians are often instructed in behavior management during their curriculum, to improve their abilities to motivate diabetics to take their prescriptions, overweight patients to control their diet, smokers to quit consuming cigarettes etc... However, most graduate orthodontic programs don't train their residents in behavior modification. Based on the finding of this study, it seems appropriate that behavior modification should be a part of the educational process for orthodontists. As orthodontists become more familiar with these strategies from the beginning, they may feel more comfortable implementing them in their office.

The experimental design of the present study was compromised in two major regards. The first was its short duration. This was due to the amount of preliminary time required in structuring this project. As the residents needed to be trained before the beginning of the experimental group, the control group data had to be completed before the experimental group could be started. Duration is a very important consideration in orthodontics; high levels of patient cooperation must often be maintained for more than two years. Although the present methods stress the importance of constant encouragement by team members, self-monitoring to keep the patient

interested in the treatment, problem-solving by the patient to help cope with difficult situations, reinforcement by the parents to increase or maintain patient motivation, the long-term effect of these procedures could not be evaluated. On the other hand, this study can non-the-less give an idea of the methods' effect, since it has been shown that two-thirds of the patients who drop out preventive programs, do so within 90 days (Weinstein, Getz, Milgrom, 1983).

The second compromised factor in the present study was the fact that cooperation with wearing rubber bands or headgear could not be studied. Only five patients out of 22 had to wear a headgear from the beginning. Most patients who needed to wear rubberbands did not get them before the third month when the initial alignment of the teeth was obtained. No statistical studies could be done based on this data. However, the dimension "appliance wear" was shown by Crawford (1972), El-Mangoury (1981), and Gross et al. (1988) to be correlated with oral hygiene care, a parameter tested in the present study.

3 - Evaluation of data from the patients' evaluation

Unless the reliability and stability of the patient cooperation measures have been established, the correlates found or not found are supect. The significant overall rating consistency between the residents' evaluation and the author's confirms the report of Slatker et al. (1980) on the internal consistency and reliability of the Orthodontic Patient Cooperation Scale. The

internal consistency of this scale is also demonstrated by the high level of correlation (r=0.56) obtained when comparing the objective signs of patient cooperation with the subjective ones. However, when studying individually the rating consistency of each parameter, 26 % of error was found between the residents' ratings and the author's concerning the parent interest (parameter VI) and 17% of error concerning the patient enthusiasm (parameter VII). One possible explanation would be that these two parameters are subjective criteria, and as such, subject to variable interpretations. Another more likely interpretation is found in the experimental design of the study. The author played the roles of both the treatment coordinator and the hygienist. As such, she was in contact very frequently with the patients as well as the parents. At each appointment, she would take the time to chat with the patient, discuss with the parents their feelings about their child's treatment, the reward system they have been establishing, and their relationships with the youngsters. Interestingly, this observation supports Kulis's (1983) statement that patients and parents may share their feelings more easily with enthusiastic, respectful staff members demonstrating interest than with a busy orthodontist. If this assumption was justified, it would reinforce the importance of the team effort in patient and parent satisfaction, and as an outcome in patient motivation, as described by many authors (Morton, Clark, Adelson, et al., 1980; Wright, Lebloch, Lapin, 1986; Bellavia, 1986; Kasdin, 1980; Jacob, Plamping, 1989).

Our results showed a significant amelioration of the cooperation level of

the experimental group compared to the control one. The overall level of cooperation was improved in the experimental group at a high level of significance ($p<0.0018$). The study of patients' progress comparing the objective parameters of patient cooperation (appointment keeping, hygiene care, appliance care) as well as the subjective parameters (patient's and parents' behavior) also presented significant results (respectively $p<0.0065$, and $p< 0.0049$). These results confirm the positive effect of behavioral self-management counseling strategies reported in many health care fields (Young, Jorgenson, Shapiro, 1986; Chiodo, Rosenstein, Clarke, 1986; Holst, Ek, 1988; DiMatteo, DiNicola, 1982; King, Novik, Citrenbaum, 1983; Meichenbaum, Turk, 1987; Patterson, 1985; Kasdin, 1980; Jacob, Plamping,1989; Barkley, 1972). However, the results of the present study can only represent the short term effects of the experimented strategy. It would be interesting to study its effects on the patients' level of cooperation during their entire treatment period. Such a study would be difficult to test statistically. It would imply that all parameters of the strategy, including effective communication skills of team members, would be implemented correctly through time.

Many authors have proved the importance of videotape modeling (Wenstein, Getz, Milgrom, 1983; Schoonover, Bassuk, Smith, et al., 1983; Paegle, 1978; Rubin, Locascio, 1985; Brooks, 1976; Gatchell, 1986; Ingersoll, 1982; Holtz, Ek,1988); behavioral contracting (Rubin, 1983; Jarabak, 1965; Weinstein, 1982; Starfield, Wray, Hess, et al., 1981; Meichenbaum, Turk, 1987; Jacob, Plamping, 1989); problem-solving

(Meichenbaum, Turk, 1987; DiMatteo, DiNicola, 1982; Patterson, 1985); self-monitoring (Weinstein, Getz, Milgrom, 1983; Williams, 1983; Meichenbaum, Turk, 1987; Jacob, Plamping, 1989); as well as relatives involvement and reinforcement procedures (DiMatteo, DiNicola, 1982; Meichenbaum, Turk, 1987; Jacob, Plamping, 1989; Ingersoll, 1982; Patterson, 1985; Kasdin, 1980).

It would be interesting to study the possible motivation drifting through time of the effects of the initial materials presented at the consultation: the videotape, the contract, the flow chart/problem-solving road as well as the parents' reward system. Such a study would perhaps emphasize the importance of interpersonal skills. It could point out the need for reinforcement programs with paced timing when patients' motivation levels can begin to decrease.

The fact that "appointment keeping" is usually considered as not being primarily under the patient's direct control, but rather mostly parental control (Elgolf, Begole, Upshaw, 1989) was a factor that was circumvented because the patients were held responsible for calling in advance if they were unable to appear. However, the results of the present study did not show any significant improvement concerning this parameter ($p > 0.225$). One explanation is that the control group patients' cooperation for this variable was very good. Also, the duration of the study was too short to study the evolution in time of this parameter.

Interestingly, the experimented method had a positive effect considering "appliance care" ($p<0.047$). Most appliance breakage usually occurs during

the early months of treatment, so the short duration of this study did not, in our opinion, alter the results significantly. The fact that appliance breakage is considered to be more a reflection of the skills of the student orthodontist in a university teaching clinic, (Elgolf, Begole, Upshaw, 1989) was circumvented because the patients were held responsible for calling in case of broken appliances to have them replaced as soon as possible.

Even more significant were the results concerning the improvement of hygiene care ($p < 0.0059$). This confirms the notable oral hygiene amelioration among orthodontic patients found by McGlynn, Lecompte and Thomas (1987) and by Clark (1976) after implementation of a behavioral self-management program. However, definitive conclusions cannot be made unless the duration of the study is extended to the entire orthodontic treatment time.

Intuitively, it seems reasonable to conclude that patients may be more cooperative concerning some aspects of treatment and not compliant in other facets. Some data in the literature suggest that patients are often selective concerning particular aspects of their treatment program they are willing to adhere to (Gross Samson, Dierkes, 1985; Gross, Samson, Sanders, et al., 1988). In the present study, significant correlations were found among "appointment keeping" and "appliance care" ($p<0.004$), "appointment keeping" and "hygiene care" ($p<0.017$), "appliance care" and "hygiene care" ($p<0.015$). However, patient consistency should be studied in time. As a matter of fact, it is not uncommon at the end of orthodontic treatment to find patients willing to continue wearing appliances in order to have treatment

finished, but with decline in good oral hygiene.

Taylor (1979) described good patients as being compliant, following instructions, exhibiting understanding, respectful, considerate, and bad patients as complaining, demanding attention, insisting on information, and suspicious of treatment. The results of the present study found significant correlations among the objective signs of patient cooperation (appointment keeping, hygiene care, appliance care) and patient behavior. This observation supports the contention that internally motivated patients cooperate better with the orthodontic therapy (El-Mangoury, 1981; Egolf, Begole, Upshaw, 1989; Clemmer, Hayes, 1979; Crawford, 1974). This probably is because the orthodontic patient is given the opportunity to participate in therapy and is in control. This observation is also confirmed by the low correlation found between the patient objective signs of cooperation and parent enthusiasm ($r=0.4$). As Lewit and Virolainen (1968) stated, it seems that parental wishes are important for adolescents, but more self-reliant adolescents are less influenced by parental approval than by the severity of the malocclusion.

4 - Evaluation of data from the survey

Sending surveys was an attempt to determine the degree of satisfaction of patients and parents concerning the care they received during this experimental study. At the end of the experimental period, seven months after the control group patients have been started, and four months after the experimental group had begun, these surveys were sent. The discrepancy in

time may have had affected the results.

The comparison of the overall level of satisfaction between the control group and the experimental one shows more contentment of the experimental group at a high level of confidence ($p < 0.0001$). As the treatment of these patients had just begun, this feeling may be more related to the communication skills demonstrated by the residents and the author, rather than student orthodontist technical skills. Although the data are correlational and caution must be exercised when interpreting these results, this observation may be also supported by the high degree of correlation found between the amount of information that parents received and their satisfaction with the care their child receives in our orthodontic department. This would confirm the importance of interpersonal skills as demonstrated by many authors (Smith, Bass, 1979; Gerrard, Boniface, Love, 1980; King, Novik, Citrenbaum, 1983; Meichenbaum, Turk, 1987; Mittleman, 1985; Lefler,1985; Brandon, 1988). Although no correlation was tested between patients' degree of satisfaction and their adherence, the patients who demonstrated the highest level of cooperation were also the ones the most satisfied. Zimmerman (1988) demonstrated that patient satisfaction was linked to patient behavior. Communication is effective for helping patients to internalize recommendations (Weinstein, Getz, Milgrom,1983). As Meichenbaum and Turk have stated (1987)... "Patient satisfaction resulting from good communication and rapport and continuity of care increases the likelihood of adherence. It is without saying that a caring attitude, warmth, personalized treatment approach can significantly enhance patient

satisfaction and treatment adherence". These observations have direct clinical implications in orthodontic practices. If one wants to get patient cooperation throughout the entire treatment period, training of the orthodontist as well as the staff in communication skills seems essential.

The results of the present study also showed a significant correlation between the patient's feeling of responsibility and their feeling of living the orthodontic treatment as a great experience (r=0.63). Although these correlational results must be interpreted with caution, the relation between these two factors is of particular interest. As a matter of fact, the goal of the experimental method was to build a partnership with the patient in which they shared responsibilities for the outcome of the treatment through videotape modeling, behavioral contracting, self-monitoring and problem-solving. Gosney (1986) stated that "Motivation and the decision to seek treatment are not always initiated by the child, the incentive to co-operate fully during the treatment period may be reduced or absent". As emphasized by many authors (Rozencweig, 1988; Williams, 1983; Weinstein, 1982; Chiodo, Rosenstein, Clarke, 1986) all attempts were made to have the patient beleive that his/her preventive behavior will produce the desired outcomes. As Gross (1988) mentioned "The relationship between cognitive competence and compliance may be the reflection of a responsible behavioral style. Compared to non compliant youngsters, children who followed orthodontic treatment instructions may be better trained to attend the long term consequences of their behavior". Making patients feel responsible and properly reinforcing their adherent behavior may help them attend long term

outcomes. Most adolescents have a strong desire for independence (Schneiders, 1967; Mercer, 1979; Rich,1968; Aten, Mc Anarney, 1981). The assumption of this strategy was that the orthodontic treatment may, through a patient's feeling of responsibility, be a fantastic opportunity for the teenager to gain a sense of control, an enhanced self-esteem. Also, "having the patient participate actively strenghten adherence related attitudes" (Jacob, Plamping, 1989). The results obtained may indicate that a "mutual participation model" assuming that both pratitioner and patient have equal power, need each other and will work toward choices and actions satisfying to them both may be not only the most suitable model of orthodontist-patient relationship to obtain long term behavior changes, but also probably the most appropriate to gain a adolescent satisfaction (Weinstein, Getz, Milgrom, 1983; Jacob, Plamping, 1989).

Some adolescents have a difficult time relating to their families. On the other hand, youngsters who are exposed to warmth and openness in their homes, whose achievements are met with approval and affection, and who are encouraged to be independent, move forward into adolescence with few problems (Schneiders, 1967; Mercer, 1979; Rich, 1968; Aten, Mc Anarney, 1981). A letter given to the parents at the beginning of their child's treatment, as well as a discussion with them, emphasizes the importance of having the teenager cooperate on his own accord, of the parents supporting and shifting responsibility toward their child (Meichenbaum, Turk, 1987; Baldwin, 1989). As recommended by many authors the parents were involved in a reward system (DiMatteo, DiNicola, 1982; Meichenbaum, Turk, 1987;

Jacob, Plamping, 1989). Interestingly, the results of this study showed a significant correlation between the patients' feeling of responsibility and the parents' feeling that the orthodontic treatment was positively influencing their relationships with their child (r=0.58). This confirms the report by Gross, Samson and Dierk (1985): "parents have indicated that a reward program increases pleasant parent-child interactions, which have a positive effect on the parent-child relationship". The combined results of this previous study, the correlation of patients' feeling of responsibility with their feelings of living the orthodontic treatment as a great experience, as well as the weak correlation found between objective signs of patient cooperation with parent enthusiasm, may indicate that parents may not have such a significant control on adolescent patient cooperation, although they may have a direct influence in their child's decision to seek treatment (Graber, 1980; Lee, Friedman, McTigue, 1981; Gosney, 1986). Sensitive and caring parents may, rather, enhance teenagers' adherence by increasing their sense of responsibility as well reinforcing their adherent behavior. It may also suggest that if positive attitudes between a youngster and parents, as well as with the orthodontist, are built from the beginning, orthodontics may be a nice opportunity to help the evolution of parent-child relationships during adolescence. As Story (1966) mentioned: "patients respond to the orthodontist and parents in similar ways. The orthodontist becomes a substitute parent. In an adolescent, there is a strong desire for independence from parents during the same period when orthodontic treatment is going on. The orthodontic patient does not want to be uncooperative, but he or she also

tends to have a strong desire for independence, autonomy and self-regulation".

SUMMARY AND CONCLUSIONS

While videotape modeling and behavioral modification techniques have been used successfully in different areas of medical care, their effects have only been utilized in orthodontics to enhance certain specific and limited aspects of patient behavior. No studies have been found testing the effect of a comprehensive counseling strategy on adolescent cooperation and satisfaction as well as parent contentment. A high level of patient adherence of prolonged duration is essential for orthodontic treatment success. Adolescents tend to have a strong desire for independence, and treating teenagers represents a special challenge for the orthodontic team.

It was the purpose of this study to create a structured counseling strategy for teenage orthodontic patients and to examine experimentally its possible effects on their cooperation. Twenty-two patients, 10 to 15 years of age, were randomly selected from Case Western Reserve University's Orthodontic clinic. The patients had no previous orthodontic treatment and received full banded orthodontic therapy. A matched control group consisted of 12 new patients. The orthodontic residents participated in the study and interacted with both the control and experimental patients and their families in the manner they customarily do, with no influence from the investigator. The experimental group comprised 10 patients who started their treatment once the data collection of the control group was completed. This was after the student orthodontists had received a three hour training session from the

investigator as well as receiving an explanatory manual that was prepared to help facilitate treatment adherence in teenagers. The investigator played the role of both the treatment coordinator and the hygienist. Different procedures, stressing the importance of a partnership between patient and practitioner for the outcome of the treatment, were implemented with the patients of the experimental group and their families including presentation of a videotape prepared for the purpose, behavioral contracting, problem-solving, self-monitoring, and parental support. Patients were evaluated with a scale adapted from the OPCS of Slatker et al. (1980). This was done independently by the residents and the investigator, successively one, two, and three months after their appliance placement. The outcome data was collected at the end of the three months evaluation period of each group. At the termination of the experimental period, separate surveys were sent to the patients and the parents of both control and experimental groups.

Results of the present study are summarized as follows:

Results of patient evaluation

1 - The ratings of the residents and of the investigator demonstrated a significant overall consistency. This finding supports the report of Slatker et al. (1980) on the internal consistency and the reliability of the Orthodontic patient Cooperation Scale.

2 - Two parameters, when evaluated individually, parent interest (VI) and patient enthusiasm (VII) of the scale showed significant percentages of inconsistency, 26 % and 17% respectively.

3 - Objective parameters of patient cooperation (appointment keeping, appliance care, hygiene care) were significantly improved ($p<0.0065$). Parameters III and IV (headgear and rubberband wear, respectively) could not be statistically evaluated.

4 - Subjective parameters of patient adherence (patient and parents behavior) were also significantly improved ($p < 0.0049$).

5 - Evaluated individually, parameter I (appointment keeping) did not show significant amelioration ($p > 0.225$); parameter II (appliance care) did significantly better ($p < 0.047$) as did parameter V (hygiene care) ($p < 0.0059$).

6 - The overall level of patient cooperation was significantely improved in the experimental group ($p < 0.0018$).

7 - When testing patient consistency, significant correlations were found between appointment keeping and appliance care ($r = 0.559$), appointment keeping and hygiene care ($r = 0.452$), appliance care and hygiene care ($r = 0.474$), appliance care and patient complaints ($r = 0.468$), objective and subjective signs of patient cooperation ($r = 0.565$). A less significant correlation coefficient was found between patient objective signs of patient cooperation and parent behavior ($r = 0.400$).

Results of the survey

1 - The results of the surveys showed a significant level of satisfaction improvement of both patients and parents ($p < 0.0001$).

2 - A significant correlation was found between patients' feeling of responsibility and their feeling of living the orthodontic treatment as a great experience ($r = 0.63$).

3 - A significant correlation was found between parents' feeling of having received enough information (parameters 1, 2, and 3), and their satisfaction with the care their child received ($r = 0.76$).

4 - Patients' feeling of responsibility for the outcome of their treatment was significantly correlated with their parents feelings that the orthodontic treatment had positively influenced their relationship with their child ($r = 0.58$).

In conclusion, the results of this study demonstrate that a comprehensive behavioral management method, enhancing patient as well as team members'

motivation, can augment teenage patient cooperation when utilizing the systems described herein. Furthermore, it seems to increase both patients' and parents' satisfaction of the care received. The extent to which an orthodontist is enthusiastic and involves him/herself in patient motivation will be reflected in how enthusiastic his/her auxiliaries are when relating to the teenagers, and as result in the level of patient cooperation.

Long-term analysis on the effects of the experimented strategy should now be carried out in a proper setting, and on lareger samples, in order to evaluate the evolution of patient cooperation as treatment proceeds through more extended time. This could then provide a basis for structuring a reinforcement program.

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APPENDIX I

SOPHIE ROZENCWEIG

TEENAGE COOPERATION AND ORTHODONTIC TREATMENT

A "HOW TO" WORKBOOK FOR THE ORTHODONTIC TEAM

ACKNOWLEDGEMENTS

I wish to express my sincere appreciation to the many individuals who gave of their time and expertise, and made this project possible:

Dr Donald Enlow who graciously reviewed this manual and gave me so much valuable advice.

Dr Mark Hans, for his close attention and his willingness to confront the various problems encountered in the development of this project.

Dr Delorre Haddad whose dynamic personality and expert advice enabled this manual to come about.

Dr Georges Rozencweig, my husband, for his love, support and constant encouragement.

Dr Michael Taylor who so kindly edited the text of this manual.

Dr Sharon Comet Epstein and Dr Dennis Drotar for their thoughtfull suggestions.

Dr David Fuller whose examplary staff relationships and nice personality inspired my work from the very beginning. I am also most grateful to his Treatment Coordinator, Mrs Lori Mollohan, and his Financial advisor, Mrs Dee Curci for their professional evaluation.

Dr Varun Kalra, Dr Michael Sabat and Mrs Susan Hans for their constructive criticism.

Miss Gay Henderson for her skillfull and competent production of the videotape.

Miss Hannah Slodov for her talented drawings seen throughout the manual.

