Dental anxiety and behaviour management problems: The role of parents

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General discussion, recommendations for future research and final remarks
General discussion

In the chapters of this thesis, strengths and limitations have been discussed for the specific studies and their samples. Now, a more general discussion on the main topics of this thesis will follow. This section will be followed by recommendations for future research and clinical practice and ends with some final remarks.

Assessment of child dental anxiety

Assessing child dental anxiety in young children, below the age of six, is interesting, as these children are at the biggest risk of developing dental behaviour management problems (DBMPs), which impairs the quality of dental treatment [Pine et al., 2004; McQuistan et al., 2006; Jensma & Veerkamp, 2008]. However, the assessment of dental anxiety in these children is difficult. Self report is considered to be the most reliable (relative to proxy report or observation), but below the age of 8, children lack the cognitive capability to fill out a questionnaire on dental anxiety themselves. Relying on proxy- (mostly their parent’s) report raises the question whether these parents are reliable reporters of their child’s dental anxiety. In a study on 7-11 year old children, about three quarter of the reporting mothers were good proxy reporters of their child’s dental anxiety (Chapter 1) [Krikken et al., 2013]. However, the other 25% of the parents overestimate or underestimate the dental anxiety of their children, which could have important clinical implications.

When one relies on parents’ report during the dental treatment of children, an overestimation will not have serious consequences. In this situation, the dentist will be more careful than necessary. However, when the dental anxiety of a child is underestimated, this could lead to overcharging the child, which in turn might lead to more dental anxiety instead of decreasing this dental anxiety. Considering that particularly parents of highly anxious children tend to underestimate the dental anxiety of their child, this might have important consequences for the treatment of these children.

A questionnaire (the inventory of Stressful situations) was constructed to assess anxious responses of children to daily situations. Two subscales of the ISS explained about 30 percent of the variance of the Dental Subscale of the Child Fear Survey Schedule (CFSS-DS) in children. This questionnaire appeared to be promising for the prediction of dental anxiety in young children. Construction of more items for this questionnaire could improve its predictive power.

Parental rearing

In this thesis various aspects of the model [ten Berge, 2001] of anxiety acquisition were investigated with respect to DBMPs. The major topic that was looked upon was parental rearing style, as parents are frequently reported to play an important role in the development of DBMPs in children [Mejare et al., 1989; Pine et al., 2004; McQuistan et al., 2006; Klaassen et al., 2007; Jensma & Veerkamp, 2008]. Literature on the actual relation between parenting style and dental behaviour management problems is sparse and contrary [Aminabadi & Farahani, 2008;
In the three studies performed for this thesis, only small associations were found between parental rearing style, dental anxiety and dental behaviour management problems. Although there were some significant differences in the way parents prepared their child for dental treatment among parents with different parenting styles, no differences were found in the level of dental anxiety of these children or in their level of DBMPs (Chapter 4) [Krikken & Veerkamp, 2008]. In a comparison between children referred to a secondary dental care clinic and a non-referred control group, the referred children were significantly more anxious than non-referred children. Their respective parent's rearing style did not have an influence on this (Chapter 5) [Krikken et al., 2012]. Non-referred children whose parents used an authoritarian parenting style were more anxious than the other non-referred children. This finding contradicts with the results that were found in a large study on a group of non-referred children. In the latter study, a negative correlation was found between the restrictiveness factor of the CRPR and dental anxiety (Chapter 6). It can be concluded that, besides some minor associations, the influence of parental rearing style on dental anxiety in children and DBMPs can be neglected. The parental rearing style was not associated with the referral status of children, and if the children were referred, the rearing style was not associated with the behaviour of these children.

However, consultation with dentists in general practices, and the author’s personal experience, do suggest that the way parents interact with their children is related to behaviour during dental treatment and dental anxiety levels of their children. Such as relation was found by Klaassen in 2010 [Klaassen, 2010]. Different explanations can be put forward for not finding an association between parental rearing style and dental anxiety or DBMPs in the present thesis. In Chapter 5, referred and non-referred children were compared on their parent’s parenting style. The group of non-referred children was taken from a larger sample that was described in Chapter 6. The children in this sample were recruited from primary schools in a part in the Netherlands where no secondary paediatric dental practices are located. Possibly, the results of this study are somewhat biased since children who behave uncooperatively during dental treatment were not referred. Also, as a substantial number of decayed teeth in children remains untreated [Kalsbeek et al., 2002; Elfrink et al., 2006; Bruers et al., 2009; Schuller et al., 2009], these children are more likely to acquire dental anxiety from episodes of toothache and its consecutive treatment rather than from routine dental treatments.

