

Child dental anxiety, parental rearing style and referral status of children

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Objective: Treating children can be difficult for both dentist and child. In some cases treatment fails and those children are referred to a specialist paediatric dentist. Different factors can be put forward for referral of children, such as factors relating to the child, dentist and parent. Possible child-related factors can be dental anxiety and the child's temperament. A possible parental factor is the parental rearing style. The objective of this study was to assess the possible associations between dental anxiety, parental rearing style and referral status of children. **Methods:** Parents of 120 non-referred and 335 referred paediatric dental patients were asked to fill out the Child Rearing Practices Report (CRPR) and the Child Fear Survey Schedule Dental Subscale (CFSS-DS) on behalf of their children. **Results:** The questionnaires were filled out by 115 (96%) parents of primary schoolchildren and by 331 (99%) parents of referred children. Referred children were younger than non-referred children, $t(442)=6.9$, $p<0.01$, and had significantly more dental anxiety, $t(430)=-8.7$, $p<0.01$. No differences existed between parents of referred children and parents of non-referred children on parental rearing-style. No differences existed between fearful and non-fearful children on parental rearing-style and also no correlation existed between children's dental anxiety and their parent's rearing style. However, non-referred children with parents using an authoritarian parenting style were more anxious than the other non-referred children. **Conclusions:** In the present study, referral status and dental anxiety of 4-12 year old children were not associated with parental rearing style.

Key words: dental anxiety, child rearing, behavior, referral and consultation, CFSS-DS

Introduction

Dental anxiety is a common phenomenon in children and adolescents. In The Netherlands, an estimated 14% of children suffer from dental fear with 6% reporting high levels of dental fear (ten Berge *et al.*, 2002). Dental fear may lead to neglect of dental care and distress or temperament may lead to behavioural management problems (Krikken and Veerkamp, 2008) making dental treatment potentially demanding for dentists, parents and especially children. Besides child factors, such as dental anxiety and temperament, some parent and dentist factors are thought to contribute to dental behavioural management problems (Klingberg and Broberg, 2007).

Only a few studies have been performed concerning the relation between parental rearing style and behaviour of children during dental visits. In family environments, factors such as parental rearing and attachment style contribute to the severity of anxiety symptoms in children (Rapee, 1997). In another study, no association was found between parental rearing practices and fearfulness and internalising problem behaviour. However, a positive association was reported between negative rearing practices and externalising problem behaviour (Muris, 1996). Parental rearing style was also found to influence the number of coping strategies, especially avoidant strategies and aggressive strategies during everyday stressful situations (Hardy, 1993). In addition, parental presence and behaviour seem

to be related to children's ways of coping with aversive medical situations (Blount, 1991). In a dental situation, higher heart rates and anxiety scores were associated with greater permissiveness and less reliance on rewards and discipline (Venham *et al.*, 1979). Parental dental anxiety seemed to be related to parenting style but was not related to child dental anxiety (Krikken and Veerkamp, 2008; ten Berge *et al.*, 2003). Thus, parental rearing style seems to have some influence on child behaviour and coping strategies, the exact mechanism however remains unclear.

The aim of the present study therefore is to investigate the possible relationship between parental rearing style, child dental anxiety and referral status of children. The population of referred children is a particular priority because clinicians will appreciate additional guidance.

Methods

This study was conducted among parents of two groups of children aged 4-12 years old in the Netherlands. The first, or non-referred group, consisted of 120 children visiting regular primary schools in the Netherlands. These data were randomly drawn from a larger study including 500 parents of preschool children in the northern part of the Netherlands and can be seen as representative for the Dutch population. The second, or referred group, consisted of 335 children referred by their family dentist because of behavioural management problems during dental treat-

ment and/or dental anxiety to either of two second line paediatric dental practices in Amsterdam, the Netherlands.

All parents were informed about the study by a letter and asked to participate. The study was approved by the medical ethical committee of the Free University of Amsterdam (ref. 06/164, 10/071)

Parents of the non-referred children were asked to fill out the questionnaires at home on behalf of, but without any help from, their children. Parents of the referred children were asked to fill out the questionnaires while they were waiting in the waiting room during their child's first dental (habituation) session.

Child dental anxiety was assessed using the Dental Subscale of the Children's Fear Survey Schedule. The CFSS-DS is a well-known instrument for assessing dental fear in children, initially presented by Cuthbert and Melamed (1982). The CFSS-DS has satisfactory reliability and validity (Aartman *et al.*, 1998). The questionnaire consists of 15 items related to different aspects of dental treatment. The items can be answered on a 5-point scale from 1 'not afraid at all' to 5 'very afraid'. Total scores thus range from 15 to 75.