CONTENTS

Preface	1
Introduction	3
How to create a winning team	5
The enthusiastic team	6
The efficient team	7
How to keep the lines of communication opened	
How to perform work efficiently	
The patient-oriented team	9
How to become an effective communicator	13
Persuasion-the communicator	14
Warmth and enthusiasm	
Empathy	
Respect	
Persuasion-the message	22
Brief	
Clear and precise	
Organized	
How to implement the counseling strategy	27
The exploration phase: first clinical examination and diagnostic records	30
Patient interview	
Report of the preliminary examination findings	
The diagnostic records	
The understanding phase: consultation	33
The conference	
Presentation of the videotape	
Signature of the contract	
Parental support	
Patient public commitment	
The action phase:	44
The bonding/banding day	
The appliance day	
The following visits	
How to meet the challenge	47
The cooperative patient	47
The potentially cooperative patient	48
The timid	
The non-consistent	
The defiant	
Child lacking of cooperative ability	53
Epilogue	55
Reading and resources	57

PREFACE

Good teenage patient relations is the single most important factor in orthodontic marketing.

Having positive relationships with our patients is essential for success in today's competitive market because one unhappy patient can transmit dissatisfaction to many potential patients.

Most of our patients are teenagers who present special challenges to the orthodontic team. As orthodontists, we have all felt the frustration and concern of working with teenage patients who don't cooperate with their treatment regimen. Orthodontic treatment requires a high level of patient cooperation, and patient nonadherence to our suggestions can render even the best treatment plan and techniques ineffective.It should be noted that it is as important to reach our treatment goals for the good of the patients' oral health and comfort as it is for our own satisfaction and peace of mind. Afterall, straight teeth and beautiful smiles are the "walking advertisements of our skills".

Good teenage patient relations is the single most important factor in orthodontic marketing.

Motivating orthodontic patients and communicating effectively are not new issues. Resources abound on cooperation and communication tactics. However, few resources describe an appropriate counseling strategy for teenage orthodontic patient adherence. We hope that this book will help you increase the cooperation of your adolescent patients by showing you how to develop and maintain more satisfactory personal relationships with them.

*The quotes followed by *** are issued from the ADA materials. (please refer to the readings and resources list p 57)*

INTRODUCTION



Can your orthodontic team improve its performance even after several years in practice?
Are the members of your orthodontic team open-minded? Can they recognize their mistakes? Are they self-willed?
Is there always something to learn in any situation?
Is it sometimes necessary to change work habits in order to become more efficient?

If you can answer "yes" to most of these questions, the information in these pages is intended for you.

Entering the motivation aspect of your practice is analogous to entering a religion. The orthodontic team needs to be enthusiastic and to believe in the efficacy of motivation in order to communicate this attitude to the patient.

This booklet is organized for you, the orthodontist and the staff, to assist you in improving teenage patient cooperation in both adherent and non-adherent patients. It is not a philosophical treatise on patient motivation. Rather it is a "how to" work book. It won't make you an instant communication expert, but it will give the entire team easy-to-understand guidelines on how to increase treatment adherence in teenagers.

It is critical to create a "people-oriented" atmosphere in your practice to effectively motivate your patients over a long period of time. In the pages that follow, you will discover:

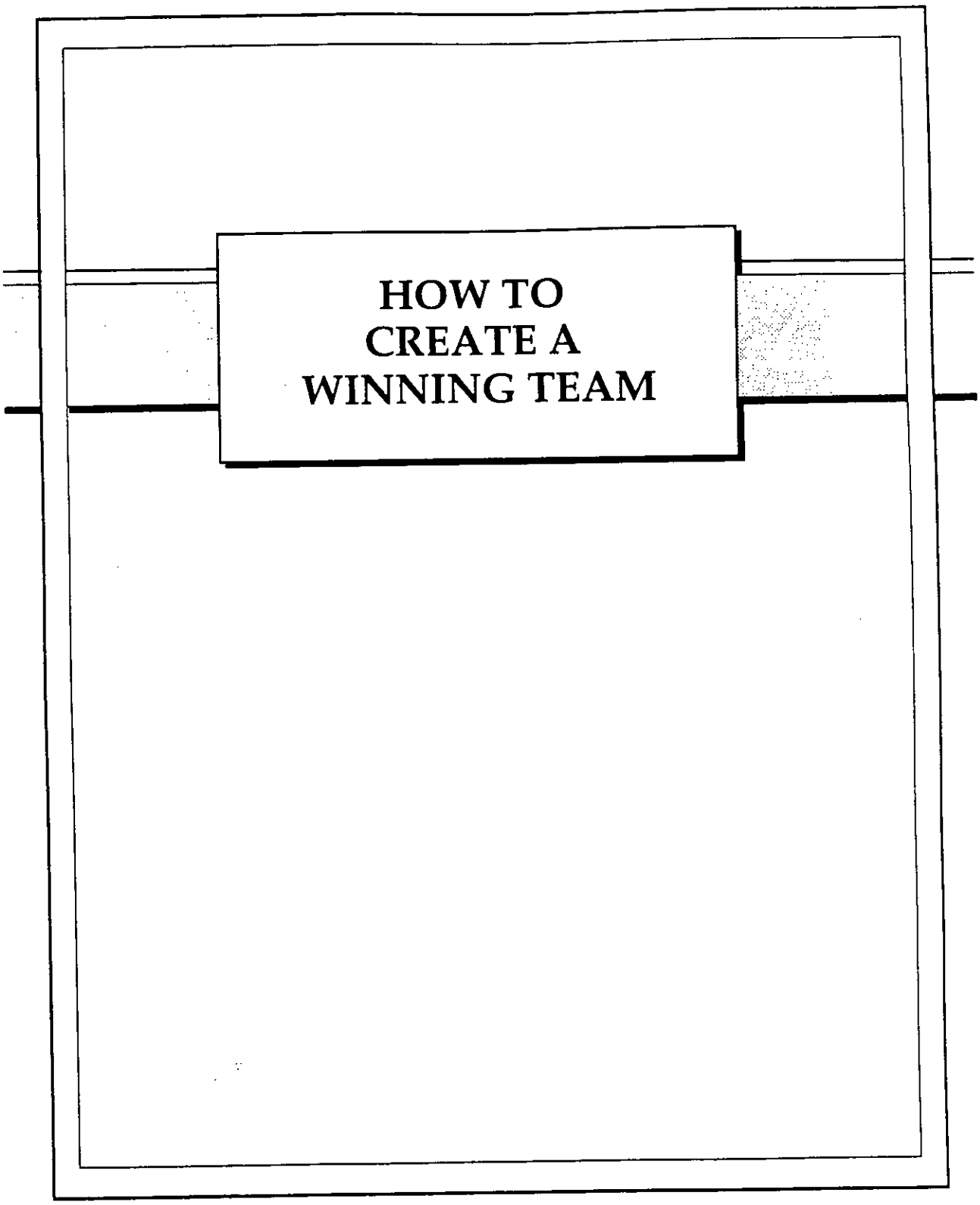
• **Step I: "How to create a winning team"** features essential facts on building positive orthodontist/staff relationships.

• **Step II: "How to become an effective communicator"** describes personal qualities needed to build positive orthodontist/patient and staff/patient relations. It also focuses on the different characteristics of a persuasive message. Presenting information in the correct way will help your patient remember and follow your suggestions.

• **Step III: "How to implement the counseling strategy"** presents a straight forward system for teenage patient adherence, designed to be readily integrated into the routine of orthodontic procedures.

• **Step IV: "How to meet the challenge"** describes how to tailor communication style to adapt to different patient attitudes.

"Be a team player. Always place the patient's need above your own. Be competent technically, surround yourself with caring people and learn how to communicate effectively".
L.D.PANKEY


HOW TO
CREATE A
WINNING TEAM

HOW TO CREATE A WINNING TEAM

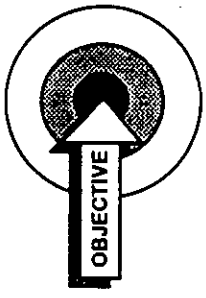
What is required to create an atmosphere that is conducive to patient motivation? What is required to become a sharp team of professionals?

It requires a **continuous** team effort. As in any dental office, positive first impressions are essential for successful relationships. However, in an orthodontic office, this feeling must be *continuously reinforced* throughout the entire treatment which may last for several months. For this reason, the orthodontic team needs to make a special on-going effort to communicate. This includes being friendly, caring tactful, and understanding so as to meet the patient's human as well as orthodontic needs.

"Patients must have confidence and respect for the team. This is only possible if the team has confidence in itself and in its ability to work together"



Creating the right practice atmosphere depends on orthodontist/ patient relations as well as staff/patient relations. However, this can only be achieved by a winning team; a team who has confidence in itself and in its ability to work together.



The objective of this chapter is to describe the main characteristics of a winning team; i.e. being **enthusiastic, efficient,** and **patient-oriented.**



The office policies must be clear and stated in writing. All aspects (staff, office design, fees, communication..) of the practice must fit together and present a consistent image in the mind of the patients, parents and staff.

A commited team is the best practice builder any office can have

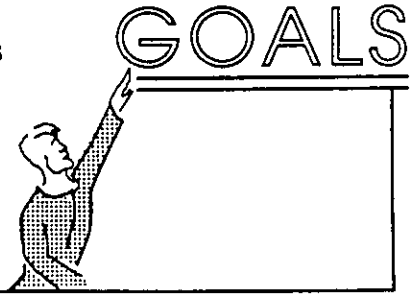
The complexity of orthodontic practices has resulted in an increasing interdependence of personnel in many of their functions. The effectiveness of the individual is therefore often dependent on another office member. As a consequence, having a printed office policy is very beneficial to the team. It ensures that team members are well coordinated and effectively working in the same direction. Because no two orthodontic offices are alike, no two office policies are similar. However there are three aspects of an office policy that should be considered key factors for building successful team members/patient relations. They are being:

1- an **enthusiastic team**,
2- an **efficient team**, and
3- a **patient-oriented team**.

THE ENTHUSIASTIC TEAM

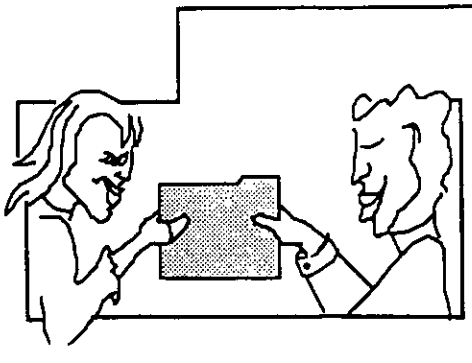
Having team members who are mutually supportive, comfortable in their work environment, and concerned about the quality of their work will increase the likelihood that optimal orthodontic care will be provided for the patient. However, having a concerned, loyal, dedicated team is not solely a result of the innate charm of the orthodontist. It is a **concerted effort** by the **entire team**.

What are team members expecting from the orthodontic office where they work?



BEING ABLE TO MEET PERSONAL GOALS

- My work is interesting. I can develop and learn
- I contribute to the success of the practice
- My work goals are attainable by me. They provide for me a sense of achievement

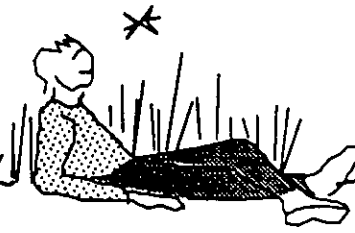


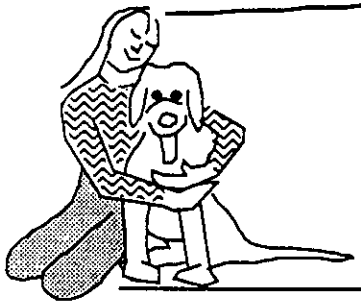
HAVING A FEELING OF CONSIDERATION

- Dr Smith is confident in the quality of my work
- I am being listened to when I have a suggestion
- I participate in decision-making through office meetings
- I know what is expected of me and I get specific feedback about my work, so I can progress.

HAVING A FEELING OF AUTONOMY

- My knowledge and judgement allow me to make certain appropriate decisions
- I have a certain degree of freedom to organize my time effectively.





HAVING A SENSE OF BELONGING

- Dr Smith is skillful and professional
- Dr Smith always has a nice attitude
- I have confidence in Dr Smith
- There is a great atmosphere at the office
- I am proud to be a member of our team.

Being an enthusiastic team will foster each member's pride in contributing to the success of the practice. It will develop the auxillaries as one of the most important sources of new patient referrals. Complimenting team members in front of the patients will make them more confident in your practice and it will also create greater patient comfort. Because they will see that you enjoy working together.

THE EFFICIENT TEAM

Efficiency is a necessarry ingredient for success. It depends on the team members' ability to communicate and on their understanding of their roles in the office.

HOW TO KEEP THE LINES OF COMMUNICATION OPEN

Good communication is the key to creating a winning team whether it is on the football field or in the orthodontic office. And as in any situation, **how** the information is communicated may be the most important aspect of effective team communication.

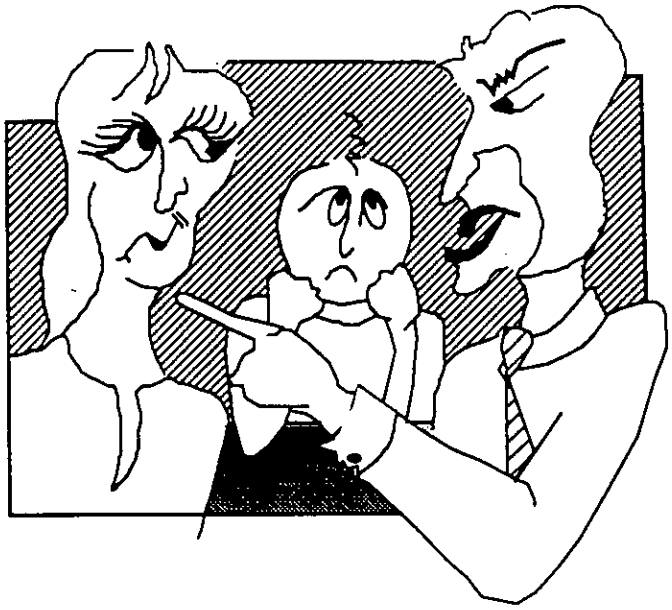
Lines of communication must be opened within the team so that the orthodontist and the staff can function at their highest potential.

Team members that stay enthusiastic and keep positive attitudes about their work will:

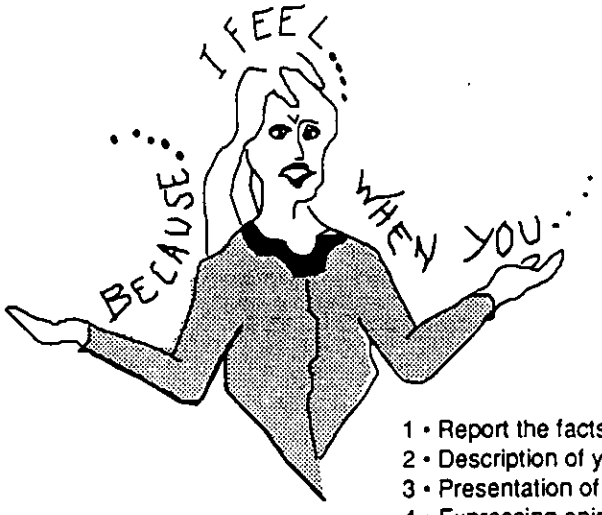
- listen to each other
- talk with each other about ideas and feelings that affect work performance
- be comfortable disagreeing with each other and manage their differences in a constructive manner
- talk comfortably about how well tasks are being accomplished and how performance can be improved....etc...

Effective communication skills (described in the next chapter) will help team members discuss and perform adequately work tasks and practice goals. To keep the line of communication opened, team members need to know **how to make feelings and ideas known.**

The professional regard that orthodontist and staff display toward each other will be strongly related to the positive perception of the work performed.



However, making these feelings and ideas known is not always easy. When a problem arises, this problem cannot be solved by discussing with anyone other than the person who is concerned. You will get the best outcome if, instead of complaining in a disorganized manner, you build your intervention tactfully with the following components:



1 • Report the facts (*When you do this.....*)
2 • Description of your feelings (*I feel..... because)*
3 • Presentation of an action plan *(I would prefer that....)*
4 • Expressing opinions or judgements (*It is stupid to do so....*) will only create tension, anxiety, defensiveness and intensify the problem.

HOW TO PERFORM WORK EFFICIENTLY

Defining individual roles is the second step for attaining efficiency in the office. To avoid confusion, conflict and loss of job effectiveness, it is very important to reach agreement about and specify work roles for all team members. Because of individual differences between workers, the increasing complexity of work, and the specificity of each office it is impossible to give a standard portrait of each team member job description.

Most job descriptions define:

- The ***skills*** needed to perform the job responsibilities (Ability to gain patient confidence, ability to perform receptionist duty....)
- The ***desired behaviors and attitudes*** (punctual, loyal, friendly....)
- The general daily, weekly, and periodical ***work responsibilities***

To avoid any misinterpretations, desired behaviors and attitudes should be specifically defined as demonstrated in figure 1.

Although job refinement is an ongoing process that is specific to each office, having a written job description is critical for effective communication within the team.

THE PATIENT-ORIENTED TEAM

To provide a service of excellence you need to be aware of patients' expectations.

Developing effective communication skills for the staff is just as important as developing these skills for the orthodontist. Today, staff members play an active role in the growing success of a practice, because many orthodontists delegate to competent auxillaries. Staff members are not only the first people to meet the patients but also interact with them more and more during treatment.

Creating the appropriate atmosphere to develop good patient relations is the duty of the orthodontist as well as the staff.

For this reason, it is important to individualize a policy for patient relations. This policy will specifically outline how patients are to be treated in your office. It helps team members pay proper attention to patients' individual needs. It helps patients to value what the practice has to offer.

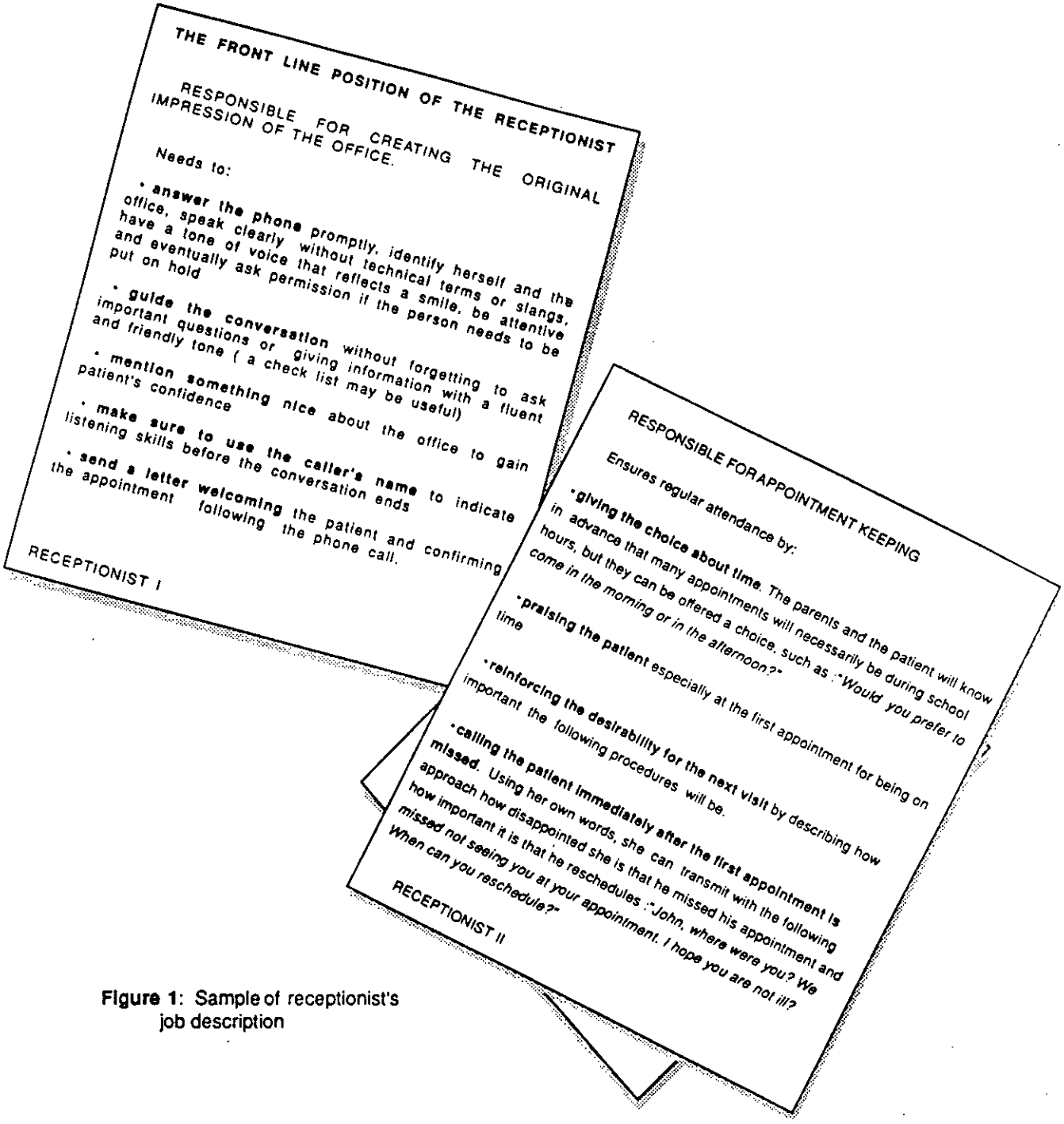


Figure 1: Sample of receptionist's job description

A winning team will:

