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SCIENTIFIC SECTION

A qualitative study of teenagers' decisions to undergo orthodontic treatment with fixed appliance

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Abstract

Objective The aim of this study was to describe thoughts and values influencing young people's choices to undergo orthodontic treatment.

Subjects and methods Twenty-eight patients (11 boys), aged 13–19 years, at an orthodontic clinic in the western part of Sweden participated. Open, taped interviews, lasting about 1 hour, were conducted with each subject and analysed by the grounded theory method. Five descriptive categories, each related to several subcategories, were generated in the analysis and labelled: 'being like everyone else', 'being diagnosed', 'focusing on the mouth', 'obeying social norms' and 'forced decision-making'.

Outcome Category forced decision-making was identified as a core category, describing the power in the social process, resulting in the decision to undergo orthodontic treatment.

Conclusions Motivation for the decision to undergo orthodontic treatment seemed to be social norms, and the beauty culture in their reference group and in society in general. The teenagers were not fully conscious of these external influences. Their opinion, as a group, was that they had made an independent decision to undergo orthodontic treatment.

Index words: decision-making, grounded theory, interviews, malocclusion, orthodontic treatment, teenager.

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Introduction

It is well established that orthodontic treatment is provided to three main groups:

- people with defects in the jaw and/or face as well as children with a handicap;
- younger children requiring interceptive treatment to prevent malocclusion or to create optimal conditions for normal occlusal development or preventing traumatic tooth damage;
- teenagers with severe malocclusions that may negatively influence psychosocial well-being or oral function.

The most important treatment motivating factor in this last group is probably a strong subjective dissatisfaction with the appearance of the teeth. As a result, it is essential to understand teenagers' subjective motives for undergoing orthodontic treatment and thereby setting realistic treatment goals.

When we consider potential orthodontic patient's concerns about orthodontic treatment it appears that they may perceive and report anxiety about and discomfort with the appliance. Other problems during treatment are difficulties with speaking and swallowing and a lack of confidence in public.[1] It has also been suggested that 14–17-year-old youths have been identified as the most vulnerable, with regard to psychological well-being and higher levels of pain during the phases of treatment. Interestingly, younger people, 11–13 years old, can cope better with their appliances.[2]

Previous research into decision-making has suggested

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that children below 10–12 years of age rarely seem to be capable of making decisions on aesthetic improvement.[3–6] In these studies, children were asked to describe their teeth and to identify themselves from a set of oral photos. Not more than about 30 per cent of the young children were able to identify themselves. In addition, those failing to recognize themselves contained a larger than average proportion of severe malocclusions. A similar study of patients having orthognathic surgery showed differences between patients' own reasons and their perception of orthodontists' recommendations.[7] A comparison of aesthetic evaluations between 12-year-old children and dentists revealed great disagreement.[8]

Dissatisfaction with the teeth is not restricted to the western world. Two-thirds of 12-year-old Chinese schoolchildren in a study in Hong Kong reported dissatisfaction with their teeth, but only 40 per cent of them were willing to undergo orthodontic treatment.[9] A recent study from the USA showed that 71 per cent of patients who had undergone orthognathic surgery had done it for aesthetic reasons. Functional reasons were reported by 47 per cent of the patients. Some patients had reported both alternatives.[7] This is in agreement with an earlier study by Shaw *et al.*[10] and one by Tulloch *et al.*[11] The opinions of children and their parents were very similar in these studies. Hackett *et al.* [12] has shown differences in teenagers' motivation for orthodontic treatment. Using smallest space analyses it appeared that subjects showing great dependence on family and friends emphasized psychosocial motives for treatment, whereas more independent individuals focused more on function or oral health.