Also, no associations were found between parental rearing style and dental anxiety and between parental rearing style and DBMPs in referred children. In the studies described in this thesis, parents were absent during dental treatment. Perhaps, when associations between parental rearing style and DBMPs do exist, these were not showed because of the specific study design. The specialised paediatric dentists who treated the children might have the experience and behaviour management skills to reduce the influence of the parents (Chapter 4). This could also explain why only small differences were found in behaviour of children when parents were either present or absent during dental treatment of their child (Chapter 7).
Moreover, also these children were treated by dentists with special training and experience in treating children. These dentists might have neutralized the influence of the parents by their experience, even though they would have preferred some parents to remain in the waiting room, but were withheld by the study design. However, dental anxiety of children was measured prior to the dental treatments, without any impact of the treating dentist. Even under those conditions, no association was found between parental rearing and dental anxiety.

Another possible reason for not finding an association between parental rearing style, dental anxiety and behaviour management problems is that parent’s self-report of their child rearing practises are likely to suffer from social desirability effects. Therefore, parents may be inclined to report that they engage in, more often than is actually the case, parenting practices that are perceived by them as socially acceptable or good. Likewise, when parents are asked about their rearing style, they might tell us their preferred style rather than their actual style. Besides these social influences, the assessment of child rearing is influenced by the dynamic properties of child rearing. Parental rearing style is the result of a long and dynamic process of interactions between child and parents, rather than a static property that parents possess. This suggestion is supported by the work of Kiff et al. [2011]. They concluded that child behaviour and parenting style mutually influence each other. Children’s adaptation in behaviour resulting from a reaction to parenting might be related to this behaviour. On the other side this adaptation might also be influenced by the parenting style. Additionally, over time, children’s behaviour might induce particular parental behaviours, just as parental behaviours may shape children’s characteristics, and these bidirectional effects further accounts for children’s adjustment [Kiff et al., 2011]. Moreover, parenting style might also be effected by cultural influences [Senese et al., 2012].

The questionnaire that was used in most of our studies on parental rearing appeared to measure more error than latent trait (Chapter 3). Especially the item scores on the factor Nurturance were all very high, suggesting that most parents agreed with the items of this factor. It was not surprising to find that most parents care for their child, spend warm moments with them and like to be with their children.

Perhaps it was not possible to find an association between parental rearing and dental anxiety and DBMPs because this association is not straightforward. Many child, parent and dentist factors might play a mediating role in this process. The child’s character, temperament and earlier dental experiences might modify the relation between parental rearing and DBMPs. The behaviour of an anxious parent accompanying a child to the dentist might be very different from their normal child rearing behaviour. This behaviour might be interpreted by the dentist as a negative kind of rearing, while this parent might have good parenting skills in a neutral environment. Also the behaviour of the dentist might play a modifying role in this interplay. A dentist with extended experience in treating children and their parents will probably be less influenced by a parent’s behaviour than for example a young colleague or a dentist with less experience in treating children. This might be noticed by the child who in turn can positively or negatively influence the treatment.
Study design

In this thesis, a number of study samples was used. The smallest group comprised the children who were referred to the centre of special dental care in Amsterdam (SBT) and filled out the Child Behaviour Checklist (CBCL). Of the selected 50 children and their parents, only 39 filled out the questionnaires completely. The CBCL was filled out as part of the standard protocol for registration at this clinic. This questionnaire consists of more than 90 questions, which makes it quite time consuming to administer. Moreover, sufficient knowledge of the Dutch language is needed to complete this questionnaire. Therefore, as reported before, this sample can be biased. The children were 4-12 years old with a mean age of 6.6 years. Their dental anxiety assessed using the CFSS-DS was 40.72, which is considered to be very high.

The biggest study samples were collected at general primary schools in different parts of the Netherlands. In the study described in chapter 2, dental anxiety data of 167 children with a mean age of almost 8 years old were collected. These children lived in the southern part of the Netherlands. The mean CFSS-DS score of these children was 23.3 (sd=6.7). In the study described in chapter 7, 464 children and their parents were included (part of these children were also involved in the study described in chapter 6). These data were collected in primary schools in the northern part of the Netherlands. The mean CFSS-DS scores of these children, with a mean age of 8.7 was 21.8 (sd=6.5). The mean CFSS-DS score of the first study group was comparable to the normative data provided by ten Berge in 2002 [ten Berge et al., 2002], although the children were somewhat older. In the second group, however, the mean CFSS-DS score of the children was lower than the normative data of 2002. These children were somewhat older, which could, however, not completely explain this difference. Ten Berge and colleagues reported a significantly higher CFSS-DS score for children with a non-Western cultural background (about 6% of the population). In the study population of this thesis, based on the geographic location, the percentage of non-Western children was much lower.