1- Transmit positive messages to the patient both verbally and non-verbally by:
- Maintaining a professional demeanor, "dressing for success",
- Being an effective communicator.(cf. chapter 2)

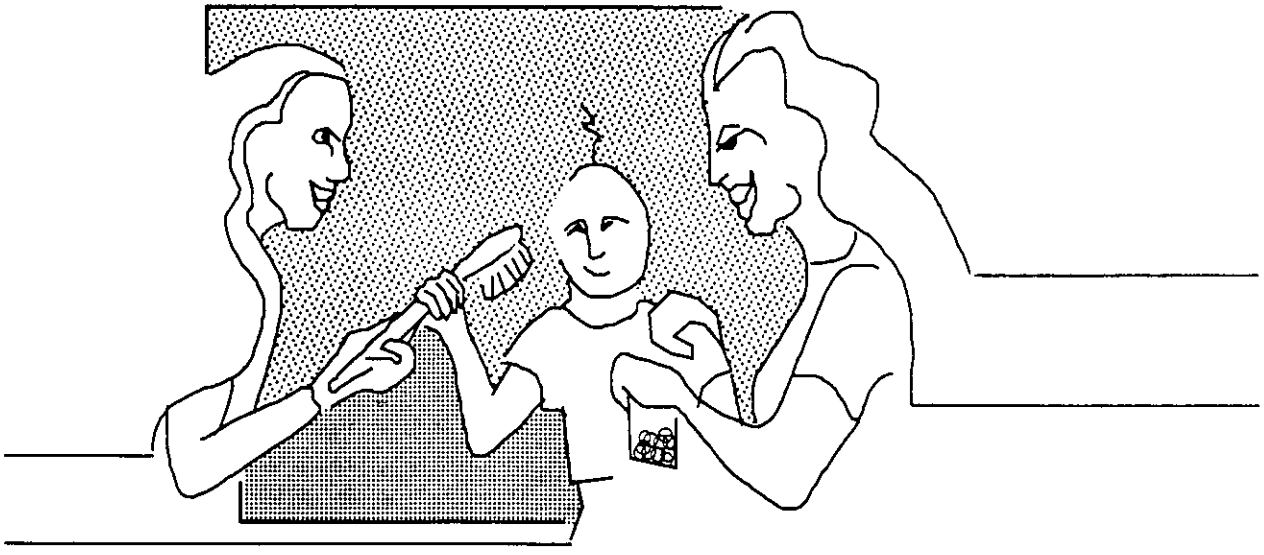
2- Make the patient actively participate in his treatment, by:
involving their families and sensing their needs.

3- Foster patients' sense of self-efficacy, by:
assessing their performance, praising them (for being on time, maintaing a good hygiene, wearing their appliance)....and rewarding them (cf. chapter 3).

4- Tailor communication style to adapt to different patient attitudes
(cf. chapter 4)

IN CONCLUSION...

The purpose of the orthodontic team is to help patients acquire nicer smiles and better function. An enthusiastic, efficient and patient-oriented team will be far better prepared to serve the patient and achieve superior results than a divergent, reclusive, fractionated, and seemingly uncaring one.



HOW TO BECOME AN EFFECTIVE COMMUNICATOR

HOW TO BECOME

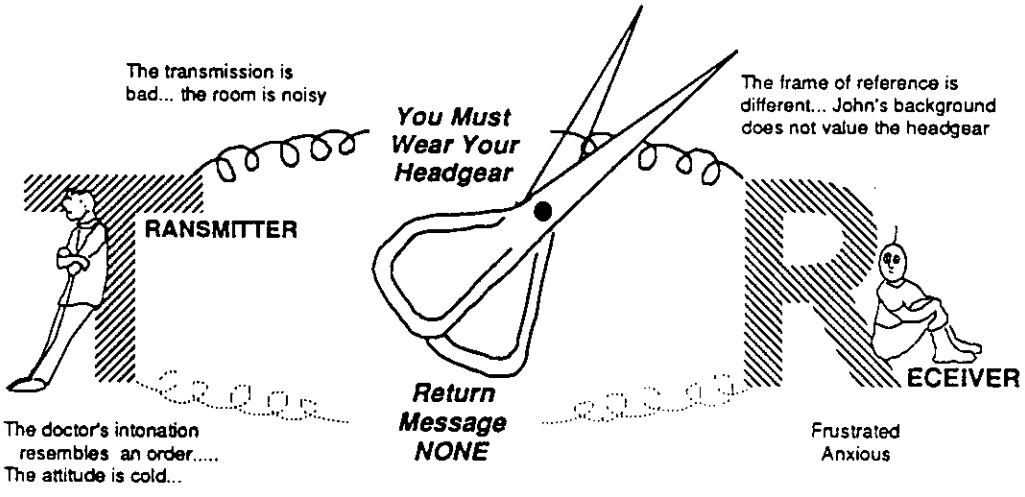
AN EFFECTIVE COMMUNICATOR

Did you know that two-thirds of the patients that leave an orthodontic office, do so because they have been turned off by somebodies' attitude?

Because most patients automatically presume an orthodontist has professional competence, they tend to focus their attention on the emotional rather than the technical aspect of care. This is why effective communication skills build trust and create the kind of rapport that can lead to a patient's increased willingness to accept the orthodontist's suggestions.

" Interpersonal relationships may be the single most important factor in a patient's commitment" ...

Persuading or even discussing with somebody can be a very difficult task. You can imagine, for example, the many obstacles that can prevent the communication process in the following everyday situation: you, the orthodontist, trying to convince John, your patient, to wear his headgear can turn out to be a one-sided lecture.....

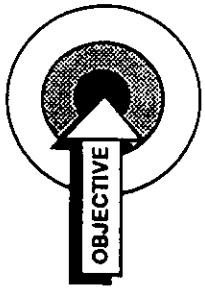


In this case, most probably, there will be no return message, because John is not allowed to express his feelings. This caricatural situation represents a communication failure.

The objectives of the following pages are to pin-point the main aspects of the communication process and help you build even greater relationships with your patients. We will be discussing:

- The qualities of a persuasive communicator
- The construction of a persuasive message

The principles that we will be illustrated will not only apply to the relationships between team members and patients,but also to circumstances that occur outside the office in our everyday lives.

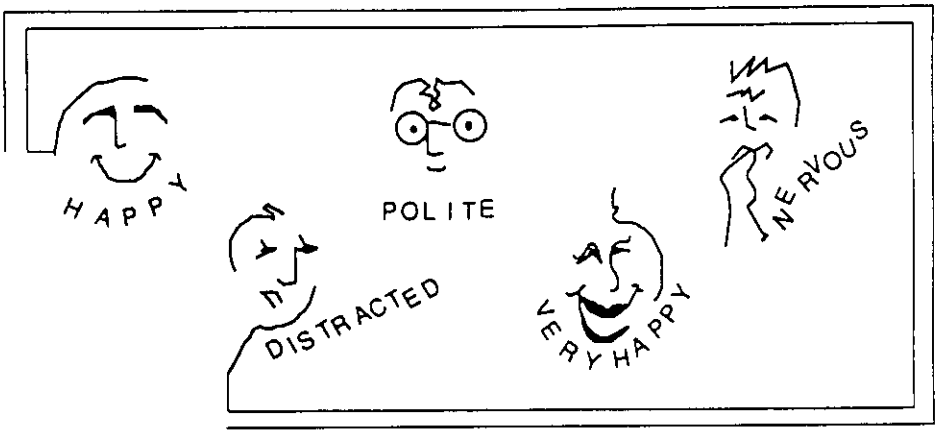


PERSUASION - THE COMMUNICATOR

With most patients, anxiety interferes with effective communication. If you create a positive atmosphere and build trusting relationship, your patients will be more inclined to ask questions and hear your answers. Three qualities can help you in becoming an effective communicator: *warmth, empathy and respect*. These qualities can be expressed through appropriate practice and continued self-monitoring.

WARMTH AND ENTHUSIASM

Conveying warmth shows an interest in and a concern for the patient. The key issues are not only what you say to the patient, but also what emotions you convey while speaking to them. One can say *"Boy, it's great to see you again!"* and feel either:



NON-VERBAL SKILLS

" Non-verbal communication can be even more powerful than verbal ones. If the two are perceived to be in conflict, the non-verbal ones will dominate".
R.A. BRANDON

Your feelings and reactions can readily be transmitted to someone through different communication channels.

One of those channels is your voice.

Your voice will clearly convey your emotions. By varying the volume, emphasis and pacing of words you can give several different meanings to simple sentences. As was seen in a previous example, your voice tone can reveal a different feeling from the one you want to declare. For instance, saying to John: *"Boy,it'sgreat to see you again"* without the non-verbal expressions to support your statement will send mixed signals to John.

Another channel by which to transmit your feelings is demonstrated through your facial expression and body language.

Natural eye contact will convey self-confidence, honesty and friendliness. On the contrary, shifty eyes will transmit self-consciousness, dishonesty and hostility. Evidence indicates that it is important to make good eye contact during the first two minutes and the last thirty seconds of your meeting with the patient. These periods of eye contact will display your attentiveness to the patient.

A friendly smile, an informal manner, a relaxed attitude as well as head nods will make the patient feel your attractiveness and warmth. These gestures will also encourage the patient to be relaxed, open and honest. On the other hand, maintaining a closed arm position, leaning backward, fidgeting, playing with your hands will communicate coldness, inaccessibility, disinterest, and defensiveness.

VERBAL SKILLS

It is very important to address the patient only when you are prepared to devote full attention to his reply. Evidence shows that talking while working on the patient, increases patients' satisfaction. It lets them know that you are interested in the person as well as the patient.Following are some tips that can make you communicate even more effectively:

Good verbal skills are important in educating as well as encouraging patients

Asking the teenagers what they want to be called, and doing so, is one fo the small actions you can take to return some control to them and reduce their anxiety.

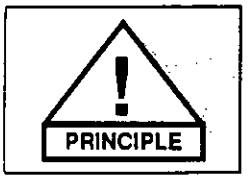
Presenting your ideas confidently and calmly will allow your patients to relax and will encourage them to do as you say.

Using constructive words or expressions such as: " *Confidence*"," *Value*", *"I understand you"*, *"You will be proud"*, *"You deserve"*, *"You will benefit*, *"Advantages are"*....will help boost the child's self-esteem and make him/he more receptive to your ideas.

Phrasing your sentences so as to have a positive effect rather than a negative one, for example:

-		+
"Do you understand ?" "Let me tell you..."	≠	"Am I clear enough ?" "May I remind you...?"

The key to successful communication is having a common ground with the teenager. This does not mean that you should pretend to have the same interests or outlooks as the adolescent. If John says he loves basketball and you say that you personally prefer tennis, you are still on common ground because you can be as enthusiastic about tennis as the teenager can about basketball.



Presenting information to the patient, without other considerations, does not lead to behavior changes. In order to be truly convincing, you must:

- adapt your voice, facial expression and body language to the personality of the individual,
- be attentive to your own feelings,
- apply yourself to use the appropriate words.

To achieve this, you will need to "deeply" understand your patient and demonstrate this understanding. The next section will help you in this respect.

EMPATHY

Empathy is usually considered the most important charasteristic of effective communication. Empathy is the identification with and understanding of another's situation, feelings and motives. In other words, your patient will follow your instructions more readily when he **beleives that you understand his situation**.

In order to understand your patient and demonstrate empathy, it is important to know:

- How to question your patient
- How to listen to your patient.

APPROPRIATE QUESTIONING

Discovering the needs and expectations of your patients through appropriate questioning will provide you with invaluable clues as to the best ways to interact with them. There are two types of questions: open and closed.

"Practice building requires effective interviewing skills to get patients talking about their needs and expectations".

OPEN QUESTIONS can refer to:

1- opinions: *"What do you think about braces ?"*. These questions will not allow the dialogue to move on because they lock the child's attention into expressing their opinions rather than expanding the dialogue.

2- facts: *"When did you brush your teeth ?"*. These questions are more objective. They begin with *"who", "where", "when","how","how much"*... and will allow the child to better discern reality;

3- feelings: *"How do you feel about brushing your teeth after meals?"*. These questions lend validity to the factual questions above. Facts only have meaning when they refer to a feeling, so it is very important to inquire about the concerns after questionning the fact.

4- intention of actions: *"What are you planning to do about your gingivitis?"*;These questions allow the patient to present his own plan of action. You should, at this point, add to or modify this plan by offering your own solutions as well.When offering solutions, it is always best to present the patient with at least two choices:*"Do you want your mother to remind you to brush your teeth or do you think you can handle your tooth brushing on your own?"*

In a discussion, it is constructive to question 1- facts, 2 - feelings, 3- intention of actions; then offer to help by presenting personal solutions: *"I'll be happy to...Would you like me to..."*

CLOSED QUESTIONS present elements of answers. They are asked in an effort to influence the answers of the interlocutor:

- *"Don't you think you could wear your rubber bands more often?"*,
- *"Do you really believe in braces?"*, "
- *"Are you sure you will always come to your appointments ?"*,
- *"Don't you know that people who have bad oral hygiene are dirty people ?"*.....

Not much information is obtained in this manner. Because closed questions can usually be answered with a "yes" or "no". These type of questions don't allow for much dialogue and of ten times will shut the patient out. Sometimes it is necessary to use **directed questions** to elicit specific information: *"Would you prefer to come at 8.30 a.m or at 4.30 p.m?"*

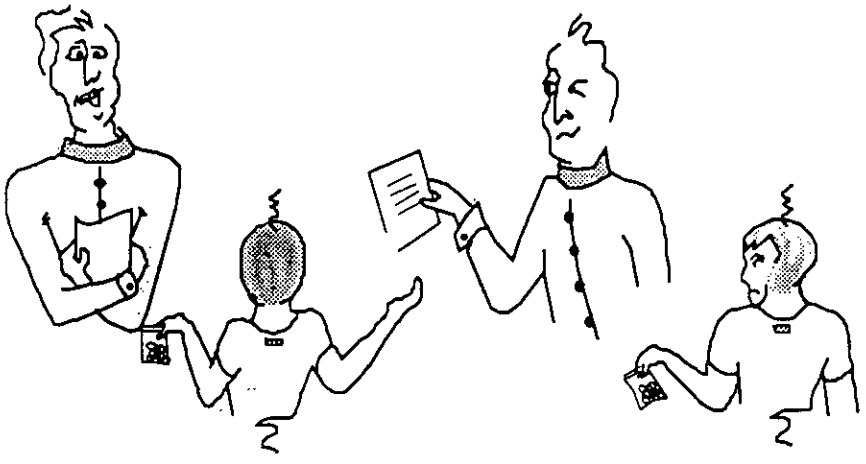
Open questions encourage the patient to talk. Questioning in a constructive manner yields a great deal of information about the patient and shows that you care enough to listen.

ACTIVE LISTENING

To communicate effectively, it is very important to know how to speak well, but equally important is to know **how** to listen well. The art of listening is an effort that demands undivided attention and requires that the listener be sincere.

Good listening skills promote understanding and mutual trust

Let's examine, for example the following situation: John is talking to you, he *"can't stand"* rubber bands, they hurt, they are embarrassing. You....



carefully listen to John, maintaining good eye contact. You share his feelings, and reproduce on your face the emotions you read on his: your actions show that you understand...

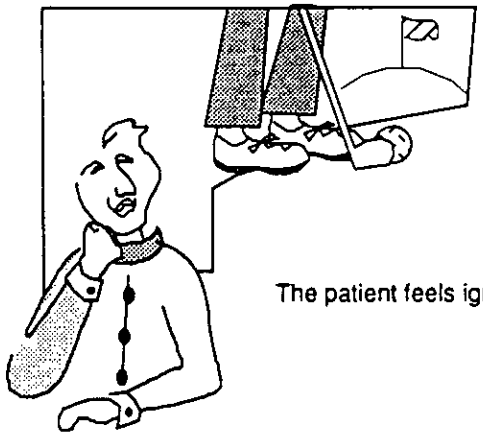
are distracted, because you're busy filling out on his chart for his next visit. You shift your eyes from his and show that you are not interested in his problems.

In your opinion, what will the patient's reaction be in each of the above situations. In which one will the patient be more prone to listen to your suggestions?

When listening to somebody, it is critical to pay attention to your own reactions. Because we think more rapidly than we can listen, **active listening** requires a **tremendous effort**. Do you sometimes assume in advance that the patients remarks are unimportant or uninteresting.... Or do you plan your response while the patients are talking ? Do you occasionally daydream or engage in an other activity while the patient is speaking ? Do you now and then interrupt patients or finish sentences for them ?

By reacting in different ways in the previous situation, you would promote various reactions from the patient:

1- What if you think about something else.....



The patient feels ignored

2- What if you think about your own ideas.....



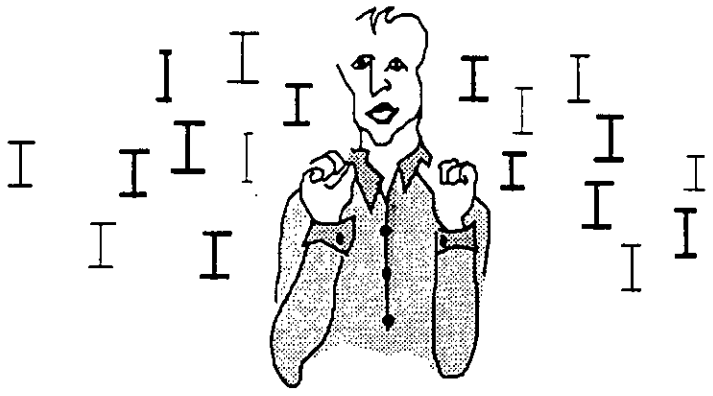
• If you judge, the patient feels rejected. A person will accept a judgement if he is convinced that it is true from the beginning, which is not the case in this situation.

• If you make suggestions, the patient does not feel involved, and often times does not try to find a solution on his own.

• If you offer support, you can sometimes cheer him up, but often the patient is still not motivated

3 - What if you use self-disclosure statements

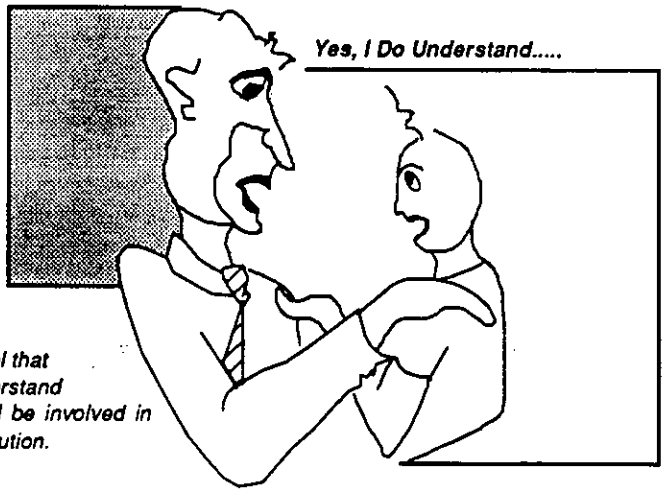
You can maintain open lines of communication by sharing similar experiences and expressing your concerns to the patients: *"I am interested by", "It pleases me that, "I feel discouraged when"*. (Please note that expressing a feeling : *" I get angry at you for not coming at the office on time"*, is different from giving an opinion : *" You are very impolite!"*). Be careful however because excessive self-disclosure may bring the attention to you instead of the patient where it belongs.



4 - What if you use reflective responding

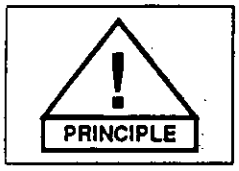
Reflective responding is one of the best ways to transmit a powerful message. It consists of four steps:

- You listen and observe the attitudes and the feelings expressed by John,
- You ask him questions to help him define his problems.
- You **reformulate his main ideas** without adding new ones,by repeating your perception of what John said.
- You ask him appropriate questions to help him find a solution....