Grounded theory is a qualitative method, especially suitable when studying social processes or areas where theories are rarely common. The aim of the method is to generate concepts, models or theories describing the area under study. This is referred to as 'theory generation', explaining the empirical reality as told by the subjects interviewed. The theoretical basis underpinning grounded theory is 'symbolic interactionism'.[13,14] The basic principles include theoretical sampling, constant comparisons, theoretical sensitivity, and theoretical saturation:

- Theoretical sampling means that the sampling procedure continues until the identified categories are saturated and new information no longer emerges from new data (i.e. theoretical saturation).
- Constant comparisons mean studying differences and similarities in codes and categories.
- Theoretical sensitivity reflects the investigators ability to use personal and professional experiences to see data in new ways.[15] According to Glaser and Strauss[16] data should be summarized in as few categories as possible, without missing too many nuances in the data. It is of great importance that the generated categories really fits, i.e. are grounded in the data. Adequacy of evidence (or reliability) is reached when similar relationships between categories repeatedly emerge from data. Credibility or trustworthiness are terms used to describe the validity of a qualitative study. A high level of correspondence between a theoretical concept and its indicators, as reflected in quotes from the interviews, is regarded as strong evidence of validity.

For more than 30 years theoretical concepts on personal decision-making have been based on cognitive theories, which assume that individuals make deliberate choices on a rational basis.[17,18] Recently, such theories have been questioned.[19,20] According to the dominance theory,[21] people make their decisions by finding more subjective advantages and less disadvantages for the preferred alternative after scrutinizing all accessible alternatives.

Currently, very little is known on teenagers' decisions to undergo orthodontic treatment with a fixed appliance when there are no serious problems with oral health or function. It is therefore important to gain a deeper insight into personal decision-making in this group.

Aim

The aim of this study was to describe and to analyse the thoughts and the values influencing young peoples' decisions to undergo orthodontic treatment with the ultimate aim of gaining a deeper insight into teenagers' decision-making and their need to undergo orthodontic treatment.

Method

Study group

Twenty-eight patients (11 boys), aged 13–19 years, who were on the waiting list for treatment at an orthodontic clinic in the western part of Sweden took part in our study. The youths were strategically selected on the basis of gender, age, place of residence, and family situation. Verbal and written information concerning the study was given to all subjects and their parents.

Data collection

Open, taped interviews, lasting about 1 hour, were held with each subject. An interview guide was used, and included themes such as school situation, family situation, body image, factors influencing the decision to undergo orthodontic treatment, expectations, attitudes and reactions from other people, and thoughts about the future. Based on these themes, the interviewer (UT) asked relevant follow-up questions. During the interview the subjects had the opportunity to raise questions of relevance to them. Data collection and analysis were done simultaneously and continued until new interviews did not provide additional information, i.e. saturation was reached.

Data analysis

The interviews were transcribed verbatim and analysed by open, axial (theoretical) and selective coding processes[15,16] as follows:

- Open coding means that the substance of the data was identified and allocated to substantive codes, which were specifically labelled, mainly with the informants' own words. This open coding was then clustered into higher order categories of similar content. These categories were given more abstract labels.
- In the axial coding each category was further developed by identifying its subcategories. Relationships between categories were identified and combined.
- In the selective coding the generated categories were saturated with information, from new interviews or from earlier assessed data. In the selective coding process, questions like 'What is all this about?' were put. A core category was identified, describing a social process. This core category was central in the data, and could be related to all other categories and subcategories. During the entire process of analysis, ideas, preliminary assumptions and theoretical reflections were written down in 'memos'.

Ethical aspects

The study design was approved by the Research Ethical Committee at the University of Göteborg. Requirements concerning informed consent and confidentiality were fulfilled. Informed consent was also given by the parents of all subjects.

Results

Five descriptive categories, each related to several subcategories, were generated in the analytical process. The categories were labelled 'being like everyone else', 'being diagnosed', 'focusing on the mouth', 'obeying social norms' and, finally, 'forced decision-making'. The descriptive categories were related to the core category, which is illustrated in Figure 1.