Moreover, in the Netherlands, the distribution of paediatric dentists is unbalanced. In the Western part of the Netherlands, around the big cities of Amsterdam, The Hague and Rotterdam, referral to a secondary dental clinic is easy, whereas in some other parts of the Netherlands, paediatric dentists are not available. The effect of this uneven distribution is not known. Perhaps, the availability of special dentists for children might influence parents and dentists attitudes toward paediatric dentistry. In all study populations, parents who cannot read and write, and parents with insufficient language skills in Dutch were excluded.

In one study [ten Berge et al., 2002], data were collected in a dental situation, that is in a general dental practice. Parents were asked to fill out the questionnaire while waiting in the waiting room just prior to or after the dental visit of their children. The parents who filled out the questionnaire about dental anxiety in the study described in chapter 2, were informed about the topic of the study. It might be expected that in both studies, the dental context or pre-information might have influenced the scores. In the population described in chapter 7, parents filled out the questionnaire at home, as one of the questionnaires about parenting
style, that is apart from any dental setting. An influence of the context on the responses to questionnaires was observed in the study described in Chapter 3. Parents scored higher on the items “doctors” and “injections” when these items were part of a dental questionnaire.

All other studies made use of specific child populations. In the studies described in chapters 3, 5, 6, 8 and 9, the children were referred for dental treatment to a special dental care clinic in Amsterdam (situated at 3 locations), Haarlem or Utrecht, in the western part of the Netherlands. Most likely, the samples in these clinics are not representative for referred or highly anxious children in the Netherlands. In these clinics, the percentage of children with a non-Western cultural background is high. From earlier studies it is known that these children are more anxious [ten Berge et al., 2002] and suffer from more dental decay [Truin et al., 2005] than the children with a Western cultural background. Also, an increased probability exists that these children were referred for dental treatment as the communication with the parents was impaired due to language incompatibility. As could be expected, these samples had a mean CFSS-DS score above 32, which can be considered as an increased risk for developing dental anxiety [ten Berge et al., 2002]. Differences in these populations can be explained by the different characteristics of the dental clinics. The population studied in Chapter 10 is a special one, as these children were not referred for dental treatment, but were more anxious than normative data, which is explained by their medical condition.

To summarize, in all samples used in this thesis some kind of selection or bias took place. Therefore, the results found cannot easily be generalized to the population of Dutch children. However, on many occasions, a specific sample was chosen given its relevance for the question being studied. For instance, in order to study parental rearing style, dental anxiety and behaviour during dental treatment, a sample of children was needed who required two or more treatment sessions and had some level of dental anxiety. For this reason, this study was performed using children that were referred for dental treatment to a specialized clinic. In this specific secondary dental care clinics, the majority of patients have parents from non-Western cultural background, often with insufficient comprehension of the Dutch language. For the reference group, a sample was used that would be representative for the Dutch population. Parents from these children were primarily native Dutch people. As a result, such groups clearly differ with respect to cultural background and possibly on associated confounding factors. So, although generalizability is restricted, the results from the present thesis need not apply to all children, but primarily to those with substantial dental anxiety or those that cause behavioural management problems. However, additional research is required to confirm the results found in other comparable samples, and in samples that are more representative for the population of Dutch children.

**General emotionality and coping behaviour**

The general emotional status of the child appeared to play a role in the presence or absence of dental anxiety and DBMPs. Internalising anxious children might not express their dental anxiety, but seem to suppress it with the risk of increasing their dental anxiety. This
might be of clinical importance. That is, in daily practice it is highly important to be alert on children possibly suffering from some degree of dental anxiety but not showing their anxiety. This group of children may seem to experience no difficulties during treatment, while they essentially may have problems accepting the treatment or coping with the situation.

The development of dental anxiety may be prevented or stopped by providing extra attention and by using a proper behaviour management approach in these children. Children have different coping strategies to deal with dental treatment. Some coping strategies will help them deal with dental treatment and others will be counterproductive [Muris et al., 1995]. In the treatment of CL/P patients the mean CFSS-DS scores decreased in the three year period of the study. However, part of the children became more afraid of dental treatment. These children appeared to use more destructive coping strategies. Also this finding can be of clinical importance as extra attention to these children and a proper approach may guide them to a more adequate coping style and help them to overcome or lower their dental anxiety. Especially internalizing children are at a greater risk of developing high dental anxiety, as their distress might not be noticed by the treating dentist, and they are not able to adequately cope with the situation due to their internalizing coping behaviour.