John will feel that you do understand him and will be involved in finding a solution.

It is important to listen not only to what the patients say, but also to what is not said. If they do not ask questions, it may indicate that they were not listening or tt they are too embarrassed to admit that they do not understand or simply that they do not plan to follow the treatment regimen.



Being empathetic will help you detect underlying concerns that patients may have and allow you to react appropriatly to these concerns. In addition, a patient will offer greater cooperation and commitment to an empathetic team.

RESPECT

People from whom we are willing to accept instructions are the ones that demonstrate consideration and respect for us. Respect involves accepting a person "as is", with her own set of values.

If you are viewed as an ally who is accessible, non-judgemental, and competent, patients will feel comfortable when asking you questions, raising concerns, or expressing misunderstandings. Ultimatly this perception will render the patient open to your suggestions.

How do you demonstrate respect ? You must:

- give information and not advice,
- be honest and sincere,
- build the office on discipline.

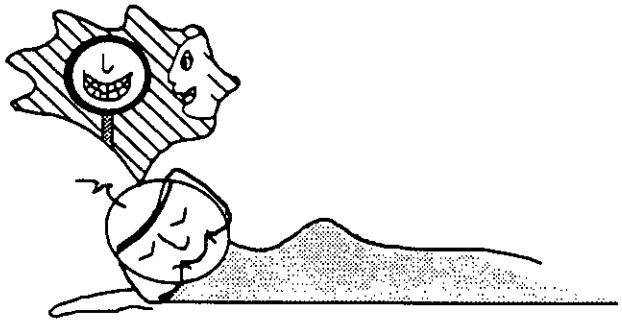
GIVE INFORMATION AND NOT ADVICE

"You must brush" is different from saying:
"John, I can see that you did not brush perfectly around your brackets, but after talking with you, I know that you have a good understanding about plaque. What do you think you could do to improve your brushing?"

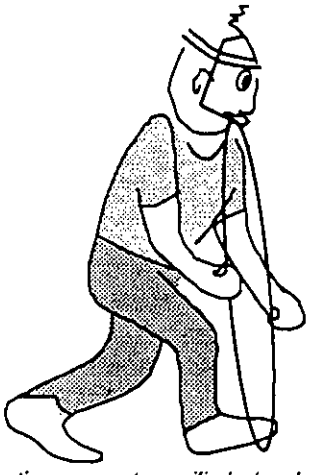
In this example you let John know that you have confidence in his ability to help manage his problem. No advice was given before permitting him to provide some ideas. Giving advice is an attempt to make the decision for the patient that only he can make. The patient's decision should be based on his value system, not ours. It is by transmitting a persuasive message (cf next chapter) that you can actually alter the patient's value system.

When you do need to give direct instructions to somebody, it is important to explain why. Giving reasons is one ingredient of a persuading message (please refer to p22). On the other hand, forgetting to fully inform the patient can lead to various undesirable reactions.

For example, if you say: *"John, you need to wear your headgear on your molars, and to use these rubber bands...they are the strongest"*....



• *John will be more motivated if he knows **why** he needs to wear his headgear and **what the consequences** will be if he doesn't wear it.*



If I hook my headgear this way, it will apply more force and go faster....

• *If instructions are not specified (e.g.how many hours to wear the headgear per day, why hooking his headgear on his cuspids), John may take **the initiative to modify** them, thinking that he is right, without awareness of the consequences.*



The strongest rubber bands... I knew he did not like me!

• *If John **does not understand the reasons why he must wear the strongest rubber bands (e.g orthopedic as well as orthodontic effect) John may imagine the reasons and misinterpretate** your recommendations.*

BE HONEST AND SINCERE

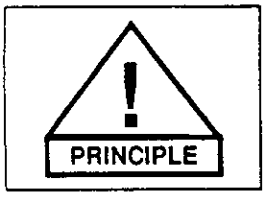
Most people are accustomed to giving and receiving superficial information, such as *"If you eat your soup, you will grow stronger and bigger"*. It is important to realize however that this type of information is useless when attempting to establish a sincere relationship. Teenagers can sense insincerity immediately. If you tell John, *"wear your headgear, and you will have a good career when you grow up"*, he will judge these arguments as being simplistic. And as a result, John's trust in you and his overall motivation will decline.

On the other hand, offering sincere praise nourishes people's self esteem; if you like John's new glasses, why not tell him?

Finally, showing your patients that you have faith in their ability to do their "homework" (wearing rubber bands, maintaining a good hygiene...) is critical; If you don't, John may leave the office with the idea that no one really expects him to wear his rubber bands or his headgear.

BUILD YOUR OFFICE ON DISCIPLINE

Office discipline is exhibited in many ways and can promote patient respect, for example: by providing specific appointments, by reducing waiting time, apologizing sincerely when late, never breaking a promise, offering clean and quiet surroundings, by having a room decor that reflects a pleasing atmosphere....



Respect is reflected through our attitude, what we say and do not say, the environment we create. By conveying respect to patients, you will help them value and believe in themselves more; they will continue to gain confidence in their ability to follow your instructions so they will be more prone to include them in their daily life.

PERSUASION - THE MESSAGE

"Your ability to clearly and positively communicate is the key to the patient's acceptance of your treatment plan".

***

Most suggestions made by members of the orthodontic team require patients to spend significant amounts of time and/or give up behaviors they enjoy. To avoid these restrictions, patients may subconsciously distort or minimize their importance.

How can you present information in such a way that the patient understands, remembers and acts on the new knowledge ?.....

You need to formulate the information into a persuasive message, by being:

- **brief,**
- **clear and precise,**
- **organized.**

BRIEF

When a person speaks too much, the interlocutor cannot distinguish what is essential from what is secondary , and subsequently is drowned in a sea of words and can not express himself. People tend to remember the first and last things we say and forget the middle of our message. Therefore, logic tells us that if we break up our presentation into parts, people will retain more of what we say. We can accomplish this by:

1 - Saying what we have to say with pauses

Doing so will encourage the patient to express their feelings as we progress. However, it is important to pause at the end of sentences; pausing in the middle of phrases or ideas often implies a lack of confidence in our message. We must be careful though because speaking too slowly can seem patronizing.

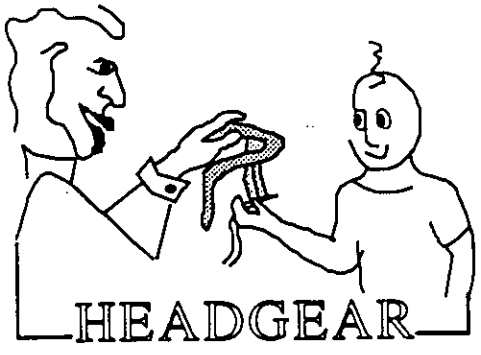
2 - Punctuating the message with verbal highlights to emphasize the main points

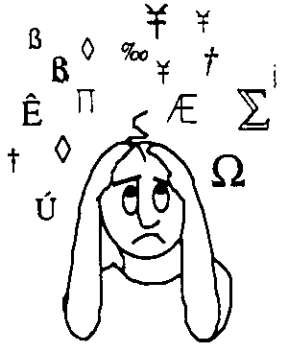
This will give added attention to the important information.

CLEAR AND PRECISE

Speaking clearly and precisely can increase the amount of information that patients will remember.

CLEAR





• The patient and you give the same meanings to words

.• The use of medical jargon is avoided. Technical talk may lead to patient dissatisfaction or frustration.

On the other hand, making things simple does not mean talking down to the patient. Your message should vary depending on the perception capacities of the individual patient.

PRECISE

If you systematically **ask yourself** the following questions *"who", "what", "when", "how much", "where", "how", "why"* before making recommendations to somebody, you will be more concise. You will also ensure that you don't forget anything important.

For example, John needs to wear rubber bands.....

WHO	WHAT	HOW
"John	you will wear your rubber bands,	from this lower back hook to this upper front one, on both sides,

HOW MUCH / WHEN	WHY
24 hours a day, even when you eat and you will take them off just to brush your teeth, making sure that you put them back afterwards,	to move your lower teeth forward so that they match the upper ones".

It is very important to **repeat** your message in various ways to solidify the information in the patient's mind: *"Not wearing rubber bands is like pedaling a bicycle with no chain", "At the beginning, your rubber bands will hurt, then you won't feel them anymore", "it is important to wear your rubber bands even during meals, because most people forget to put them back when they finish"....*

Repetition is a necessary tool that should be used throughout the duration of the treatment sequence. If used on a regular basis, it has the capacity to increase or maintain high levels of adherence.

ORGANIZED

There are five components to an organized recommendation.

Let's apply these 5 components to the following examples.

1 - MAKE LEARNING RELEVANT

John needs to brush his teeth better..... Making learning relevant can be accomplished by using any of the following suggestions:

• Use your individual knowledge of John **to link your suggestions to what the patient considers important:** *"John, you told me you had a pretty girlfriend. Do you know that all the plaque you have on your teeth and gums give you bad breath. How long do you think your girlfriend will put up with you and your bad breath?*

In order to demonstrate your concern and interest for your patient, you can record brief notes of your conversation after each visit.

• Make the information **sound personal**: instead of saying *"people that don't brush may lose their teeth"*, you may tell John *"You have gum disease which may cause your teeth to get loose"*.

"Patients are motivated by their own desires, so communicate your objectives with your patient's logic in mind".

...

• **Dramatize your ideas to create emotion**, for example use a periodontal explorer to make his inflammed gums bleed to illustrate the disease process present in his mouth.

• Demonstrate the **benefit of learning something new:** *"John, if you know how to brush perfectly now, you will have a greater chance of keeping your teeth forever ".*

• Make it a point to demonstrate why the information is important and **maximize the advantages** of following your suggestions. *"You can see John, the before and after pictures of Laura. She had much worse bite than you do but because she wore her headgear faith fully, she did not need any teeth taken out"*

• **Presenting all aspects of the desired behavior, even the negative ones,** will reinforce not only the patient's estimate of your expertise and honesty but also his involvement. *"I know it is not easy to brush your teeth at school and it is not fun to wash away the taste of good food, but...."*

2 - SPECIFY THE INSTRUCTIONS AND GIVE SOME LATITUDE

If you show John that you are giving him a choice, that he plays a role in planning treatment, he will be more apt to take responsibility for making the treatment a success.

"John, to move this tooth back, we have two solutions, either I put this power chain on that loses its force after a few days, or I give you these rubber bands that you change every day. It would make the treatment quicker.if you wore the rubber bands, but it also requires more cooperation on your part. What do you prefer ?".

3 - ENSURE UNDERSTANDING

It is very important to ask the patient to **repeat** the message back to you in his own words. This action will solidify the concepts within John's mind as well as allow the message transmitter to see if John really understands what he is to do.

"John, can you repeat what I just said, so that I can verify your understanding?"
When stated in this manner, John may beleive that you think is stupid.

≠

"John, can you repeat what I just said so that I can verify if I was clear enough"

" Let's see, before going on...I don't know if I am being clear enough..can you repeat what I just said? 'il would help me"....

It is also essential **to thank** the patient who has taken the risk of showing a misunderstanding: "*Thank you, John, it is exactly whay I meant"*

4 - COMMUNICATE THE CRITERIA FOR SELF-EVALUATION

Doing so will allow the patient to appreciate the results of his effort.
"John, if you brush well, you will see that all your brackets and teeth are shiny , your gums will become pink again and stop bleeding".

5 - BE AVAILABLE TO HELP THE PERSON IF NEEDED

"John, this is my card. Please call me if you have any questions about your treatment"

IN CONCLUSION...

**"I hear and I forget,
I see and I remember,
I do and I understand".
CONFUCIUS**

The most important step to learn the previously described skills is not just to read, but to **practice**. When effective interpersonal communication skills become a part of the team environment, positive outcomes are likely to occur. Organizing information is very important to transmit your instructions efficiently. But, as reviewed previously, the way a patient perceives your message is the key issue. Friendly, enthusiastic, and respectful team members will be rewarded with

HOW TO IMPLEMENT THE COUNSELING STRATEGY

HOW TO IMPLEMENT THE COUNSELING STRATEGY

Research indicates that two-thirds of the patients who cease cooperation, do so within the first ninety days of treatment. Most orthodontic treatments last more than eighteen months and require a high level of cooperation until the end of the treatment.

How can we reinforce the patient's desire to persevere ?

Motivation is an **ongoing process** involving many parameters. All of which need to be taken into account to assure patient adherence:

- helping the patient discover how malocclusion affects one's life,
- solidifying in the patient's mind his initial treatment goals,
- making the patient think "for" himself and not "by" himself, and to feel responsible for his treatment,
- informing the patient about the required behaviors, about how and when to perform these behaviors,
- encouraging the patient to anticipate problems and find solutions if a problem arises.
- reinforcing initial adherence and supporting the patient until the end of the treatment.

Part of the motivation problem is dealing with the changing personality of teenagers and with the adolescent desire to become autonomous. On the other hand, orthodontic treatment can be a fantastic opportunity for the child to gain a sense of control and enhanced self-esteem.

The aim of this strategy is to emphasize the patient's responsibility for his treatment progress, and his active participation in the clinical decision making process. It is also to create a positive climate to open the patient to new ideas. This strategy is a step by step approach for the patient composed of three stages:

1- **The exploration phase** : first clinical examination and diagnostic records.
2- **The understanding phase** : consultation.
3- **The action phase** : active treatment.

The counseling strategy integrates several approaches (cf. figure 2). Using different combinations of these procedures customizes the strategy to the patient's individual needs and makes it more flexible for the orthodontic team.

> **"Because biological, psychological, social environmental, and economic factors are all likely to influence the decision to adhere, a strategy which integrates several approaches is most likely to be efficient"**
>
> C. LEE & OWEN

Projection of the videotape

The videotape does not show an orthodontist giving advice to the patients. Because the peer group represents a new horizon for the adolescent to challenge, enter, and identify with, the videotape portrays teenagers with braces making a humorous yet serious videotape for their peers about orthodontics.

Its goal is not to give sophisticated explanation about appliance wearing or hygiene motivation, but to diminish the patient anxiety, to involve him in the "braces situation", and to make him feel responsible for his treatment.

The flow chart: patient treament self-monitoring

The flow chart shows the different steps of the treatment plan, the amount of time expected for each phase and the occlusal results to be obtained.

On this flow chart, the space for the treatment steps is left blank so that each practitioner can individualize his own treatment plan.

The purpose of reducing the treatment plan to writing is to benefit the patient and the practitioner. The patient will be able to monitor his own progress, thus increasing his motivation, and the orthodontist will more easily evaluate the level of cooperation and plan for changes if necessary.

Eventhough it is written, it should be stated, from the beginning, that it may be modified depending on unpredictable variables such as growth.

The problem-solving road

The problem-solving road shows the patient how to anticipate high risk situations. It involves him in finding solutions, and as a result, enhances motivation and self-esteem. It allows team members to reinforce positive communication with the patient.

Figure 2 :

The behavioral written contract

The behavioral written contract enhances treatment adherence by building a mutual agreement. This signed agreement is a partnership between the orthodontist and the patient outlining the responsibilities that each partner must fulfill in order to achieve the desired result.

The group reinforcing process

The group reinforcing process allows the patients to share their experience. It enhances their motivation and allows them to help find solutions to their problems. It is specially important for the *adolescent* patient who needs to identify with *peers*.

This procedure can be implemented in two different steps of their orthodontic treatment:

- After the presentation of the videotape, the child can be introduced to a successful patient who can share knowledge and discuss how she handles the treatment .
- On the day the appliance is placed, the teenager may be introduced to another patient starting treatment at the same time. Both patients should know that they will meet every three months. They will monitor each others treatment, and will be able to discuss their progress and difficulties.

The reinforcement principle chart for the parents

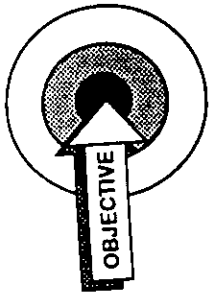
Some adolescents have a difficult time relating to their families. On the other hand, youngsters who are exposed to warmth and openness in their homes, whose achievements are met with approval and affection, and who are encouraged to be independent, move forward into adolescence with few problems.

Orthodontic treatment is a *fantastic opportunity* for the parents to give their child a sense of control,which in turn enhaces their self-esteem.This chart explains to the parents how they may be *positively involved in their child's treatment.*

The different procedures of the counseling strategy

THE EXPLORATION PHASE: FIRST CLINICAL EXAMINATION AND DIAGNOSTIC RECORDS

The initial exam should be scheduled for approximately 15 minutes of the practitioner's time. The treatment coordinator should also be present .



The pretreatment meeting with the patient is an ideal opportunity to begin to make the patient aware that he is responsible for the "majority" of his own treatment. Much can be learned about the teenager's level of development by observing who comes to the examining room (the teenager alone, or the teenager with his parents), and who responds to initial questions. If there are any reasons to believe that the teenager is unable to accept accountability for his treatment (evident whining or inattentiveness), or if the parent/patient relationship is charged with alienation (very dominant parents that don't allow the patient to express himself), the orthodontic team may not be able to fully implement this strategy. Whether it is prudent to institute treatment depends on the orthodontist's assessment.

PATIENT INTERVIEW

The patient interview will help you determine patient needs and expectations. It will provide you with invaluable clues as to the best ways to interact with this patient to ensure a succesful relationship. It establishes communication and eventually results in a trusting relationship.

A patient's feelings of fear or inhibition can affect his treatment adherence. It is critical to make him feel comfortable. Disconnect him from the outside world, maintain good eye, listen well, establish a positive relationship with him and encourage him to express himself. Implementing the qualities of an effective communicator described previously will help you in this regard.

The first issue to consider **who** has come for orthodontic care and **why**.

The second issue is **how** can we facilitate the communication process. Because John, your patient, probably holds many beliefs about his smile, and about the potential efficacy of orthodontics. These beliefs may be based on misconceptions and negative distortions.

You can introduce yourself, engage in some non-orthodontic chat and be friendly rather than business-like. You can ask open questions to explore John's worries, goals and expectations.

- In order to **determine exactly the type of treatment you need**, I must ask you some questions. Is that okay with you, John?
- First, tell me a bit about **yourself** : school, activities, age, family etc....
- As you see it, what **problems bring you here** ?
  What / who led you to seek treatment ? (self, parents, dentist).
  What would you like to change?
  How would life differ if you had a super smile?
- How do you **feel about braces** ?
  Do you know anybody that had braces?
  How did it turn out for that person?
  How effective do you think orthodontic treatment will be for you?
- Do you have any **questions for me** about braces?

As John is talking to you, show him that you are **actively listening** to him and you don't interrupt him. (" I want you to know that I listen to you and I understand you").

You can **write** on his chart what **his concerns** are so as to address them during the consultation.

By paraphrasing what John said, you can **briefly summarize** the information gathered and reitarate the main points:

"John, you are concerned by what you call your ugly smile. You think your teeth are crooked, that your upper teeth are sticking out too far. You came in because your dentist told you that you needed braces, but YOU want to have your smile fixed. You are afraid of braces because your friend Peter told you that they hurt. On the other hand Peter's treatment turned out great, and you are confident that braces can also give you a nice smile. Am I right?"

This will serve to check accuracy, as well as demonstrate your willingness to truly understand your patient's needs.

John will feel that you are going to plan a treatment especially for him and he will trust your judgement. You will actively involve John in his treatment by helping him verbalize his wants and expectations.

REPORT OF THE PRELIMINARY EXAMINATION FINDINGS

It is important to **generate interest,** show concern, listen and provide information as soon as the first visit. If John becomes aware that he has a "malocclusion" then his recognition of that fact will be one of the primary influences on his decision to have orthodontic treatment.

The report should be presented to John first, in terms suitable for his level of understanding:

"John, this is just a preliminary report of what I can see after examining your mouth and your profile. You are perfectly right: your teeth are crooked, your upper jaw seems to be too far in front in your profile. You are now 12 years old, and it is perfect for you to start treatment now, because you are still growing, and growth will help us correct your problem. Depending on the results of your records, I will prepare a specific treatment plan for you. If you share with me the treatment responsibilities, you will get that super smile you desire. How do you feel about all of this?"

The next step is to invite John's parents to come into the examination room. The interaction between John and his parents may give you some worthwhile clues about their relationships. The explanation to John's parents about the first clinical findings and the reasons for recommending orthodontic care to the patient should be followed by emphasizing that the **success of the treatment depends on John performing certain tasks**. The patient should estimate the likelihood of that occurring.