Forced decision-making

The core category, which was central in the data and described a social process, was identified and labelled 'forced decision-making'. According to the interviews, the teenagers' thought that the final decision to undergo orthodontic treatment with fixed appliance was solely their own. However, the analysis showed that the decision was strongly influenced by several external and internal factors. The interviews showed that it is difficult for teenagers not to follow the norms and values in their actual or desired reference group. These norms are influenced by the surrounding world including the media's ideal body image. Importantly, although the teenagers were influenced by input from others, i.e. the referring dentist, group-members, and their families, they felt that they had made an independent decision. This may be illustrated by the following quote from the interviews:

- It is … she (the dentist) who thinks it's necessary to fix my teeth, but still the decision is up to me … as I see it.

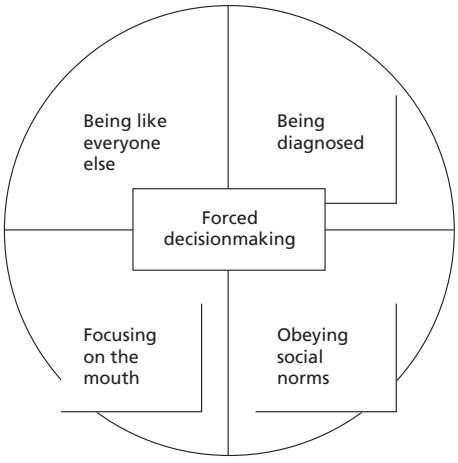

Fig. 1 Model describing how orthodontic treatment with a fixed appliance was initiated, based on interviews with 28 teenagers.

Unfortunately, once they had made the decision to undergo orthodontic treatment they felt that the waiting-list time was too long. They would have preferred to start the treatment immediately after the first consultation. This was because they felt that, psychologically, it would be easier to be as young as possible at the start of treatment. Furthermore, there was a desire to have the treatment over and done with instead of having to wait.

Being like everyone else

This category, 'being like everyone else', describes the psychological power of attraction, which keeps a group together. This is related to three subcategories, labelled 'media' 'influence', 'body awareness', and 'confirmation'. The category describes the psychological power of attraction, which keeps a group together. It was obvious in the interviews that teenagers, wishing to be a part of a group, or being part of the same reference group, are striving for similarity and closeness with other group members. This means that the desired reference group also has a strong normative function.

Media influence. A socially widespread fixation on appearance and ideal of beauty seems to have an impact on young peoples' values. It was obvious in the interviews that the opinion in the group of what is desirable was highly affected by the media's view of how women and men should look. The interviews revealed the influence of several 'ideals':

- It … I don't know … there is a lot of ideals and stuff … most of my friends have a great lack of self-confidence and stuff. Even if they are pretty. I don't know …

Our impression was that the informants were not aware of the computer techniques that manipulate pictures of models in media. The teenager sees the body of the model as a desirable ideal for his/her own body. According to the teenagers in the study, the ultimate ideal for girls and women is 'an extremely thin and skinny body with big breasts'. However, this body image is often a paradox. The ultimate ideal for boys and men, according to the informants, is a muscular body. This body image is often unrealistic and can lead to a decreased sense of self-confidence:

- But I mean … if you look at these models who are extremely slim and have big breasts and who have that marvellous smile … and make up and the hair and everything is perfect … then I am totally lost.
- It's often like this that you should be skinny and have big breasts like a perfect type, maybe long hair and a lot of stuff.

Body awareness. The interviews showed that most of our sample had a high degree of body awareness. Also, they made high demands on themselves concerning their appearance, their school performance, and leisure activities. According to the group, a nice appearance was very important because it leads to high self-esteem:

- Well, my opinion is that it is important to have a nice appearance … it will give you much higher self-esteem … so … well … yes.

Most informants did some kind of sport and they were eager to keep their bodies fit. They were physically active and exercised regularly, often several times a week. The interviews indicated that the youths were more satisfied with their personality, and other characteristics than with their bodies, weight, and separate parts of the body.