What did this thesis bring us?

Child dental anxiety remains the most important reason for DBMPs. However, the reason why children behave uncooperative and why children become highly dentally anxious is still not fully understood. It was found that general emotional problems of children (Chapter 8) and coping abilities of children (Chapter 9) might play a role in the acquisition and continuation of dental anxiety. Also earlier unpleasant experiences, such as toothache and painful dental procedures played a role in this anxiety acquisition.

The rearing style of parents still is an interesting factor which might play a role in the acquisition of dental anxiety. However, in the studies described in this thesis, we were not able to show a clear relation between parenting style and dental anxiety or dental behaviour management problems in children, due to a variety of reasons. Also, the presence or absence of parents did not influence behaviour management problems and remains a point of concern, both practical and ethical.

Although extensive research has already been done on the acquisition of dental anxiety in children, the number of dentally anxious children has not decreased in the last 15 years (since the normative data were collected by ten Berge in 1998 [ten Berge et al., 2002]. Also, the caries prevalence in children has stabilised on an unacceptable level and the majority of general dentists prefer to have the opportunity to refer children for dental treatment. This implies that these dentists do not feel confident in treating children. Dentist parameters were not assessed in this thesis.

Based on the findings discussed in this thesis and in the discussion point is the previous paragraphs we suggest a modification of the model presented in the introduction of this thesis [ten Berge, 2001]. In this modified model, dental anxiety and behaviour management problems
are connected as these two factors are difficult to distinguish and are strongly correlated. Also, prevention and treatment need were added. Following the direct pathway of anxiety acquisition, these two factors are important in the acquisition of dental anxiety. Furthermore the child, parent and dentist factors are separated. On one side of the model, the dispositional factors are listed. These are factors that are rather stable over time. On the other side of the model, the situational factors are listed. These factors can be influenced by the dental situation or in the context of a dental appointment.

![Modified model of factors contributing to dental anxiety in children.](image)

This makes the right column of this model the most interesting part for future studies on child dental anxiety and dental behaviour management problems. Especially the coping skills and negative emotionality of children are interesting as in this thesis these factors were found to have some influence on dental anxiety and behaviour management problems. Moreover, it might be possible and interesting to influence these by learning children to deal with aversive situations. Besides, it would be possible to learn parents how to prepare children for and guide them through the dental treatment. And last, but probably most important, as children get anxious by the dental treatment and especially the subjective perception of the child about
this treatment, the influence of the dentist might be most important.

**Recommendations for future research**

- Further development of the Inventory of Stressful Situations to an instrument that is useful to predict dental anxiety in young children and test this extended ISS in samples of high-anxious children and in samples of children in general dental practices.
- Assessment of general emotional problems and coping skills in children with and without dental anxiety and dental behaviour management problems and to examine how the dental anxiety of these children changes after or during a series of dental treatments.
- To develop a training program to teach children to use different coping skills to use during dental treatment and evaluation of this training program.
- Assessment of preferences of children, parents and dentists about parent’s presence during dental treatment. Especially the reasons children, parents and dentists have for preferring parent’s presence or absence are interesting. Probably with this knowledge, the child, parent and dentist interactions can be improved.
- Construction of a training program to learn anxious parents or parents who are very concerned about their child’s dental treatment how to support their children during the dental treatment.
- Assessment of dentist characteristics and treatment approach that helps or counteracts in the treatment of children and how these can be influenced by a training program.

**Final remarks**

The association between dental anxiety and behaviour management problems is complex. In this thesis, no association between parental rearing style and dental anxiety or DBMPs was found. Different reasons for not finding this association were highlighted. For future research, it was recommended to focus on other aspects of the dental treatment of children. In addition, the prevention of dental anxiety is of utmost importance, and can to a large extent be achieved by prevention of dental problems in children, the most important being dental caries. The prevalence of dental caries in the Netherlands remains unacceptably high, and severe levels of caries are found in a relatively small part of the child population. Prevention of dental caries should focus on these children. It may be obvious that parents, and the way they raise their children, can play an important part in this prevention. So despite that no associations were found between parental rearing style and dental anxiety or DBMPs, parents can have an indirect influence by providing their children with healthy nutrition and by teaching them how to perform adequate oral hygiene behaviour.
References