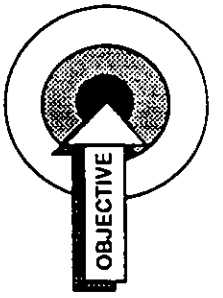
When everyone is in **agreement** that John is in need of some type of orthodontic care, the consultation will conclude with brief recommendations for diagnostic records and the follow up conference visit.

The orthodontist will then introduce the **treatment coordinator** to the patient and parents. The treatment coordinator will clearly state the team approach philosophy of the office, and the fact that she, as treatment coordinator, will be conducting the conference visit where the treatment plan and the use of the orthodontic appliances will be presented. A videotape will be shown that will help them become familiar with orthodontics, and all their questions will be invited and answered at this conference visit.

THE DIAGNOSTIC RECORDS

The staff members will be introduced, and will explain the purpose for taking pictures , X Rays , models , etc...Thus involving John for the first time in

THE UNDERSTANDING PHASE: CONSULTATION



The prime objectives of the consultation are:

- To repeat the patient's concerns and explain the sequence of therapy, demonstrating that this specific treatment plan satisfies his desires and needs.
- To involve the patient in his treatment by helping him in monitor his progress.
- To emphasize accountability of the patient for his treatment.
- To discuss with the parents the management philosophy and the financial matters involved.

A worksheet prepared by the orthodontist stating dental, functional, growth, cephalometric problems, as well as describing the therapy and the treatment sequence may be an efficient means by to communicate to the treatment coordinator for the patient conference.

A short meeting between the treatment coordinator and the orthodontist should insure that the worksheet is clearly understood.

Consultation should be scheduled for one hour of office time, including ten minutes of practitioner's time. It will consist of three different steps:

1- **The conference** conducted by the treatment coordinator.
2- **The presentation of the videotape**.
3- **Contracting** between the orthodontist and the patient.

At this visit, both parents, if possible, need to be present. This allows them to gain an understanding of the office philosophy; it helps the communication process between parents and the orthodontic team as well as between their child and them.

"Patient education can be a driving force in your practice by engaging patient interest, motivating behavioral change and stimulating referrals".
***

Conference tips: motivating patients to say "yes"

The atmosphere of the conference room

- The atmosphere should be **warm** and **comfortable**.
- **Distractions** (such as telephone calls) should be eliminated.
- **The seating arrangement** should feature similar chairs, so that both patient and parent have a feeling of equality.
- The patient should be seated **near** the treatment coordinator. This will establish a sense of equality betwee the two of them.
- The treatment coordinator should primarily **address the child** in order to enhance his self-esteem.

The message: keeping patient's interest

- **Speak in short segments**. Communicate one idea at a time. Break up the presentation with questions.
- Give concise, simple, straight-forward explanations in terms **suitable** for the patient's level of understanding. Being too complex creates a sense of boredom and frustration for the patient. Being too simple or condescending, on the other hand, can miff a patient. It is important to have consistent descriptions of malocclusions and appliances within the orthodontic team. The hand-out *"suggestion of explanations for the conference"* may help in this regard. It may be easily modified depending on the orthodontist's perspective.
- Engage as **many communication channels** as possible: auditory, visual, and touch. You can stimulate patient's senses by having displays of rubber bands, brackets, headgear, functional appliances etc... that the patient can manipulate.
- Stress long-term as well as short term **benefits** (appearance, function, self-esteem, comfort, etc...). Minimize disadvantages.
- Present realistic ways to **fit the behavior aspect** into the patient's daily routine.
- Seeing is beleiving: nothing is more convincing than presenting the **before and after records of some successful cases.**

THE CONFERENCE

An increasing number of orthodontists have one of their staff members present the treatment. Delegation of these conferences is efficient for both the doctor and the staff because it accomplishes necessary communication with the least amount of time and effort.

A very perceptive, sensitive staff member should handle this responsibility. As a matter of fact, many times, patients will more readily reveal their concerns to the treatment coordinator than to the orthodontist. The role of the treatment coordinator is to orchestrate communication with the patient and the parents as well as the the referring dentist during treatment.

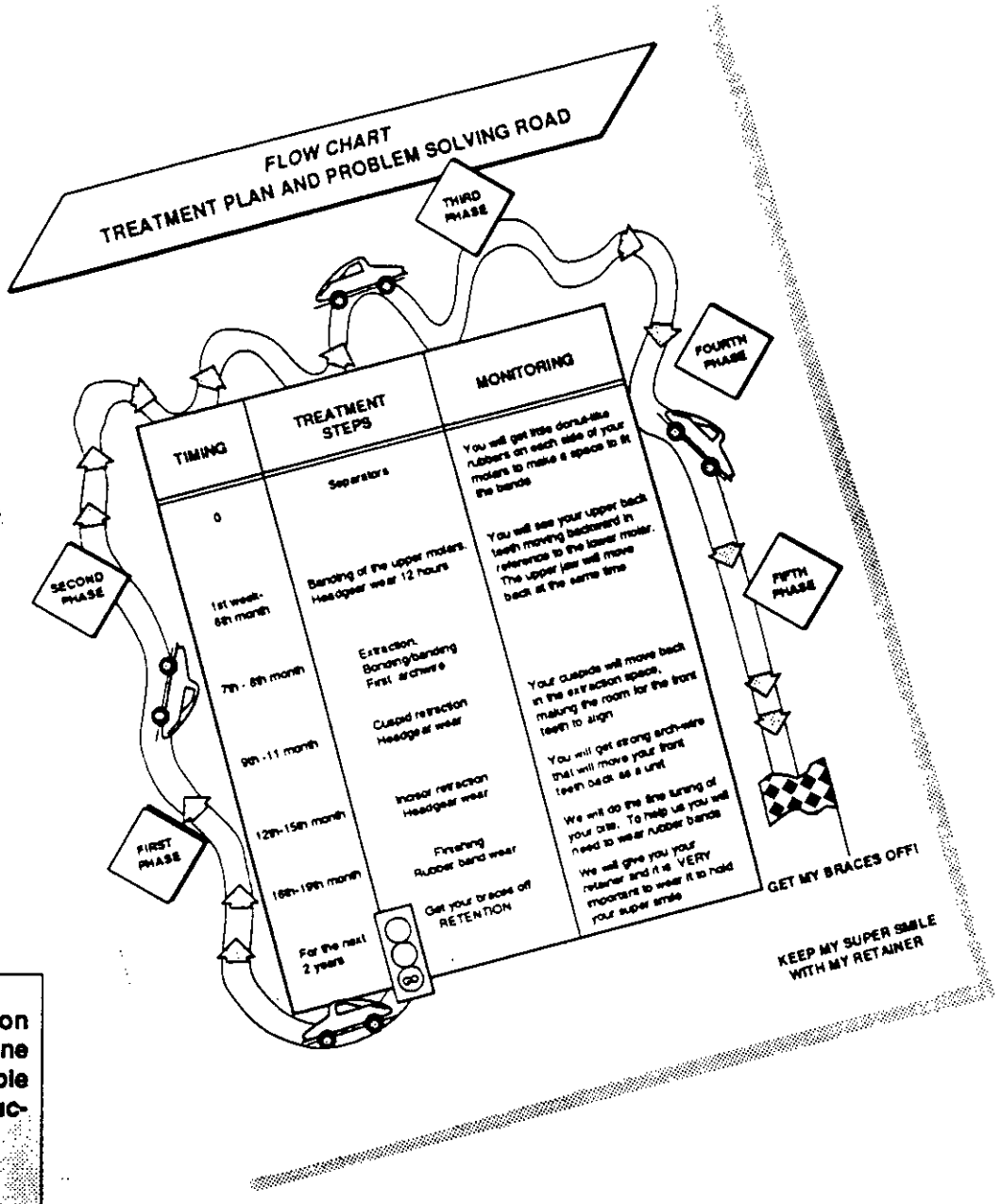
The treatment coordinator should reintroduce herself, escort the patient and parents into the conference room, make them feel comfortable and inquire as to whether both parents have met the doctor. If not, the orthodontist will introduce him or herself and return when the treatment coordinator is finished.

The step by step approach is presented as a detachable chart so that it may be given to the treatment coordinator as a reference.

The following should be available in the conference room:

- **the flow chart/problem-solving road** (fig.3),
  "Taking control" chart (fig. 4),
- **displays of orthodontic appliances**,
- **before and after pictures** of similar malocclusion case,
- **an acrylic duplicate** of the patient's model. The duplicate will be given to the patient. It will become a true reference for the patient to monitor his progress effectively. It can also be a great source of referrals if the patient shows his dentist his before and after models.

In the two pages that follow, we will present an example of how this visit may be handled by the treatment coordinator.



"The link between motivation and success is a strong one provided that patients are able to perceive their own success".

D. MEICHENBAUM & D.C. TURK

Figure 3 : Sample "Flow chart"
A dozen round stickers for the patient's use should be stapled on the back of the chart.

1 - Description of orthodontic problems **2 - Provision of reassurance** **3 - The flow chart: timing and monitoring** **4 - Appliance scheduling**
5 - The inconveniences 6 - The problem-solving road 7 - Anticipation of forgetfulness 8 - Financial arrangements 9 - Closing summary

John and Mr and Mrs Smith, I would like to review the results of Dr James's evaluation of John.

What is important for you John, is that you don't like your upper teeth sticking out and the fact that they are crooked. The condition you have is what we call a Class II div1 malocclusion. This is one of the most commonly seen conditions in orthodontics. It means that your upper jaw is too far in front. As you see on your picture, it makes your profile very convex. Your upper teeth, as you have noticed, can be injured or broken more easily because of their position. There is a risk as you get older that your condition may worsen, and eventually you will notice that your teeth shift around more easily because there is not good support for them in front. Also, you can see on the models that your teeth are crooked. These teeth are extremely difficult to clean, making them very prone to decay and gum disease. These crooked teeth also affect your smile. Your growth pattern is horizontal and actually may help us to correct your malocclusion. John , would you like to have these problems corrected ?

We have a specific treatment for you, John.

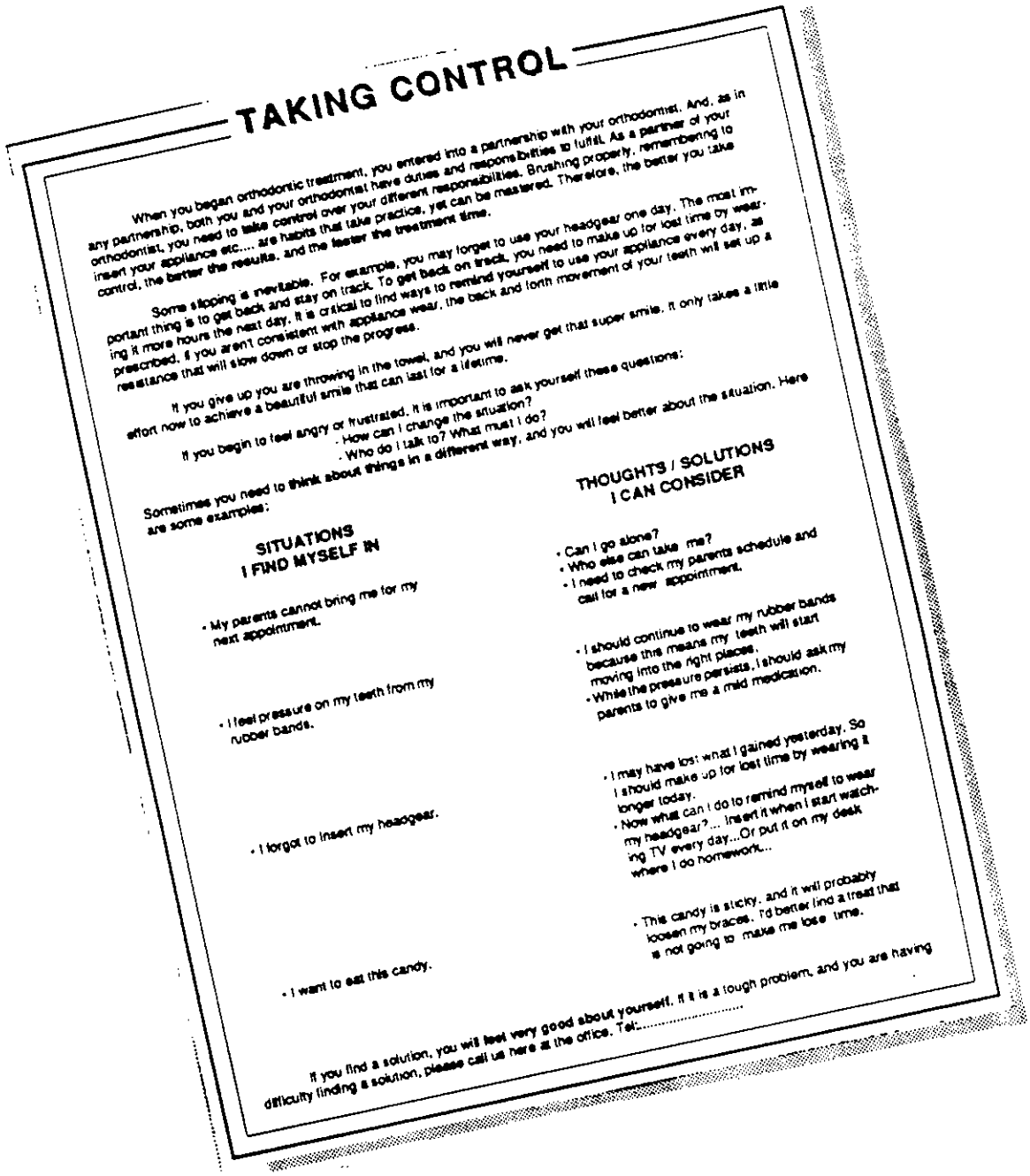
We will give you all the elements of it in detail. I know you will recognize that it is made in your best interest. Dr James will ask you to sign a contract of partnership with him for the outcome of your treatment.
You will first wear a headgear for a six month period to correct your skeletal problem. This is a headgear. Are you familiar with headgears? I understand you may find it embarrassing, but it can move your upper jaw in ways your braces cannot. It is a device that uses the head as an anchor for jaw-moving forces. It consists of a metal bow that slides into headgear tubes on your molars (see, this is a molar band with its big tube) and a strap hooked by means of rubber bands that wrap around the back of your head and neck. I wish we could avoid wearing this appliance for so long, but tooth movement is a slow, gradual process. However, we have good news for you, John! It is extremely effective if you wear it, every day, as you should. John, I know you had some concerns about your "ugly" smile, as you call it... Well, we need to make some space to align all your teeth. This means you will need some extractions. How do you feel about that?

Let me show you, John, how YOU can help us monitor your progress closely.

On this chart you can see that there will be different steps in your treatment. During the first six months, you will need to wear your headgear at least 12 hours a day. You will be able to observe in the mirror that these big teeth, called the molars, that arecurrently located in front of your lower molars will move back to this position, along with your upper jaw.. Then you will have your teeth extracted and get your braces. See this is a bracket. The following six months, you still wear your headgear to make sure you keep what you gained, you will see the crowding of your teeth begin to disappear as your cuspids, the teeth that you see here, move closer to your molars. Then for the following three months, you will get strong arch wires, see this rectangular arch wire, that will close the remaining extraction spaces. You will almost be at the end. The last three months, you will stop wearing your headgear, but you may get some rubber bands that will help us fine-tune the way you bite, and finish your treatment. As you get your braces off, we will give you a retainer to maintain your teeth in their corrected position. Do you think this will be an interesting experience for you to know exactly what is happening to you and monitor the events?

In thinking about setting a schedule for YOU to wear your appliance, we must consider YOUR daily routine.

Do you have any special activity after school ? You have piano lessons once a week , great ! I would love to learn how to play piano again. You won't need to wear your headgear at school or during your piano lessons if you feel embarrassed. But if you wear it as soon as you come back home and at night we should get the amount of time necessary to move your upper jaw back. However, during the weekend , if you can wear it more in the privacy of your home , during these first six months, you will progress even faster...At first, in order to get used to it you can wear it just in the evening and after 2-3 days, you can start your regular schedule in order to obtain the biological response you desire. If you want your teeth and jaw to move back quickly, the headgear should be worn more than 12 hours a day to trigger a response. Can you tell me in your own words why it is important to wear the headgear as prescribed?



TAKING CONTROL

When you began orthodontic treatment, you entered into a partnership with your orthodontist. And, as in any partnership, both you and your orthodontist have duties and responsibilities to fulfill. As a partner of your orthodontist, you need to take control over your different responsibilities. Brushing properly, remembering to insert your appliance etc.... are habits that take practice, yet can be mastered. Therefore, the better you take control, the better the results, and the faster the treatment time.

Some slipping is inevitable. For example, you may forget to use your headgear one day. The most important thing is to get back and stay on track. To get back on track, you need to make up for lost time by wearing it more hours the next day. It is critical to find ways to remind yourself to use your appliance every day, as prescribed. If you aren't consistent with appliance wear, the back and forth movement of your teeth will set up a resistance that will slow down or stop the progress.

If you give up you are throwing in the towel, and you will never get that super smile. It only takes a little effort now to achieve a beautiful smile that can last for a lifetime.

If you begin to feel angry or frustrated, it is important to ask yourself these questions:

- How can I change the situation?
- Who do I talk to? What must I do?

Sometimes you need to think about things in a different way, and you will feel better about the situation. Here are some examples:

SITUATIONS I FIND MYSELF IN	THOUGHTS / SOLUTIONS I CAN CONSIDER
• My parents cannot bring me for my next appointment.	• Can I go alone? • Who else can take me? • I need to check my parents schedule and call for a new appointment.
• I feel pressure on my teeth from my rubber bands.	• I should continue to wear my rubber bands because this means my teeth will start moving into the right places. • While the pressure persists, I should ask my parents to give me a mild medication.
• I forgot to insert my headgear.	• I may have lost what I gained yesterday. So I should make up for lost time by wearing it longer today. • Now what can I do to remind myself to wear my headgear?... Insert it when I start watching TV every day...Or put it on my desk where I do homework...
• I want to eat this candy.	• This candy is sticky, and it will probably loosen my braces. I'd better find a treat that is not going to make me lose time.

If you find a solution, you will feel very good about yourself. If it is a tough problem, and you are having difficulty finding a solution, please call us here at the office. Tel:.....

Figure 4 : Sample "Taking Control"
This hand-out is comprised of examples to be given to the patient along with the "The flow chart"in order to show how to handle the various problems he may encounter.

1 - Description of orthodontic problems
2 - Provision of reassurance
3 - The flow chart: timing and monitoring
4 - Appliance scheduling

5 - The inconveniences
6 - The problem-solving road
7 - Anticipation of forgetfulness
8 - Financial arrangements
9 - Closing summary

There will be some small inconveniences.

How much of an ***embarrassment*** your appliances will be, will depend a great deal on how your parents and friends treat you. But you will quickly find out that many of your classmates wear braces and that most of your older friends wear retainers. Many people regard braces as a status symbol. Your mouth and teeth will feel a little ***tender*** during the twoto three days following each visit because this is the time necessary for your teeth to begin to respond to the pressure applied by braces. You will feel the same mild stiffness in the beginning with your headgear. You will also feel that your teeth seem a ***little loose*** while they are moving. This is actually true until the tooth movement stops. The brackets and bands that will be fitted in your mouth are very fragile. They provide the "handle" by which Dr James can grasp and control each individual tooth . This is why certain sticky or hard treats should be off limits . We will give you a list of the ***foods that should be avoided***. If a bracket or a band ever comes loose, the tooth is no longer being controlled, and it may stop moving or move in the wrong direction. So, it is very important that you call us right away and arrange to have it adjusted as soon as possible. And finally, because it is harder ***to brush*** when you are wearing braces, it is more important than ever to clean your teeth well. Laurie, the hygienist will show you how to make sure that you don't get any cavities or bleeding gums. Now, can you overcome all these little disadvantages?

This is your problem-solving road.

Because each patient is unique and because each situation is different, Dr James will need your HELP in ***reporting your reactions***, especially if you have unusual difficulties. In order to simplify this recording process for you, we have included these little dots. Each time you experience some difficulty, stick a dot along the road, and write the possible solutions you have found, but let me know if you did not find a solution . Dr James and I are here to help you. So it is important that you bring your chart at each appointment, so that we can discuss it together. Let me REASSURE you that your life will not change all that much during treatment, as you will see in the videotape, and that the ***long term benefits*** from wearing your braces will outweigh any short-term inconveniences.... : picture that nice, healthy smile you will have. As soon as your teeth becomes aligned and your face gets more harmonious, your self-esteem will most probably improve. Orthodontics is often beneficial to social and career success because it improves the patient attitude toward life. (You may show pictures and models of other patients that had the same treatment plan). See this is a patient that had almost the same problems as you do, had to wear headgear and had extractions. These are the pictures of his face and teeth before and after the treatment.