The informants were convinced that other teenagers observed their appearance and how they looked. According to the youths, it was important that others feel that you look 'right' had the 'right' clothes and good appearance. In their opinion, strong self-esteem was related to a nice appearance. Surprisingly, when asked about other teenagers' appearance, several informants said, 'it does not matter what other people look like'. Importantly, it appeared that it was not important whether other people were fat or thin, and if they had straight teeth or not. A more important attribute was personality. The following excerpts illustrate this contradiction about personality and appearance:

- No, but it … well, in some way you want others to think that you are … it is like this … any way, you want other people to think you have a nice appearance too.
- Maybe you want to get friends and stuff. Maybe … maybe you have to change to have friends.

Confirmation. According to the interviews, it was important to the teenagers that they looked like 'everyone else'. They did not want to differ from the way 'everyone else' acted and looked. A strong body fixation and the appearance ideal existing in society were reflected in the teenagers' thoughts and behaviour. The following quote will illustrate:

- … when you are talking to somebody, then maybe you see the teeth first. Yes, I sometimes think it

gives a first impression. If somebody has crooked teeth then you think: what has he done? Has he not taken care of himself and stuff like that.

Youths aged 13–19 years are in the middle of their identity development and they are testing different roles and identities. At that age you are insecure about who you are and where you are going. To be like 'everyone else' is of importance to create an independent identity. The importance of reflecting themselves in others is obvious in the interviews:

- Our teeth look almost the same in all of us.

Being diagnosed

The category labelled 'being diagnosed' was related to two subcategories: 'being informed of a problem' and 'the normal becomes abnormal'. The category describes how the youths have to redefine reality. Something they had taken for granted as normal earlier was now defined by an authority as 'something that could be improved'. The normal became abnormal and thereby an important part of their appearance, mouth, and teeth was questioned.

Being informed of a problem. The interviews showed that at the routine check up by their general dentist the youths had been told that their teeth could be improved by orthodontic treatment. Importantly, the youths had not explicitly asked their dentists for information about orthodontic correction:

- Well it is just the dentist (who claimed that the teeth were crooked). I haven't thought about it … I don't even know what I want myself.
- When I realized that the dentist thought I should fix it, I started to think about it.

In most cases, the youths themselves had not been aware of the deviation before the dentist pointed it out. This was expressed like this:

- A dentist should be able to see things like that, I think.
- When he (the dentist) told me about my teeth occlusion, there was actually not much to think about.

Normal becomes abnormal. Some informants said that they had been somewhat aware of some kind of morphological deviation of their teeth before the dentist's diagnosis, but earlier they had not ascribed it any major significance. In fact, the youths had considered these minor deviations as something taken for granted as normal.

Focusing on the mouth

In the category 'focusing on the mouth', three subcategories are included: 'fixation', 'expected deterioration', and 'economic aspects'. It seems as if the mouth came to the teenagers' attention after the dentists had informed them of a deviation. Most subjects had not given their dental status much attention prior to this point.

Fixation. Most teenagers in the study claimed that being told that they had malocclusion was a total surprise, whereas others were aware of minor deviations. Importantly, the teenagers had reflected considerably on their dentition after the dentists had mentioned their malocclusion. Following this, the impression is that their attention became focused on their mouths:

- I knew it but I didn't care about it (the dentition)…lately I have thought more about it.
- Sometimes I have periods when I think very much about my teeth being malaligned, why they look like that … everyone else has nice, straight teeth and stuff.
- Everyone else's teeth look good, except mine.

