Motivation of the Headgear Patient

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INTRODUCTION

It has become increasingly evident to practicing orthodontists that neither appliance nor orthodontist is responsible for failure or poor progress in many cases in orthodontic therapy. Stolzenberg[1] pointed out that the technology of dentistry is only a small phase and that the lack of cooperation of the patient is often an obstacle in the treatment of malocclusion. In 1966 Story[2] stated "Why a young adolescent does not always see things in quite the way his parents and often his orthodontist do with respect to his malocclusion or deformity is clearly the area in which a great many "motivational" problems in orthodontic treatment lie." Motivation, the level and degree to which it is sustained by the patient during the course of orthodontic treatment, appears then to be the intervening variable whose fluctuation very considerably affects the duration and quality of the orthodontic corrective process.

The term *motive* usually 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.[3] Human beings behave uniquely and in learned ways of responding. If the motivation of the patient affects the course of orthodontic therapy regardless of the high quality of dental technology by the orthodontist himself and regardless of the caliber and appropriateness of the appliances used, it would appear that understanding and control of the patient's motivation has central importance.

Saper[4] has recently suggested the use of the term "comprehensive dentistry" to indicate that the dentist knowingly practices with the whole patient, rather than treating only a single facet of a multifaceted whole person. It also recognizes that the whole, unique individual functions in a total life situation which is in constant flux and often produces stress situations for the patient, all of which must be comprehended and taken into account by the orthodontist. Or, at least, the personality of the patient and his life space must be understood by the orthodontist to the degree that these affect the motivation of the patient for sustained cooperation for the duration of orthodontic treatment.

Based on his years of private practice in orthodontics, the author some time ago reached the subjective conclusion that the success of orthodontic treatment rests not only on the skill of the orthodontist and his technique, appliances and equipment used, but also on the motivation of the patient for 1) accepting orthodontic procedures and attendant demands on time, 2) oral hygiene, 3) regularity and promptness in keeping appointments, and 4) persistency, amount, and correctness of use of headgear. Therefore, he began a more scientific investigation to determine the relative effects of various factors on motivation of patients to use headgear during orthodontic treatment. The results of the study are contained in a previous paper.[5] That study of sixty-seven treated patients showed that they unanimously felt that instructions given for the use of headgear were adequate and that the orthodontic correction was very worthwhile, but emphasized the need for orthodontist-patient communication aimed at increasing:

A. Patient's feeling that communication between orthodontist and patient is confidential.

B. Patient's continued information on:

1. his progress in treatment,
2. possibility of lessening expense and/or duration of treatment with consistently good patient cooperation,
3. possibility of improving quality of orthodontic correction with better use of the headgear by the patient,
4. relieving apprehension created by appearance of depressions or marks on face or cheeks left by headgear.

C. Preparation of patient for:
1. anticipated embarrassment resulting from appliances and/or headgear,
2. answering questions regarding headgear or cheek depressions,
3. discomfort or dislike of headgear.

D. Orthodontist's skill in:
1. using his authority as an expert or specialist to:
   a. reassure the patient,
   b. give specific and frequent directions to improve and facilitate use of headgear,
   c. inquire at each visit as to use of the headgear since last appointment,
   d. focus on goal of treatment and its success, as well as desirability of correction, possibly by a given time.
2. Recognizing patient's personal requirements and sensitivities and need for support, interest, reassurance and recognition for effort.
3. Recognizing sex differences of orthodontic patients: i.e., girls more often shy, take blame more seriously, need more specific directions, are greater conformists than boys. Whereas boys are more often independent of adult authority, less bashful, less trusting, more competitive, and more self-confident, but less certain of how others perceive their capabilities.
4. Recognize extrovert and introvert traits in each patient regarding his attitudes, behavior, and actions and how to deal with them as they are.

Survey of the Literature

Sanford Lewis[6] has written that "No field of dentistry is more concerned with emotional factors than orthodontics. Nowhere does the question of body image become more important and nowhere must a therapist be more perceptive and sympathetic in his approach." The patients of the orthodontist are mainly those who are approaching or have just reached adolescence with its related increase in glandular activity, social and sexual anxiety, problems of emancipation from parents and struggle with religious and ethical concepts.[7] This also seems to be a period of exaggerated sensitivity to pain.[8] Further, the orthodontist deals with some degree of conspicuous physical aberration, which must have emotional ramifications, and must work in and around the oral cavity which has a set of emotional factors all its own, ranging from its role in food-getting and security to the part it plays as an erogenous zone in sexual activity.[7] Ash says that the orthodontist may remove emotional tension by improving facial appearance but may also be in the center of a "vicious psychomatic circle" if the dentofacial deformity has been psychogenic and has served some neurotic or hysteric need. The majority of dental patients, however, are not neurotic nor do they have any psychophysiological illnesses; in these, emotional factors complicate, rather than specifically cause, dental disease;[9] the dentofacial deformity may produce distorted body image, and the emo-

tional reaction to this must affect the personality of the growing child. Correction, therefore, may have delicate psychological significance if it removes symptoms, and involves the oral zone which has special meaning for the patient.