- Do YOU feel it will help you correct your "ugly" smile and get this same super smile?
- Do YOU think the benefits of wearing braces outweigh the inconveniences of having them ?
- Do YOU feel you will be able to wear the headgear as prescribed?

It is human to forget sometimes what we're supposed to do, like wearing head gear.

Let us look at what you can do to make sure that you don't forget to wear your appliance as prescribed. Let us devise an agenda that may help to remind you to wear your headgear and check the amount of time you are wearing it. Is there a TV show that you watch every night? OK! So each time you watch " Wheel of Fortune" you can associate the show with inserting your headgear. Can you think of any other problems, besides forgetfulness, that you might encounter during treatment? Mr and Mrs Smith , can you think of any problems that John may encounter ?

So, Mr and Mrs Smith, perhaps you would like to discuss **fees and financial arrangements**.....

Now lets review your treatment plan, John.

You will only wear the headgear during the first six months of treatment. Then you will get an appointment with your dentist to have those teeth extracted. After the extractions, if you act as a real partner of Dr James, you will only have twelve additional months of treatment. When I say a partner, I really mean it, because you will be the one responsible for keeping your appointments, caring for your braces, doing a good job brushing your teeth and wearing your headgear at least 12hours a day. Was I clear enough John? Do you have any questions for me?

Let me give you a duplicate of your models to take home. It will help you picture how much improvement is occuring during treatment. At the end of treatment, I will give you a duplicate of your models after the braces have been taken off.

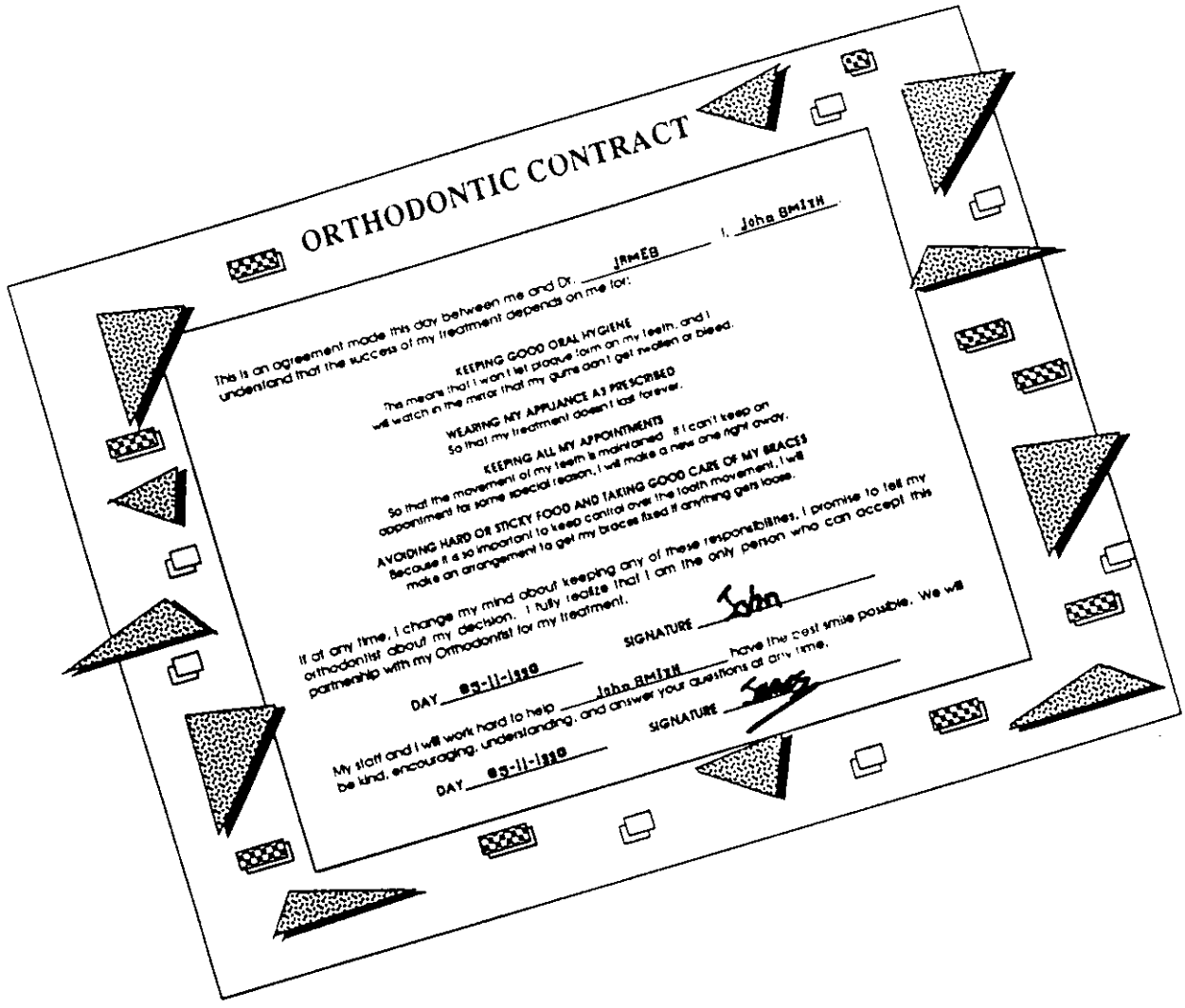


Figure 5 : Sample contract

PRESENTATION OF THE VIDEOTAPE

The treatment coordinator will tell the patient and the parents that they will watch a videotape about braces. This tape will help them become familiar with orthodontic treatment and will present the experiences of other teens wearing braces.

The parents should be asked to leave the room after the presentation. The orthodontist will ask questions of the patient about the videotape; this to ensure understanding and reinforce correct responses:

- What did you think of the show?
- What do you think were the main messages in the videotape?
- What can happen if the recommendations are not followed ?
- What can happen if you don't brush your teeth ?
- What will happen if you miss your appointments ?
- What can happen if you eat sticky candy ?
- What can happen if you lose a bracket ?
- How likely are these problems to occur ?
- Do you have any concerns that you would like to ask of me ?
- Can you think of any problems that may occur? It will be important for both of us to anticipate any problems in following the treatment and work on them together.

SIGNATURE OF THE CONTRACT

Behavioral contracting has been found to be a useful means of enhancing treatment adherence. The written contract may or may not call for material rewards, but in any case, for praise and encouragement. However, the nature of the reward is of less importance than the sense of pride and self efficacy that accompanies the achievement.

- The orthodontist will first review John's treatment plan:

"Do you have any questions for me ? Okay? So let's review your treatment plan once again. How long will you wear your headgear in the beginning? What about in the days that follows? Good!"

- Then the practitioner will communicate to John how important his role is in order to achieve a successful result. If John agrees that he is able to make the commitment to take responsibility for his treatment, his contract should be signed by himself and the orthodontist. The orthodontist follow up with statements like: *"So what we have agreed upon to try is...So you will take the responsibility for...."*.

PARENTAL SUPPORT

In the mean time, the treatment coordinator will meet with the parents and explain to them the patient partnership philosophy of the office and the importance of their support for their child. The hand-out " Child treatment success and parental support" will be given to them, with some guidelines concerning their non-dominating role in the orthodontic treatment of their child. This role may be discussed at any time in the absence of the patient.

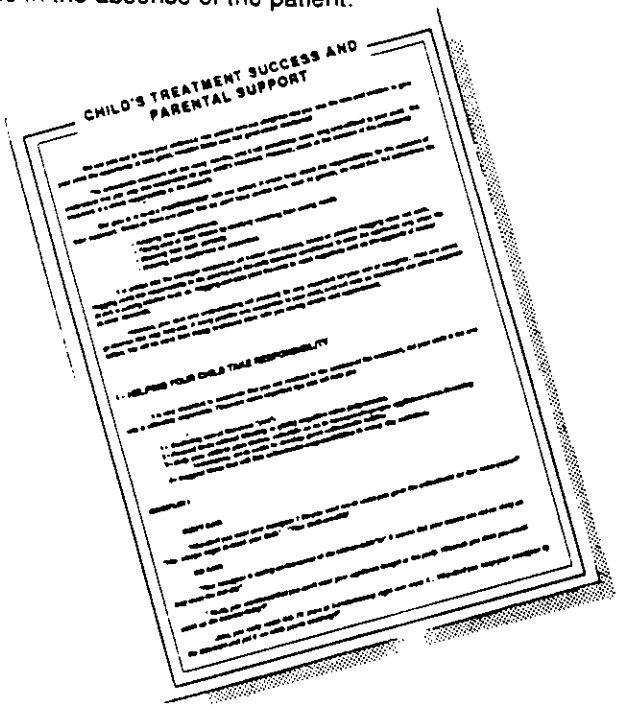


Figure 6 : Sample hand-out "Child treatment and parental success"

PATIENT'S PUBLIC COMMITMENT

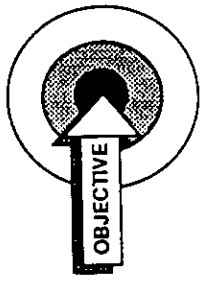
The orthodontist will ask John if he would like his parents to join them in the conference room. This will be the time for the orthodontist to answer any questions that the parents may have pertaining to diagnosis and treatment plan.

Then to strengthen the patient's adherence related attitudes, the orthodontist will elicit his public commitment: *Please, John, could you explain to your parents the responsibilities you will assume and the agreement we signed together.*

John will be introduced to a successful patient and will be given the opportunity to ask any questions that he may have.

The consultation will end with a cordial office tour. Before leaving, the treatment coordinator should give a business card to the patient and the parents, with her name and the office number, and invite the patient to call her if any questions arise during the treatment "*Please, John, call me personaly. if you have any questions about your treatment*". Parents will be told that the treatment coordinator will be available after every appointment to explain what was done that day, how well the child is cooperating, how successful the treatment is proceeding, and what is scheduled for the next visit.

THE ACTION PHASE: ACTIVE TREATMENT



This chapter will outline the roles and functions of the hygienist and the chairside assistant within the orthodontic team. Because the patient is asked to be an effective self-manager, continued commitment and evaluation are needed from the orthodontic team. The flow chart will help spot any delays in the treatment plan .

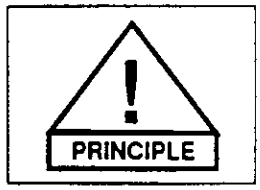
THE BONDING/BANDING DAY

At this appointment, the chairside assistant should discuss the patient's feelings about his new braces. She will act as feedback agent for the team, making sure the patient understands and is satisfied with his treatment expectations: *" So John, what are your orthodontic problems? What did Dr James tell you to do about it? Did he tell you what to expect? What instructions did he give you? What suggestions did he have for you? Are there any points I can clarify for you?"* .

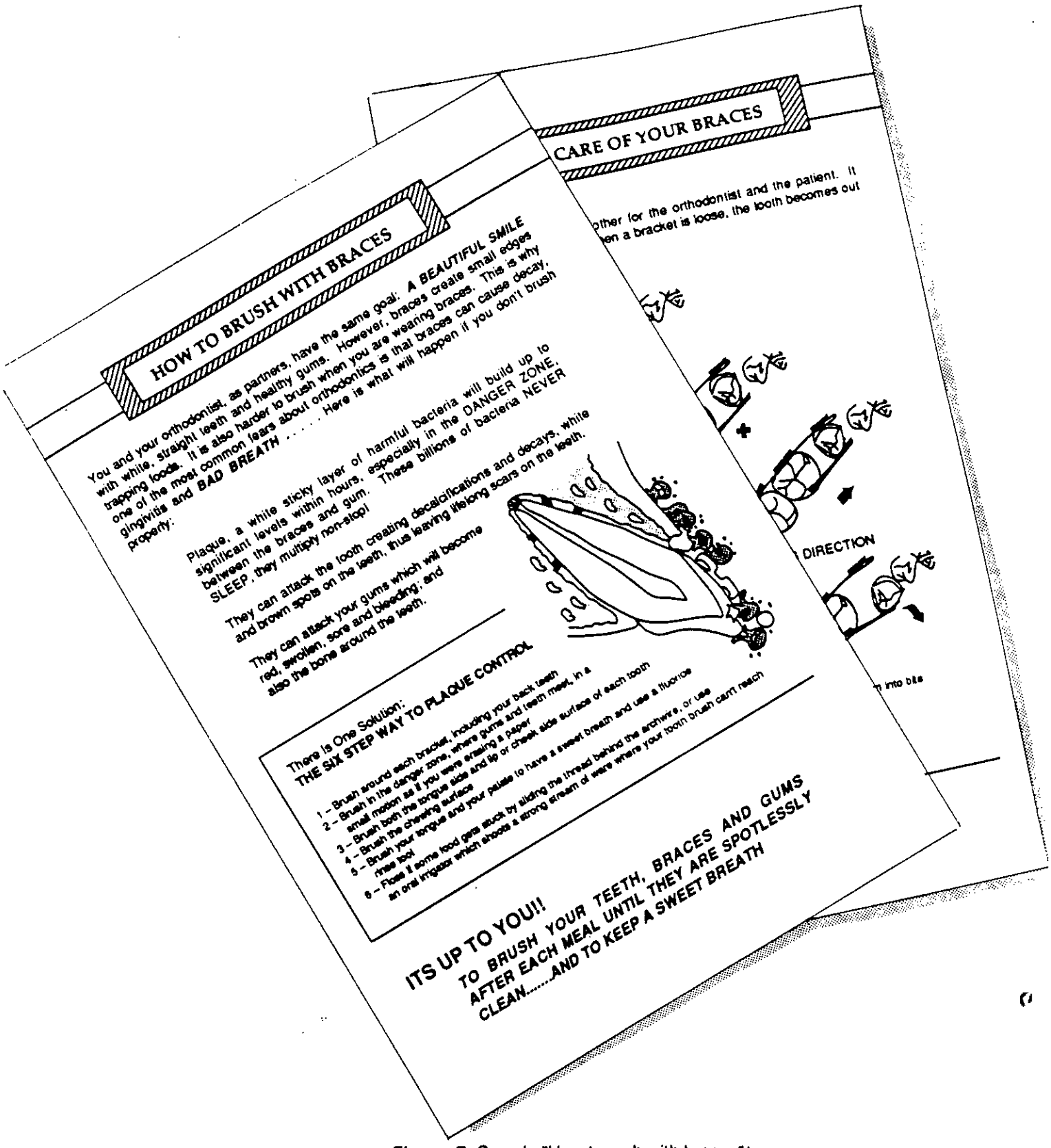
By reporting John's reactions to the team, she will enhance the treatment efficacy and coordination.

There is often a lag time between the consultation and the bonding/ banding day . Hence, it is important that the hygienist determine John's understanding of tooth brushing and how his eating habits must be modified. She can give feedback to the patient: *"John, I want to make sure that everything is clear...do you think you will be able to brush after each meal?"*. If John answers positively, she may ask the patient to demonstrate how he can brush. If the patient is reluctant, she may explain any problem he may have. In any case, it is critical to have John try to brush in front of you and explain as he goes along. If the patient is demonstrating a good level of understanding, the appointment should be ended by giving him handouts about hygiene and forbidden foods "How to take care of your braces"/"How to brush with braces" (fig. 7).

The teenager can then be introduced to another patient who is starting treatment at the same time. Both patients should know that they will meet every three months. They will monitor each other's treatment and they will be able to discuss their progress and difficulties.



No matter how interested patients are in your presentation, some of your teaching will be forgotten. Accepting this fact will help you and your patient avoid feeling frustrated or demoralized. Reinforcement must be built into the learning program as a natural component to benefit both the patient and the orthodontic team.



HOW TO BRUSH WITH BRACES

You and your orthodontist, as partners, have the same goal: *A BEAUTIFUL SMILE* with white, straight teeth and healthy gums. However, braces create small edges trapping foods. It is also harder to brush when you are wearing braces. This is why one of the most common fears about orthodontics is that braces can cause decay, gingivitis and *BAD BREATH* . . . . . Here is what will happen if you don't brush properly.

Plaque, a white sticky layer of harmful bacteria will build up to significant levels within hours, especially in the DANGER ZONE, between the braces and gum. These billions of bacteria NEVER SLEEP, they multiply non-stop!

They can attack the tooth creating decalcifications and decays, white and brown spots on the teeth, thus leaving lifelong scars on the teeth.

They can attack your gums which will become red, swollen, sore and bleeding; and also the bone around the teeth.

There is One Solution:
THE SIX STEP WAY TO PLAQUE CONTROL

1 – Brush around each bracket, including your back teeth
2 – Brush in the danger zone, where gums and teeth meet, in a small motion as if you were erasing a paper
3 – Brush both the tongue side and lip or cheek side surface of each tooth
4 – Brush the chewing surface
5 – Brush your tongue and your palate to have a sweet breath and use a fluoride rinse too!
6 – Floss if some food gets stuck by sliding the thread behind the archwire, or use an oral irrigator which shoots a strong stream of water where your tooth brush can't reach

ITS UP TO YOU!!
TO BRUSH YOUR TEETH, BRACES AND GUMS AFTER EACH MEAL UNTIL THEY ARE SPOTLESSLY CLEAN.....AND TO KEEP A SWEET BREATH

CARE OF YOUR BRACES

other for the orthodontist and the patient. It
en a bracket is loose, the tooth becomes out

DIRECTION

into bite

Figure 7: Sample "How to rush with braces"/
"How to take care of your braces"

THE APPLIANCE (HEADGEAR, FUNCTIONAL...) DAY

If the patient has good oral hygiene, no loose brackets, and is on time, it is very important to praise him.

If one of these parameters is not right, the patient must not be made to feel guilty. If it is, for example, a hygiene problem, the hygienist should definitely not say:

"John, your mouth is awfully dirty";

She may say instead:

"You are doing a very good job on your front teeth, but not so good on this back tooth... I know it is difficult to see in this mirror...but I know you can do it... There is some plaque here. Do you understand what plaque is now? Okay! you see your gum starts bleeding here. From what you saw in the video, what does that mean?... Do you have any problems with brushing your back teeth? Do you want these white and brown spots on your teeth? No! Let's brush your teeth together and see what the problem is.. Now I am sure John, that your teeth and gums will look perfect the next time!".

When giving the appliance, it is critical that the chairside assistant demonstrate again step by step the skills needed, and have the patient practice in front of her.

Asking some adolescents to many tasks at once (hygiene care + appliance wearing + modification of eating habits) or giving them explanations which they are unable to understand can lead to a feeling of failure on the part of the patient.

On the other hand, having the patient perform some part of the prescription successfully, like hygiene care, and then rewarding him for adhering to it will give the patient a sense of accomplishment, and will teach self-confidence. Once he has mastered one component of the treatment regimen, you can begin to work on another component like headgear wear, in which the patient will be only rewarded for adhering to this part.

Continuously listening to the patient's feelings, concerns, and anticipating any problems will help to prevent cooperation inconsistency from the patient.

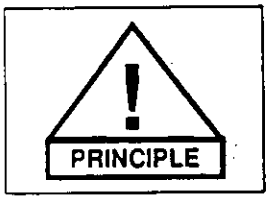
THE FOLLOWING VISITS

Each parameter of the contract will be evaluated. It is critical that all of the team members praise even the slightest improvements and continue communicating with the patients in order to obtain their feedback.

At every visit, the flow chart should be checked and discussed. Doing so will point out any problems that the teenager may have encountered since his last visit. It remains important to praise the patient for discovering solutions to these problems. One of the best encouragements will be to show them that they are **keeping pace with the predicted treatment time**. Also, a **nice personalized letter** sent to an adherent patient can be very effective and rewarding.

The treatment coordinator will keep in touch, on a regular basis with the child's parents. Praising the parents is as meaningful as complimenting the child in front of the parents.

A 6-12 month progress evaluation will be set to reaffirm the diagnosis and treatment plan. If modifications are needed, the treatment coordinator should be present to explain these changes.

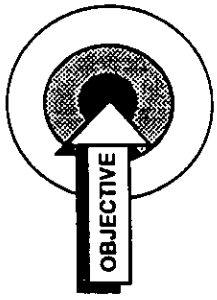


When teaching any technique such as oral hygiene or headgear wear,..It is critical to remember that we are training patients to acquire a series of skills: manual dexterity, coordination when looking in the mirror,.... Like any ability, once learned, its implementation becomes smooth and well coordinated. Until then, a lot of **patience** and **repetition** are needed from the whole orthodontic team.