Some of the group described that they had difficulty in smiling or talking to other people without feeling ashamed of their teeth. In fact, several kept their hand in front of the mouth to cover their 'ugly teeth' during the interview. Several of the teenagers stated that their quality of life had been considerably lowered due to their malocclusion. Some youths claimed that they had stayed at home from school a couple of times due to low level of courage and motivation; they had not the strength to face other students:

- I'm studying … what do you name it … the nursing program … and sometimes when we discuss the patients' teeth and you know … dam, I'm ashamed ... I'm that ashamed because they are talking about teeth … I become so sad … and therefore I stay at home sometimes.
- There are people … they have never seen that I have a tooth up here … like my boyfriend's mother

… when she saw me laughing, she looked a little bit strangely at me and I thought: No! She saw it. So I can't laugh. I have to put my hand in front of my mouth.

- Because I dislike my teeth and because I feel ugly. I can't laugh you know because I'm so ashamed of it.

There was an obvious difference between boys and girls regarding the influence of the malocclusion. The most important aspect according to the boys was the functional aspect, while for the girls the aesthetic aspect predominated:

- No, it doesn't hurt, but I can't get the teeth clean enough.

The boys argued that a correction of the bite for aesthetic reasons was necessary to correct functional disabilities. They also drew a parallel between correction of teeth and beauty surgery. Their opinion was that if there are opportunities for correcting parts of the body with which you are dissatisfied, then you should take them.

Expected deterioration. The boys' opinion was that even if they did not experience any negative consequences of their malocclusion today, problems would probably occur in the future. They argued that, for practical reasons, it is better to undergo orthodontic treatment at an early age, rather than as an adult. The girls in the study focused on the aesthetic aspects in their reasons for undergoing orthodontic treatment. The girls explicitly expressed a wish to correct their diagnosed dental deviation because the technology and the practical possibilities were present:

- There is so much you can change nowadays, and why not do it. And by the way, I don't think it is that nice with malposed teeth.

The teenagers in the study were convinced that their peers recognized their malocclusion. They also believed that if they were not treated, their malocclusion would develop and their dental health would be compromised:

- Well you can imagine that it will be so crowded in the mouth that the teeth will almost explode.
- What if … if I don't undergo the fixed appliance treatment now and don't care about it, and then after a couple of years they (the teeth) stick all the way out from my mouth. In a way I am afraid that it will stick out enormously.

They also felt that it would be technically easier to correct the bite when you were young:

- You can't fix your teeth when you grow older.

Economic aspects. According to the interviews, practical reasons to undergo orthodontic treatment included the economic aspects. An extensive treatment lasting for 2 years now costs about 2400 €, and the patient has to pay 1700 € of this cost. At the time of writing, orthodontic treatment with a fixed appliance is free for children under 20 years, a fact that is considered by the teenagers. They argued that undergoing the treatment after 20 years of age might be more difficult due to their future economic situation:

- Actually, it (orthodontic treatment) doesn't cost you anything to undergo the treatment, except time, and it could also be a good result out of it … and I think it is worth it.
- Some of my friends think I should go through it, because it costs you a lot of money if you decline the chance now and do it (orthodontic treatment) when you are older.

Obeying social norms

The category 'obeying social norms' is related to one subcategory labelled 'approval in the reference group'. Whether the teenager had taken the decision to undergo orthodontic treatment or not depended on what values, reactions, and ways of acting existed in the group they belonged to or would like to belong to. It appeared that parents' and siblings' worries about a fixed appliance had less influence on the decision. Discussions about fixed appliances seemed to take place within the group of friends, rather than within the family.

Approval in the reference-group. According to the interviews, when their friends had undergone or were currently undergoing orthodontic treatment, they got descriptions of what treatment was like. Within such a group it was considered 'absolutely normal' to have orthodontic treatment as a teenager. This was not necessarily something the interviewees were looking forward to, but was something unavoidable that most of them had to do. Their opinion was that a fixed appliance was a normal occurrence rather than something to feel surprised at or ashamed about. In spite of this, the interviews showed that there were worries about treatment duration and possible pain and discomfort:

- There are a lot of students in my class who are coming here (the odontological clinic) now and some of them have already been here a couple of times.
- There are a lot of people who are going to get it (orthodontic treatment) now at the same time as I am, I think there are three other students and that's a good thing.