Any event perceived as threatening is stressful. Although the patient may intellectually perceive orthodontic procedures as completely positive and constructive, emotionally they may be very threatening to unconscious ego functioning.[4] The patient may associate the wearing of appliances with adult domination or punishment,[8] either by adults or self. Psychic and emotional factors can prolong the period of orthodontic treatment and are responsible for many non-productive hours of repairing appliances, recementing bands, and broken appointments.[10] The orientation of the professional worker, as suggested by Hughes,[11] includes intent to a) capitalize on growth through use of long-term planning with particular attention to timing and pacing, b) recognize more fully the significance of individual differences rather than the reverse, c) realize the positive nature of human growth and development as nurture or treatment is provided, and d) develop his own intellectual and emotional maturity which will facilitate his dealing with the patient. Hughes advises the orthodontist to provide security for the child, establish and maintain support in a friendly relationship, program for orthodontic education concurrently with orthodontic treatment, and help the child to introject the goals and purposes of what may seem to him a vast array of oral indignities.

In dealing with the psychosomatic aspects of patient management, January[12] states that the problems will be solved when the orthodontist understands and employs the psychological principles of human motivation and control. He has suggested that the orthodontist reinforce the patient positively at each visit, treat him as an individual in the process of maturing to adulthood, and fill his needs for affection, adequacy and recognition. Stolzenberg[1] says, "Every action, every word spoken in the office by the dentist or his assistant should reflect positive suggestion." Kaplan more strongly says that the orthodontist does not only straighten teeth; he helps straighten out potentially disturbed personalities.[9] Lustman somewhat whimsically says that the patient brings his personality as well as his teeth to the office.[13] Several authors have pointed out the need for the orthodontist himself to develop maturity and understanding of his own self and his own emotional needs, as well as those of his patients, if he is to be able to develop a facilitative relationship with the patient.

Only one article reported actual study of treated cases. Ketterhagen[14] reported a study of 184 cases treated with headcaps and classified them as excellent, good, fair, or poor. He made the statement that "there was about eighteen months of cooperation in most patients" and that, when the "saturation point" had been reached, further improvement was a struggle for all concerned. He listed the indications for headcap treatment as: a) severe Class II cases with gross discrepancy in bony facial pattern, treatment to begin with eruption of first molars and a second period of full appliance therapy expected, b) cases with excellent chances of obtaining satisfactory results without further treatment, and c) completed cases showing tendencies to regress to overjet or where proper mesiodistal relationship has not been attained or cannot be maintained. He feels that headcap combined with full appliances should be used in any Class II case in which the lower arch is not considered adequate anchorage and in borderline extraction cases

Purpose of the Present Study

The purpose of the present study is to find out whether it is possible to reduce the duration of headgear treatment and to improve the quality of correction through better patient-doctor communication, understanding and increasing motivation of the patient, and practice of psychosomatic orthodontics. The author believes that a need for the study is substantiated by a less than total success in many cases encountered in an orthodontic practice. This could be the result of the patient's own attitudes and external influences upon him and/or of the orthodontist himself.

According to Salzmann[15] "It should be kept in mind, however, that frequently neither the appliance nor the orthodontist is responsible for failure in orthodontic therapy. Failure may be due to the nature of the malocclusion and the dentofacial malformation present in the patient and, as is frequently the case, because of a lack of cooperation on the part of the patient in following the instructions of the orthodontist."

Method

Experimental and Control Groups

The fifty-nine cases in this study are patients of one orthodontic office and comprise a total of thirty-one girls and twenty-eight boys. The study includes two groups: thirty-one controls and twenty-eight experimental subjects. Of the controls, nineteen were girls and twelve were boys; of the experimental subjects, thirteen were girls, and fifteen were boys. All of these subjects were patients who had recently completed orthodontic treatment using the headgear. They had completed treatment and were retained within a twelve month period, and therefore represent a selected population.

Criteria Measures

In range of difficulty of correction the control and experimental selections were grouped according to the severity of malocclusion as mild, moderate, or severe, and were also ranked in numerical order from most severe to least.

1. Ranking
   To measure the success of treatment, the quality of correction for each group was ranked by the author as excellent, average and below expectation, and then ranked by number, from highest to lowest. In determining each of these two rankings, the orthodontist used plaster study models, cephalometric lateral head films and employed the Q-sort technique.
2. Duration of treatment
   The duration of treatment was the actual number of months from initial banding of the maxillary first molars until debanding and retention. In the control group the average duration of treatment was as follows: one mild case, twenty-three months; eight moderate cases averaged thirty-four months; and twenty-two severe cases averaged thirty-nine months. In the experimental group the four mild cases averaged ten months; ten moderate cases averaged seventeen and one-half months; fourteen severe cases averaged twenty-seven months.
   At the beginning of treatment the range in chronological age of the experimental group was eight years, eight months to seventeen years, three months and the average age was twelve years, one month. The range in chronological age of the control group was nine years to sixteen years, eleven months, and the average age was eleven years, ten months, indicat-

ing that the two groups were comparable.