HOW TO MEET THE CHALLENGE

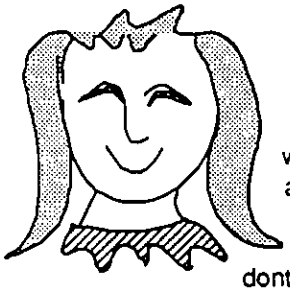
HOW TO MEET THE CHALLENGE

The role and responsibility of the orthodontic team vis a vis the adolescent are as difficult as they are important. Not all patients are created equal. Dealing with different patient responses to orthodontic treatment represents a special challenge for the orthodontic team. Some patients may be good partners at the beginning of the treatment but may not be consistent later. Others need continuous extra- attention and care due to their emotional state.



The objective of this chapter is to describe how you can alter your communication style to better meet different patients' needs. The major concerns when providing orthodontic treatment are negative reactions such as resistance, inconsistency, defiance, etc... Hence, major emphasis in this section is placed on these reactions.

THE COOPERATIVE PATIENT



The cooperative patient presents a level of adherence which allows the orthodontic team to function effectively and efficiently. The patient is relaxed and may be enthusiastic. His/her parents are supportive and they encourage him/her to assume responsibility for his/her orthodontic treatment.

This teenager can be treated in a straight-forward way. The orthodontic treatment is a fantastic opportunity for him/her to develop a sense of *commitment* and gain a *sense of control*. However, the orthodontic treatment is long and adolescence is a *"vascillating"* state. It is important to constantly reinforce initial adherence to maintain a high level of cooperation until the end of the treatment:

- show that you care, reserve five minutes at each appointment to chat with the patient,
- keep him informed about his progress during treatment,
- encourage and praise him,
- keep in touch with the parents.

"The adolescent is a vascillating combination of a dependent child and an independent adult. He needs to feel autonomous and have a real sense of commitment. He also needs to feel secure and guided by people he can trust".

G.LIPKIN & R.COHEN

THE POTENTIALLY COOPERATIVE PATIENT

Orthodontists may feel exasperated when dealing with adolescents that are not compliant. They may feel helpless, unable to communicate, and lacking of control. If patients remain non-adherent despite the teams' suggestions, the orthodontist may experience feelings of inadequacy and incompetency. Expressing constructive emotions may be blocked by fears of rejection (the patient does not like me), fears of our own imperfections (this is a failure), or fears of imperfections in others (this patient is bad and deserves to be punished). The orthodontist needs to **identify** his bad feelings, and **eliminate** the previously described irrational fears, in order to communicate effectively. The orthodontist needs to identify **who** he is dealing with and **how** to best adapt to his situation.

THE TIMID



The timid patient is very quiet. He answers your questions by responding "yes" or "no", but no actual communication is established.

This patient needs to gain confidence in himself and in the orthodontic team.

An indirect warm expression is usually most effective in communicating your genuine concern for the patient. Sometimes a simple expression of interest such as "I see" or "uh huh" is all that is necessary to start conversation.

To facilitate communication, **privacy** is important. Speak **slowly**, **briefly** and **concretely**.

Let him know that you recognize his individual personality, that you hope he is not *"uncomfortable"* with you. Show him that you are in position to help him. Tell him that by talking with him about his feelings and experiences, you will be able to better understand him, and therefore provide a treatment that satisfies him: *"When I know about....., we can decide what to do next."*

It is important to persist with **open questions** "*Can you tell me about your piano skills? "Do you have lots of good friends?","What activities do you enjoy to do with your friends?*". Allow the patient to answer **without feeling uncomfortable with silence**. These last two question examples may give you information about the adolescent's ability to get along with his peers.

Ask the patient for **help**: "*Can you hold my ligature ties for me, it would make my job much easier...*".

Give the patient choices: "*I have two types of rubber bands, colored ones or plain. It is easier to remember where to place the different elastics when you have different colors, but which one do you prefer ?*"

Do not expect the patient to change his behavior immediately. If the teenager responds, it is very important to **compliment** even minor cooperation. Once a better relationship is established, this patient should become a more consistantly adherent patient.

THE RESISTANT



Some adolescents are brought to the office unwillingly by their parents. They feel forced into a situation which has violated their freedom. Attempts should be made to help them feel that their input is important.

If the patient sounds angry, it is very important to understand the reasons for his emotional state. Using tact, diplomacy, and a sympathetic desire to see the other person's viewpoint, you may ask the following questions:

- *You sound very angry, Would you like to tell me about it?*
- *I can see you're pretty annoyed. Is there anything I can do to help?*
- *You seem pretty upset with me. I'd like to hear more about it.*

Keep the tone of your voice **low and well controlled**, react to what the patient says with an **honest, open** and **concerned attitude**. You must convince the patient, verbally as well as non-verbally, that you care and want very much to understand his problems. Ask for the patient's help in thinking about what would make him feel better.

Do not become **defensive** when the patient complains. If he expresses a dislike for orthodontics, agree that orthodontics is not inherently pleasant. Let him know that you don't blame him for getting upset.

Stay with him for few minutes, demonstrating **ease** and **control** in the situation. This allows the patient to feel increasingly comfortable with you and tells him that you are sincere in wanting to assist him.

Eventually communication will be established. In order to shift the adolescents' negative attitudes to a more "**willing**" frame of mind, it is critical to relate to him as an individual, share interests with him, and encourage him to take responsibility for his treatment.

THE NON-CONSISTENT



If a patient was compliant and suddenly fails to cooperate, it is very important to explore the variety of reasons for this failure as soon as it is observed.

Is non-adherence due to :

1 - absence of explicit instructions
2 - absence of fast enough movements of the patient's teeth.
3 - lack of patients skills.
4 - criticism from friends / classmates *"John, you look ugly with your braces"*.....
5- disinterest.

Such questions may shed some light on the subject :

- *People often have difficulties wearing their headgear for one reason or another. Have you ever had any difficulties in wearing your appliance? Why?.*
- *Do you usually have the opportunity to brush your teeth after each meal? It seems that your treatment is taking more time than expected. Is there anything about your rubber bands that I failed to explain?*
- *You are not keeping your agreement to keep your teeth cleaned. Have you changed your mind about it?*
- *It seems to me that you are having a hard time keeping your commitment with me. Could you please make a list of the things that make it difficult for you to adhere to the treatment regimen ?*

In this last example, the patient records as many solutions as they can, including rating of their effectiveness.

It is very important to listen to all the objections in order to let the patient know that you understand him.

Before discussing any possible suggestions, you must be sure that there are no other reasons for non-adherence: *"Except the fact that your friends are teasing you, is there anything else that prevents you from wearing your headgear?"*.

Finally, it is important to show him that he is not the only orthodontic patient encountering difficulties, however, most problems have solutions if you put them in a positive manner: *"We have encountered other patients that have had diifficulty cooperating but eventually they are able to perform the simple tasks that we ask of them, especially if they work together with us"*.

Eventually, psychological strategies such as **emotional role playing**, can be used in an orthodontic office to get the non-consistent patient back on track:

Emotional role playing involves creating a scenario in which the patient is confronted with an "as if" experience of being a victim. For example,

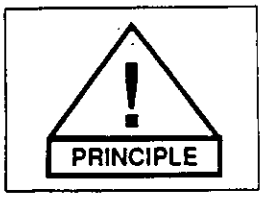
1 - Expose the patient to a list of excuses

"It hurts, it's discouraging, I love pretzels, my friends are teasing me ... and ask if he is aware of using any of them in order to avoid adherence. Then you may open a discussion in which he is asked to refute excuses *"What kind of pain do you get ? How long does it last ? What do you think is the solution?"* The patient will probably answer " to take "X pills" and wait for 2-3 days until it stops hurting", and you should praise himfor his correct answers: *"See you are right , you have the answer"*....

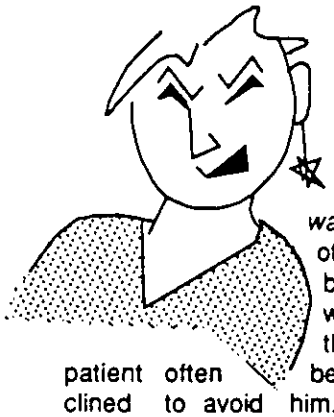
2 - Take a reversal of roles

The patient plays the role of the orthodontist and you play the role of the patient. During this role reversal you encourage the patient to participate actively in offering counterarguments and specific suggestions about why and how one can change. After you have challenged the teenager, you can ask such questions : *"Are you telling me you are going to be able to change? What about the fact that you often forget to wear your rubber bands? You like to crunch ice cubes?"*

While communicating with the patient, there should be **no value judgement** involved, no condemnation of the behavior, no labelling the behavior "bad". A positive environment should be maintained where choices are presented to the teenager so that he can decide.



THE DEFIANT



The defiant patient comes into the office with an *"I don't want", "I won't"* attitude. Adolescents who react this way often perform similarly in their home environment. They are brought to the office against their will. A defiant teenager will often project his hostility around him, and instead of thinking *"Ihate you"*, he believes *"you hate me"*. This patient often becomes a "closet" case, because the practitioner is inclined to avoid him. He tends to interpret a patient's defiance as a personal affront on himself.

When we are angry or frustrated, it is easy to explode with generalizations *"No wonder people avoid you, the way you behave" "You are totally immature..."*. Such statements shame the patient or show your annoyance. They are not only unhelpful, but they also force reciprocal anger and block interaction. It is important to allow the patient " to save face".

Honesty and **patience** are important when dealing with such a patient. You may constructively alert him that you will not tolerate such behavior by:

• Describe the insolent behavior:
"When you arrive late at the office with five or six brackets lose"

• Express your feelings:
"I get angry at you for not caring about yourself, for wasting your time and mine"

• Specify what you want the patient to do in order to improve the situation:
"If you arrived at the office on time, with nothing broken, like most of your friends, you would already be out of braces."

• Comment the positive results of his complying with your request or the negative ones in the opposite situation:
"If you start being careful now, your treatment will be finished in about six months. If you don't, be aware that I will only reserve 15 minutes for each of your appointments. When you come 10 minutes late, it leaves us with 5 minutes to complete your work . This means that you lose one more month of treatment".

A sensitive adolescent will perceive your feelings. He will see that the limit setting is not punitive or dictatorial but a matter of expediency. A frank aknowledgement of what caused frustration may relieve him or even motivate him to modify his behavior.

Another solution is to **imagine what a hypothetical individual would do in a similar situation**. By projecting, the adolescent can express feelings and eventually arrive at choices that are maeningful to his situation.

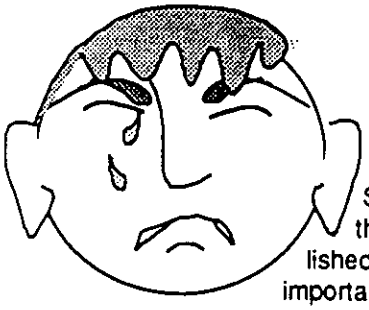
"John, one of my junior high patients came in yesterday. He was always breaking bands and brackets and then he did not show up for three months. We discovered yesterday that three of the teeth that had brackets missing, had moved in wrong directions, and that we would need an additional six months of treatment time in order to correct his malocclusion. This means three and a half years of treatment. How do you think he felt? What could have been thereasons for not taking care of his braces and missing appointments? What could I have done to help him understand the situation beforehand?"

The breakthrough may come after many weeks, when the orthodontist has proved beyond all doubt that *"he is quite a nice guy"* after all. For the orthodontist, initial feelings of anger change to feelings of success.

In families in which parents have been inconsistent, unconcerned and have given little attention or discipline to their children, the adolescent may have difficulty in making decisions. He may have poor self-control, and find it difficult to accept any authority. This patient may try to manipulate you, to test limits. Hostile remarks and acts are ways of defining the relationship and assessing the orthodontist to see how far the teenager himself can go. A firm approach often changes the behavior of these difficult patients dramatically.

You can **induce fear or use negative rewards** (fine the patients for each broken bracket... for example) However, these procedures increase the likelihood of dropping out of the treatment by triggering a variety of defensive reactions. If you use these negative procedures, you need to **relate them as a logical consequence** to the adolescent irresponsible behavior. Saying: *"John, floss only the teeth you want to keep and let the other ones be destroyed by bacteria"* may be useful only if the patient **believes** that the consequences are not merely threats and that the patient himself is **capable** ofmaintaining a good oral hygiene.

CHILD LACKING COOPERATIVE ABILITY



Some patients should never have been started. In these patients,communication cannot be established and comprehension cannot be expected. It is important to recognize that the adolescent's parent must also experience the same feelings of frustration.

Some parents grant autonomy with difficulty, yet subconsciously keep their children dependent. These teenagers can be very poor orthodontic patients. They are even reluctant to take any responsibility for the success of their treatment.

Some patients may have emotional problems that require professional therapy or there may be so much hostility within the family that the partnership approach previously described, cannot be effective.

In such cases, a meeting with the family must be set, in which the orthodontist discusses the cooperation problem and the alternatives. he should inform the family that they may continue treatment towards a compromised result due to the lack of cooperation or they may terminate the treatment altogether. All statements should be written and signed by the parents and the orthodontist.

EPILOGUE

> "If I don't believe I can do something, it makes me incapable of doing it. But when I believe I can, then I acquire the ability to do it even if I didn't have it at the beginning"
>
> MAHATMA GANDHI

David Berlo says, *"if we accept the concept of process, we view events and relationships as dynamic, on-going, ever-changing, and continuous"*. It is true that changing and controlling behavior are complicated processes yet they are interesting and challenging as well. It is easy to throw your hands in the air and say "I give up" when you have a difficult patient. Dealing with uncooperative patients requires study, practice, experience, and constant reevaluation by the orthodontist and his staff. Calling non-adherent patients simply "unmotivated" is not only incorrect, but grossly misrepresents the problem.

The foregoing strategies are capable of a broad influence on patients resulting in improved treatment results. Holding patients accountable for their own treatment success can also make them more responsible in other aspects of their lives as well, including their school work and their daily choices at home.

We cannot over emphasize the importance of the entire team exuding enthusiasm. A competent skill level, effective communication and partnership approach in orthodontics are paramountfor successful practice.

Watching patients respond in a positive manner will be a most rewarding experience for the whole orthodontic team. Having satisfied patients with functional occlusions and beautiful smiles makes for a terrific ending to a great partnership.

Reading and Resources

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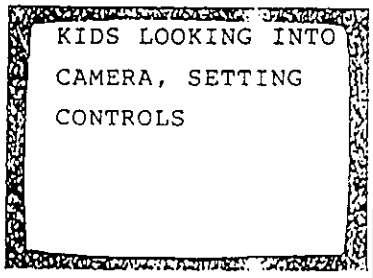
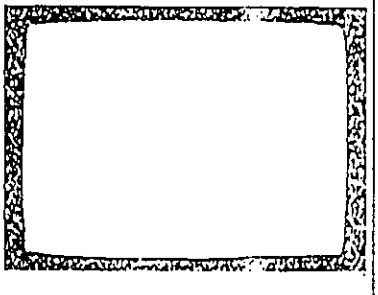
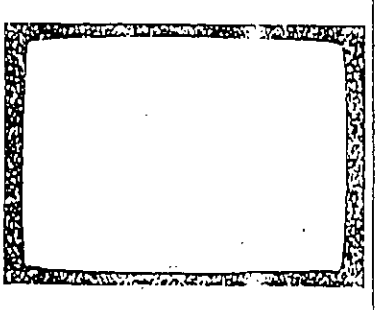
APPENDIX II

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TITLE: BRACES DATE:

CLIENT: DR ROZENCWEIG PROD. DATE:

WRITER: DR ROZENCWEIG/ GAY HENDERSON PAGE 1 OF

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
 KIDS LOOKING INTO CAMERA, SETTING CONTROLS		LAURA INDIRA KEITH INDIRA DAVID	OK, is it focused yet? I think so... did you white balance it, Keith? Yeah, I told you I did! Did you start the recorder? Yes,yes! It's rolling! All right, Laura, go ahead and start!
			(KIDS GET SERIOUS AND LOOK INTO CAMERA)
		DIANA	This is a film about braces... for people who <u>have</u> them... (SHE LOOKS OVER AT KEITH TO CUE HIM)
		KEITH	and for people who have to <u>get</u> them! (HE MAKES A FACE OF MOCK OF SUPRISE AND PAIN)

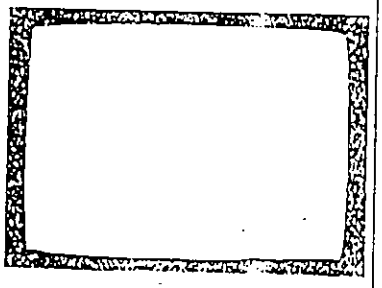
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TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 2 OF ____

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
		INDIRA	(INDIRA SMILES SMUGLY: SHE HAS BRACES) This is an educational film. (SHE STICKS HER CHIN UP AND ACTS SNOBBISH) We're going to learn all about how braces work, and how to make sure you don't have to wear them for too long.
		DAVID	We'll be answering all the most popular questions about braces, and sharing some secrets we've learned along the way. (DAVID NUDGES KEITH TO CUE HIM TO TALK)
		KEITH	First question: why do I need braces?

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TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 3 OF _____

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
LETTERS FLASH ON SCREEN: Very Good Question!		LAURA	Very good question! One of my favorites. But I'll answer it with another question: who would you like to look like?
KIDS WITH THOUGHT BUBBLES			(SEE INDIRA, KEITH, LAURA AND JOHN WITH CHANGING THOUGHT BUBBLES SHOWING PEOPLE THEY WANT TO LOOK LIKE: KIDS EXPRESSIONS KEEP CHANGING; MUSIC UNDER)
		LAURA	Everyone has an idea of how they want to look. Almost everyone's picture has a nice smile with straight teeth. And braces can give you that smile!
INDIRA AND KEITH TALKING TO CAMERA		INDIRA	That's why I couldn't wait to get braces! I think I look better already! (SHE TOSSES HER HEAD, PRETENDING TO BE A MODEL)
		KEITH	OK, but what if I don't really want to wear braces?
		INDIRA	(LOOKS SYMPATHETICALLY AT KEITH, NODS HER HEAD AS SHE UNDERSTANDS)

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TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 4 OF ___

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
KEITH WITH PARENTS AND DR. TALKING ABOVE HIM IN EXAM CHAIR		INDIRA	At first, it might be your parents who want them.
KEITH'S PARENTS THINKING		INDIRA	They could have all sorts of ideas of their own about why you should get braces...
SCENES PARENTS IMAGINE OF CHILDREN WITH BEAUTIFUL FUTURES			(SCENES OF DIANA ALONE, THEN SMILING IN WEDDING GOWN WITH DAVID IN TUX) (SCENES OF KEITH ALONE, THEN WEARING BUSINESS SUIT W/ BRIEFCASE AND SMILING) (SCENES OF INDIRA ALONE, THEN DRESSED AS DOCTOR USING STETHOSCOPE w/ PATIENT)

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TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 5 OF ____

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
CLOSE-UP OF KID'S FACE AS HE LISTEN TO DR. TALK TO PARENTS		INDIRA	But braces are not for your parents. They're FOR YOU !
VARIOUS ILLUSTRATIONS, X-RAYS, DIAGRAMS, MODELS, ETC FLASH BY QUICKLY			They are so many different reasons for needing braces, that it would take too long to go over all of them. But I'm sure your orthodontist has explained to you the scientific reasons why YOU need braces.
SEE DIFFERENT KIDS WITH BRACES			But it's up to <u>you</u> to really <u>want</u> braces, for <u>your</u> <u>own</u> reasons, and to <u>work</u> <u>with</u> your ortho-dontist.

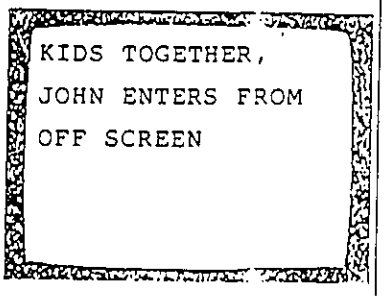
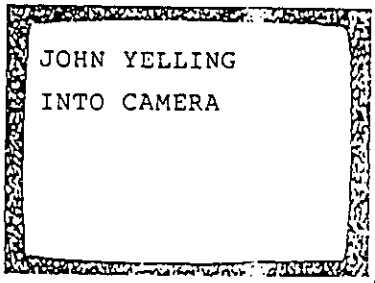
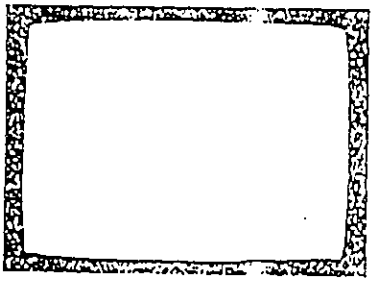
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TITLE: ..... DATE: .....