Conversely, if the group the informant belonged to or wanted to belong to had a negative attitude towards orthodontic treatment, he/she was more reluctant to accept an appliance. Rather, these people felt that a fixed appliance is harmful to your looks or that it would be a hindrance to feeling comfortable in public. Another counter argument to treatment was to claim that the malocclusion was so minor that a correction was unnecessary. Commonly, none or few of the peers of a person with this opinion had gone through orthodontic treatment with a fixed appliance:

- Those who have got it (a fixed appliance) … I don't know them … so therefore I don't know.

Even if the group the informant belonged to had a negative attitude towards orthodontic treatment with fixed appliance, the group had discussed the issue with each other. The most common argument against fixed appliance treatment was, apart from the fixed appliance harming your appearance, that it was better to undergo treatment as an adult. Accordingly, within this group, the members think that looking good is not that important when you grow older compared to the youth period.

Discussion

The result of this qualitative study of teenagers showed that the decision to undergo orthodontic treatment was based on a massive external influence. This is not in accordance with Montgomery,[21] who in his dominance theory claims that a decision is made from a subjective point of view. The core category in the present study describes the power in social processes resulting in the decision to undergo orthodontic treatment. The power in this process seems to be social norms, and the beauty culture in the reference group and society. Importantly, the dentist's identification and informing the teenager of malocclusion seems to focus attention on the mouth. However, the teenagers were not fully aware of these external influences.

The youths in the present study were 13–19 years old. Brown and Moerenhout[2] found that the time between 14 and 17 years is the least appropriate time in life to undergo orthodontic treatment with a fixed appliance according to psychological factors. If no other treatment motivating factors are present, it might be better to wait with treatment with a fixed appliance until after pre-adolescence when the youths are more secure in their own identity. The findings also underline the importance of not taking decisions involving appearance too early, in agreement with the findings of Espeland *et al.*[6] and Shaw.[3]

It was obvious in the present interviews that the opinion in the group of what is desirable was influenced by the media. The media presented an ideal body, which was desirable to the youths. It seems as if the focus on personal appearance has increased considerably in the culture of the western world. Furthermore, it is hard or even impossible to avoid being influenced by the information flow that we are exposed to daily. First impressions and appearance become more and more significant.[22] Importantly, the face, the smile and the teeth are part of the first impression of another person. Whether one finds the person attractive or not decides if one wants to get to know him or her on a deeper level.[22]

Orthodontic treatment for aesthetic reasons is a sign of the times. Youths without stable identities may find it difficult to resist the influence of professionals, media, and reference groups in their decision to have orthodontic treatment. All individuals have the right to full information on health promoting treatments. After such information they are able to make an informed decision, which is in line with recommendations in the Alma Ata document.[23]

Sällfors[24] argues that boys aged 13–15 have particular difficulty in expressing themselves in in-depth interviews. This was also the case in the present study. Reaching saturation required as many as 28 interviews. Girls were more motivated to take part in the interviews. Instead of in-depth interviews, focus groups could have been chosen as the data collection method. In a focus group, the youngest and least verbal boys (13–15 years old) might be more willing to communicate. The disadvantages of such a method might be that the most communicative teenagers 'take over the scene', making it even harder for the least verbal ones to express their opinions. In an interview situation, interviewer and informant interact. It might be possible that the younger boys in this study could have identified themselves better with a male interviewer.

Our results suggest the importance of improving critical thinking and self-esteem in children at an early age, which might result in an increased ability to resist external influences such as the media. In a public health perspective, it is also important that journalists accept their moral responsibility for the consequences of their actions. A follow-up qualitative study based on dentists conceptions of factors motivating fixed appliances and their conceptions of normal and abnormal appearance would be interesting.

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