Procedure

1. Questionnaire for headgear attitudes

   As near to the beginning of treatment as was possible, each subject was given a questionnaire for headgear attitudes which consisted of thirty-five items taken from the "California Test of Personality, 1953." The selected items were chosen on the basis of their appropriateness and acceptability to the patients and were intended to give some understanding of the patient's usual reaction patterns. The impressions gained from the initial interview with the patient and combined with information yielded from responses given by the patient on this questionnaire, it was hoped, would provide enough understanding of the patient so that the orthodontist could develop an individual program designed to increase the patient's motivation for proper use of the headgear. It was hypothesized that techniques and communication tailored to fit the personality pattern of the patient could materially improve the regularity and consistency and actual length of time of use of the headgear, to the end that the duration of treatment could be reduced and the quality of correction increased. The successive procedures used in communicating and working with each patient were as follows.

2. Orthodontic treatment

   Phase I. Initial interview and explanation of appliances and headgear.

   Phase II. Diagnosis and plan of treatment described and outlined to patient and parents.

   Phase III. Banding of teeth and beginning of headgear therapy.

   Phase IV. Tooth movement with headgear continued; correction of molar relationship and space closure where applicable, with the major target to this point to maintain motivation at a high level.

   Phase V. Finish tooth positioning in buccal segments and complete anterior esthetics.

   Phase VI. Debanding and making posttreatment records.

   Phase VII. Retention.

3. The next step was to submit to each retained subject the questionnaire for completed cases of full treatment. This questionnaire related directly to the headgear.

Findings

When treatment was concluded, the duration in months was calculated, and the finished case ranked in quality in each of the two groups according to the quality of correction achieved.

The quality of correction in the experimental group was ranked from 1 (highest) to 28 (lowest), and in the control group from 1 (highest) to 31 (lowest).

The average duration of treatment in the experimental group was: mild, 10 months; moderate, 17.5 months; severe, 27 months. In the control group the average length of time of treatment was: mild, 23 months; moderate, 34 months; severe, 39 months.

The highest score possible on the questionnaire for headgear attitudes was 35. The range in the experimental group was from 34 to 17. The range in

the control group was substantially the same, from 33 to 16. The highest score reflected the highest level of motivation.

The severity of malocclusion was ranked at the start of the study as mild, moderate, or severe and in analysis of the findings at the end of the study was more carefully ranked numerically from number one.

In using Spearman's rho formula for correlating rank differences a correlation of 1.0 would be considered perfect. Correlations were calculated for the experimental group and the control group.

In the control group the quality of correction appeared to have almost no relation to the degree of difficulty of correction. In the experimental group the correlation of .48 would tend to indicate that although it might be expected that the mildest cases would show highest quality end results, actually some of the more difficult cases were of the highest quality of correction as ranked by the orthodontist. In the experimental group the best correction took less time and in the control group the best correction took longer time.

Attitude scores of the control group bore low positive relation to the duration of treatment. The attitude scores of the experimental group showed high positive correlation, .89, with the duration of treatment. This would seem to indicate that when the orthodontist used the patient responses in the headgear attitudes questionnaire with other observations at his disposal, the resulting planned program was highly related in the experimental group. The control group showed small positive relation between a patient's score on attitudes and the ranking of quality. The attitude score in the experimental group at the *beginning* of treatment was significantly negative to the quality of correction. This would seem to indicate that the orthodontist was able to motivate unmotivated patients so that the direction of the quality of correction was positively affected.

Discussion

The results are highly significant and show that positive patient responses are forthcoming when the orthodontist plans a program for motivating each individual patient. This is also substantiated by results of the questionnaire for completed cases of full treatment where patients in the experimental group wore the headgear more and longer than subjects in the control group and those in the previous study. Hair styling of girls in the experimental group did not have the adverse effect as it did in the control group or on girls in the earlier study.

Summary and Conclusions

The findings of the study show conclusively that if the orthodontist has some indication of personality variables, and can program treatment and communication according to the understanding of the patient, the quality of the correction can be materially increased and the duration of treatment substantially reduced.

The orthodontist has been especially interested in the subject and has increased his sensitivity to motivation, and this undoubtedly has been reflected in both the experimental and control groups, as shown by contrast to the results in the previous study.[5]

Further study of the subject of motivation as related to orthodontics and including use of the headgear could be carried out whereby the limitations of one orthodontist and single office would not be imposed.

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