CLIENT: ..... PROD. DATE: .....

WRITER: ..... PAGE 6 OF ...

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
 KIDS TOGETHER, JOHN ENTERS FROM OFF SCREEN		JOHN	Hey, what are you guys doing?
		KEITH	Making a video about braces.
		JOHN	(STICKS HIS FACE IN FRONT OF CAMERA) Well, I'll be in it! I can't stand braces! I've had them for three years and I don't think I'll ever get them off! My advice: STAY AWAY FROM BRACES!
 JOHN YELLING INTO CAMERA			
		LAURA	JOHN! (SHE PUSHES HIM AWAY FROM CAMERA) You could at least say why you've had braces for three years.
		JOHN	(LOOKS AT CAMERA AND SHRUGS HIS SHOULDERS) I don't know why

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TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 7 OF ____

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
JOHN IN THE DARK, KIDS POINT LIGHTS ON HIM; HE LAUGHS		DAVID	(LAUGHING SLIGHTLY AT FIRST) Well, maybe we can shed some light on the subject...
John bouncing basketball through house and going outside / The orthodontist is asking his assistant about David The assistant tells him thatDavid did not show up once again.			Part of the reason why you've had your braces for so long is that you seem to find time to do other things,but not keep your appointments at your orthodontist. I know I can get my braces off quicker if I keep all my appointmtnts. Each appointment lost is one more month I'd have to wear them... So it IS true...What YOU do really matters.
PLAYING BASKETBALL WITH OTHER KIDS		JOHN	(LOOKS UP FROM PLAYING TO TALK TO CAMERA) But what do I have to do with it? My orthodontist decides when my braces come off.

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TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 8 OF ___

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
JOHN AND OTHER KIDS ON BASKETBALL COURT LOOKING AT CAMERA, LISTENING		DAVID	First you need to understand how your braces work...
		LAURA	Your braces are actually little handles glued on your teeth. But if you don't get the wires changed or adjusted by your orthodontist,your teeth can't move. They'll just sit there... wearing brackets.
COMPUTER GRAPHICS ANIMATED TYPODONT TOOTH ON COUCH WEARING BRACKETS			
GRAPHIC OVER VIDEO OF BOY AT RECEPTION DESK GETTING CARD: Keep Your Appointments			And in that case it may be a long time before you get your braces off. So be sure to keep all your appointments with your orthodontist...

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TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 9 OF ____

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
KIDS FACES IN EXPRESSIONS OF HORROR, SOUNDS OF SHRIEKING		DAVID	Or what happened to John could happen to YOU!
GIRL WALKING WITH HEADGEAR ON, CAMERA FOLLOWING HER		INDIRA	(WHISPERING TO PERSON OPERATING CAMERA) Be careful! Don't drop it! (TALKS TO CAMERA NOW) Here's what I'd like to know...why does my mouth feel sore after my orthodontic appointments? and why does my headgear make me look like I have a basketball hoop on my face?
ILLUSTRATION: GIRL'S HEAD WITH HEADGEAR IN SCIENTIFIC BLUEPRINT		DAVID	Ahh yes... the headgear.

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TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 1o OF ____

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
ROMAN BOY IN TOGA WEARING HEADGEAR		DAVID	Commonly thought to be an ancient torture device dreamed up by cruel orthodontists during the Roman Empire....
HEADGEAR ON GIRL (FROZEN VIDEO) FROM DIFFERENT ANGLES, SIDE AND FRONT W/ ARROWS			In reality, the headgear is an ingenious device that uses the back of your head as an anchor for tooth or jaw-moving forces.
			You know it is the same for people who's back is crooked They 've to wear a back brace to straighten their back as they grow. The headgear straightens your jawbones as YOU grow. It also can be used to move your teeth,or to hold them where they need to be.
COMPUTER GRAPHICS			Sorry to say, but in some cases the headgear is the only way to go! Braces alone can't do the job!

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TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE II OF ___

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
INDIRA LOOKING AT CAMERA, TURNS INTO OLD LADY WITH BRACES		LAURA	You'll find that if you don't wear your headgear, your treatment may last forever ! If you wear it day and night,your teeth can move faster.
KIDS DOING ALL KINDS OF THINGS AT HOME WITH HEADGEAR ON			So be creative about it, and find some fun things to do while you're wearing your headgear!
DAVID ON CAMERA, SMILES WIDE, SHOWS RUBBERBANDS		DAVID	And let's not forget rubberbands. They're also used to help move teeth.

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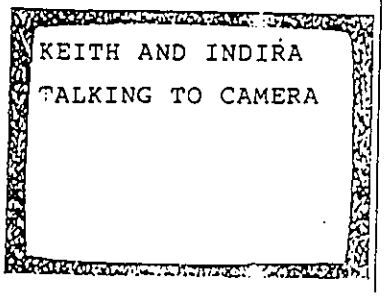
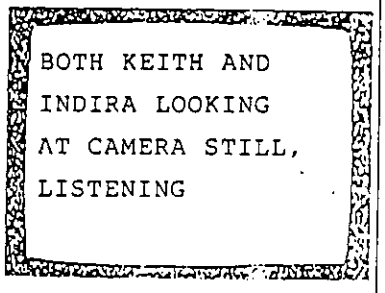
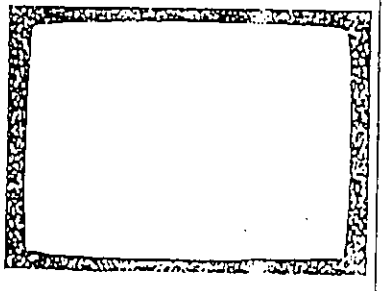
VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
KID PEDALING BIKE WITHOUT CHAIN		DAVID	Not wearing them is like pedaling a bicycle without a chain...all that work and your're getting nowhere!
GRAPHIC OVER SHOT OF DAVID PUTTING RUBBERBANDS ON: Wear Your Appliance Every Day		LAURA	It's IMPORTANT to wear your rubberbands all the time . When you forget to put them on, your teeth move back to where they were.
SERIES IF WIDE-ANGLE STILL PHOTOS OF DR. LOOKING INTO CAMERA AND SMILING			And of course, your ortho-dontist can see right away that you've been wearing your rubberbands, and he'll be very proud of you ! But most of all YOU will be proud of yourself!

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TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 13 OF ___

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
 KEITH AND INDIRA TALKING TO CAMERA		KEITH	Ok, but what about the stiffness? You forgot to tell us what happens wnen the braces get adjusted. (BOTH LOOK AT CAMERA SKEPTICAL WAITING FOR ANSWER)
 BOTH KEITH AND INDIRA LOOKING AT CAMERA STILL, LISTENING		DAVID	We're getting to that... an educational film must go slowly in order to explain everything clearly. Now, here's what happens when your teeth start moving...
			

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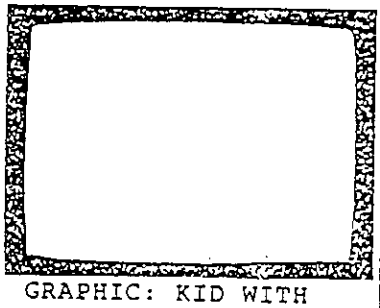
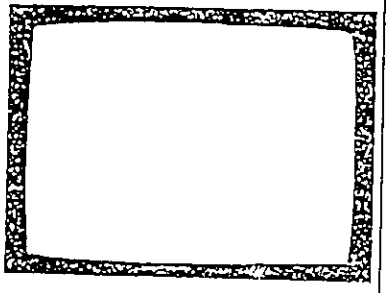
VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
DIAGRAMS TO ILLUSTRATE TEETH AND BONE MOVEMENT		DAVID	(AUDIO SPEEDED UP OR DAVID TALKING VERY FAST) Teeth are rooted in your jaw bone, and when braces apply pressure to the teeth, it triggers production of bone-eating cells called osteoclasts, which clear the way for teeth to move into their new places. As they leave their old spots, bone-forming cells, called osteoblasts, build up new bone so the teeth are secured in their new positions. It is during the first couple of days after adjustment of the wires, before your jaws react by creating the bone-eating cells, that your mouth feels sore. You must be patient though. This feeling will only last a few days, and then your teeth will start moving and it won't hurt anymore.
DIAGRAMS TO ILLUSTRATE			
KIDS MOVING MOUTH AS IF IT IS SORE			

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TITLE:_____ DATE:_____

CLIENT:_____ PROD. DATE:_____

WRITER:_____ PAGE 15 OF ___

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
 KIDS OPENING AND CLOSING MOUTH SLOWLY, STIFFLY		DAVID	actually It's more a feeling of tightness rather than pain.
 GRAPHIC: KID WITH ASPIRIN TO THE RESCUE			And if it's too bad.whatever you take for a headache should help.
			

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TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 16 OF _____

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
KIDS ALL LOOKING AT CAMERA, CONFUSED		DAVID	There, I hope you caught all that. (JUST HEAR HIS VOICE, NOT ON CAM)
		KIDS (JOHN, LAURA, INDIRA, KEITH)	Oh, yeah, sure, we got it. (ALL NODDING HEADS)
KIDS TALKING TO EACH OTHER		JOHN	(TURNS TO KEITH AND ASKS:) Well, what else do you want to know about braces?
		KEITH	I just wanna know what's going to happen. I mean, what's it really going to be like?
		LAURA	I think I know what he's talking about... it won't change your life that much.
		INDIRA	You can do all the things you did before pretty much. You can still:

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TITLE:_____ DATE:_____

CLIENT:_____ PROD. DATE:_____

WRITER:_____ PAGE 17 OF ___

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
VIDEO OF EACH ACTIVITY WITH TITLE UNDER IT		LAURA	eat in public places, sing, play a musical instrument, kiss, play sports, and yes, even have your picture taken.
GRAPHIC A Few Inconvenience...			There are a few inconveniences you'll have to adjust to though.
CLOSE-UP SHOT OF BRACKET AND BAND BEING ADJUSTED			Your brackets and bands are very fragile. These handles attached to the wire and control the movement of each individual tooth

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CWRU Video Services EMD educational media department

TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 18 OF ___

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
KIDS EATING FOODS WITH CIRCLE SLASH OVER THEM		DAVID	That's why you shouldn't eat certain foods, like caramel, pop corn, hard candy, ice cubes or bubble gum. They can cause a band or bracket to come loose or break.
STEVEN SKATEBOARDS INTO PHONE BOOTH		INDIRA	If that happens, call your orthodontist immediately! Because with a bracket loose, your teeth will stop moving or they will move back toward their original position. Or worse yet, they can move in the wrong direction.
GRAPHIC OVER VIDEO OF SMILE WITH BRACES: Take Good Care of Your Braces!		LAURA	So, just remember, you need to take good care of your braces!

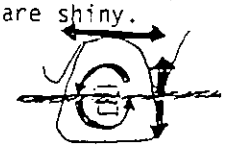
CWRU Video Services EMD educational media department

TITLE: _____ DATE: _____

CLIENT: _____ PROD. DATE: _____

WRITER: _____ PAGE 19 OF ____

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
KIDS IN FRONT OF BATHROOM MIRROR, INDIRA SHOWING KEITH HOW TO BRUSH			(INDIRA PUTTING TOOTHPASTE ON BRUSH)
		INDIRA	Here's something we forgot to tell you... when you have braces you have to brush very carefully. Especially in this "danger zone" between your brackets and gums. You should go in circles around each bracket...
INDIRA LOOKING IN MIRROR, BRUSHING. KEITH WATCHING INTENTLY			(KEEPS TALKING, CAN'T UNDERSTAND HER)
		DAVID	Let me repeat and explain a little bit more clearly. You should put very little toothpaste,and go in circles around each bracket,until they become shiny. Then you will go in the danger zone as she calls it. and do a little massage of your gum as if you were erasing a paper.If some food is stuck,you can catch it with the bristles of the brush. I know it is tuff at the beginning but you can easily check in the mirror that your teeth and brackets are shiny.
GRAPHIC OVER FROZEN VIDEO OF INDIRA BRUSHING: Keep Your Teeth Clean!			

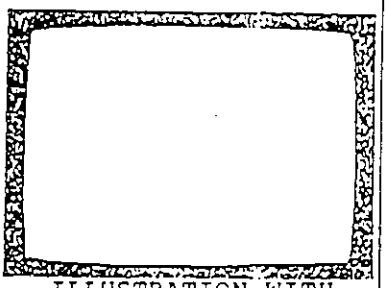


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TITLE:_____ DATE:_____

CLIENT:_____ PROD. DATE:___

WRITER:_____ PAGE 20 OF __

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
 ILLUSTRATION WITH PLAQUE AND ARROW POINTING BETWEEN BRACKETS AND GUM.		DAVID	It is VERY VERY IMPORTANT that you keep your teeth perfectly clean. Whatever food get stuck in your wire Bacteria will love it. They will form a white sticky layer on your teeth especially between the brackets and the gum,in just FEW HOU
 BILLIONS OF BUSY BACTERIA			In just .03 ounces of plaque, there are 250 billion busy bacteria. They never sleep, and they multiply non-stop.
		LAURA	They'll attack your teeth, and create decay, in the form of white and brown spots that can scar your teeth for a lifetime.
 ILLUSTRATION OF SPOTS			And they won't stop there! They'll attack the gum around the teeth. It will become red and swollen and may bleed. And in their final assault, the can actually destroy the bone around the tooth.

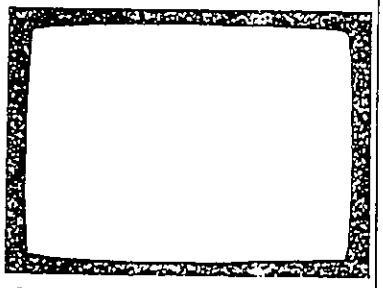
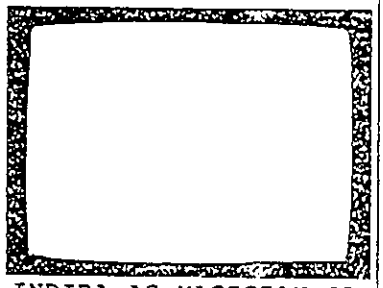
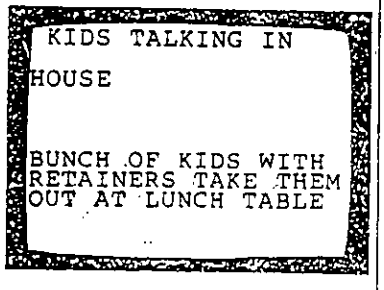
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CWRU Video Services EMD educational media department

TITLE:_____ DATE:_____

CLIENT:_____ PROD. DATE:_____

WRITER:_____ PAGE 2 I OF ___

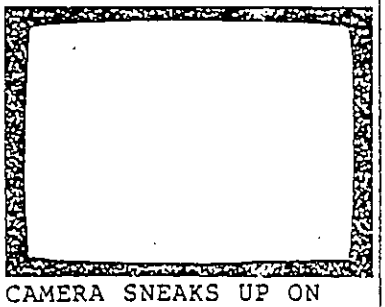
VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
 ANIMATED FROZEN VIDEO SCENES OF GIRL KISSING JOHN, HER BAD REACTION		LAURA	And worst of all, you could fall victim to bad breath and your frinds may find it rather unpleasant to kiss you.
 INDIRA AS MAGICIAN OR FAIRY		INDIRA	I have a trick I use... I brush my tongue and I use a rinse too.
 KIDS TALKING IN HOUSE BUNCH OF KIDS WITH RETAINERS TAKE THEM OUT AT LUNCH TABLE		(4 KIDS TOGETHER) KEITH INDIRA LAURA	What else should we show? Well, we could show all kinds of kids with braces. Most of my friends in junior high have them. And everybody in high school has a retainer!

CWRU Video Services E/D educational media department

TITLE:_____ DATE:_____

CLIENT:_____ PROD. DATE:_____

WRITER:_____ PAGE 22 OF ___

VIDEO	TIME	SPEAKER	AUDIO / NARRATIVE
 KIDS IN HOUSE		JOHN	And we could show me without braces! But only if you start wearing your headgear and going to your appointments
		JOHN	Well maybe I will
			CUT ON MONTAGE OF KIDS WITH BRACES, MUSIC
 CAMERA SNEAKS UP ON JOHN CALLING ORTHODONTIST ON PHONE		JOHN	Hello, this is John Edwards. Can I make an appointment to see Dr. Ross?
		KIDS	They hear him, nodd their and put their thumb up.
			FLASH BACK ON THE MAIN POINTS THEY HAVE TO REMEMBER.
 MONTAGE			

APPENDIX III

PATIENT COOPERATION SCALE

NAME:.....**AGE :**.....

BEG. OF TREATMENT:..... **DATE :**..... **TOTAL PTS :**...../40

SCALE :

0	1	2	3	4

I. The patient keeps appointments and is prompt.

missed appt	cancelled appt	late. no excuse	late. with excuse	On time

II. Distorted wires and/or loose bands.

Bands and bkts loose/no call	bkts loose no call	Bands and bkts loose / called	bkts loose called .	Everything's all right

III. This patient cooperates in the use of headgear

No wear will not admit	No wear/ Admitted	Very minimal wear	Wear/not the right amount of time	Perfect wear

IV. This patient cooperates in the use of rubber bands

No wear will not admit	No wear/ Admitted	Very minimal wear	Wear/not the right amount of time	Perfect wear

V. The patient 's oral hygiene.

decalcifications Plaque & inflamed / swollen gums	Plaque & inflamed / swollen gums	Plaque	No brushing before appt	Good hygiene

VI. The parent(s) of this patient is(are) observed to be interested and involved in treatment. (grade from 0 to 4 : - to +)

0 (-)	1	2	3	4(+)

VII. This patient acts enthusiastic and interested in treatment (grade 0 to 4 : - to +)

0 (-)	1	2	3	4(+)

VIII. This patient's behavior is cooperative and easy going .(grade 0 to 4 : - to +)

0 (-)	1	2	3	4(+)

IX. This patient complains about treatment procedures.

Always	Frequently	Sometimes	Rarely	Never

X. This patient complains about having to wear braces.

Always	Frequently	Sometimes	Rarely	Never

PATIENT SURVEY

The orthodontic department of CWRU is working to improve its services to you. Please take a moment to complete the following questionnaire as candidly as possible. **It's strictly confidential, so don't sign it.** For question 1 to 8, check the answer that most accuratly reflects your opinion.

	True	Mostly true	Don't know	Mostly false	False
1 - From the beginning, I fully understood the treatment planned for me.	☐	☐	☐	☐	☐
2 - The orthodontist explains things to me plainly and simply.	☐	☐	☐	☐	☐
3 - The orthodontist listens to me.	☐	☐	☐	☐	☐
4 - I feel that I share the responsibility with my orthodontist for the outcome of my treatment.	☐	☐	☐	☐	☐
5 - I am quite satisfied with the care I receive at the orthodontic department of CWRU.	☐	☐	☐	☐	☐
6 - I am quite satisfied with the relationships I have with my orthodontist.	☐	☐	☐	☐	☐
7 - My orthodontist has tought me a lot about taking good care of my teeth.	☐	☐	☐	☐	☐
8 - The orthodontic treatment is a great experience for me.	☐	☐	☐	☐	☐

Thank you.

PATIENT'S PARENT SURVEY

The orthodontic department of CWRU is working to improve its services to you. Please take a moment to complete the following questionnaire as candidly as possible. **It's strictly confidential, so don't sign it.** For question 1 to 6, check the answer that most accuratly reflects your opinion.

	True	Mostly true	Don't know	Mostly false	False
1 - The information at the consultation was presented clearly.	☐	☐	☐	☐	☐
2 - The orthodontist(s) communicate(s) with me regularly.	☐	☐	☐	☐	☐
3 - The orthodontist has told me a lot about taking good care of my child's teeth.	☐	☐	☐	☐	☐
4 - I am quite satisfied with the care my child receives at the orthodontic department of CWRU.	☐	☐	☐	☐	☐
5 - The orthodontic treatment has been a great experience for my child.	☐	☐	☐	☐	☐
6 - The orthodontic treatment has positively influenced the relationships with my child.	☐	☐	☐	☐	☐

Thank you.