Parental child-rearing style was assessed using the Child Rearing Practices Report (Dekovic *et al.*, 1991; Rickel and Biasatti, 1982), which has been used in a variety of longitudinal studies in different countries (Lindhout, 2009, McNally *et al.*, 1991). This 40-item questionnaire consists of two subscales: the Restrictiveness subscale relating to parenting practices and focused on control of child behaviour (e.g. 'I prefer my child not to try things if there is a chance (s)he might fail') and; the Nurturance subscale relating parenting practices and focused on sharing feelings (e.g. 'I express my affection by hugging, kissing and holding my child') (Rickel and Biasatti, 1982). All items were translated into Dutch by one of our investigators then translated back by a native speaker as a check. The items can be answered on a 5-point scale from 1 'fully disagree' to 5 'fully agree'. Parents were categorised to one of four parenting styles using the Reitman and Gross (1997) method, in which Restrictiveness and Nurturance scores were classified as high or low using a median split (Figure 1). Authoritative parenting emphasises parental control within an ethos of warm, responsive parenting that explains reasons, values the child as an individual and aims to encourage the child towards independence. Authoritarian parenting is controlling, values obedience to

set standards, favours punishment and is less warm than Authoritative. Permissive parenting is where the parent lacks control, makes few demands on the child, but is warm, and Neglectful parenting is not controlling, not permissive and not warm (Baumrind, 1971).

All analyses were performed using SPSS v18.0 (SPSS Inc, Chicago, USA). One-way analysis of variance (ANOVA) and independent-samples t-tests were performed to test for equality of means. The Pearson correlation coefficient was used as a measure of linear association. Sample size was based on a power calculation (comparing the sample of referred and non-referred children) using an independent-samples t-test (two-tailed). Given a small effect size (0.3), alpha=0.05, power=0.80 and an allocation ratio of 3:1, required samples sizes are N1=117 and N2=351. Achieved power for comparing the four rearing styles was 0.40 for a small effect size (f=0.10) and 0.99 for a medium effect size (f=0.25). Alpha was set at 0.05.

To test for a possible moderating effect of age on the relation between dental anxiety and parental rearing style, the following approach used linear regression analysis. First, the predictors were centered (by subtracting the mean from each observation). Next, an interaction variable was calculated by multiplying the centered predictors. Finally, a regression analysis was run with the centered predictor and the interaction variable to test whether the latter had any unique variance to add to the equation (indicating a moderator effect).

Results

The response rate was 96% for parents (n=115) of non-referred children (mean age 8.8 years, sd 2.5, range 4-12; 53 or 46% girls,) and 99% for parents (n=331) of referred children (mean age 7.1 years, sd 2.3, range 4-12; 171 or 52% girls). Mean CFSS-DS-score for all children was 28.0 (sd=11.0). Reliability analysis (Cronbach's alpha) yielded the following: CFSS-DS $\alpha=0.9$, Restrictiveness $\alpha=0.9$, Nurturance $\alpha=0.8$.

Referred and non-referred children were compared on mean dental anxiety, age and rearing-style. Results are shown in Table 1. As could be expected, referred children were more anxious (mean=30.1, sd=11.4) than non-referred children (mean=20.8, sd=5.1), $t(430)=-8.7$, $p<0.01$. Referred children were younger (mean=7.1, sd=2.3) than the non-referred children (mean=8.8, sd=2.5), $t(442)=6.9$, $p<0.01$. No differences existed between parents of referred children and parents of non-referred children on parental rearing style.

Turning to exploratory analyses, children who scored 32 or more on the CFSS-DS were defined as highly anxious children (HAC) and children who scored less than 32 were defined as low anxiety children (LAC). No differences existed between LAC and HAC on parental rearing-style (Table 2).

Girls were more anxious than boys, $t(422)=2.4$, $p<0.05$. No differences could be found between boys and of girls on parental rearing style (Table 1).

Pearson correlation coefficients were calculated between age, dental anxiety and parental rearing-style (Table 2). A weak, but significant, negative correlation existed between the age of the children and dental anxiety ($r=-0.3$, $p<0.01$). No correlations were found between age or dental anxiety

| | | Subscale Nurturance | |
|--------------------------|------|---------------------|---------------|
| | | Low | High |
| Subscale Restrictiveness | Low | Neglectful | Permissive |
| | High | Authoritarian | Authoritative |

Figure 1. Diagram illustrating parental rearing-styles determined by the subscales Nurturance and Restrictiveness of the Child Rearing Practices Report

Table 1. Mean scores (standard deviations) for all children, boys and girls, highly anxious children and less anxious children and non-referred and referred children on age, dental anxiety and rearing-style

| | <i>Age in years</i> | <i>Child Fear Survey Schedule Dental Subscale</i> | <i>Nurturance of Child Rearing Practices Report subscale</i> | <i>Restrictiveness of Child Rearing Practices Report subscale</i> |
|------------------------------|-------------------------|---|--|---|
| | <i>mean (sd)</i> | <i>mean (sd)</i> | <i>mean (sd)</i> | <i>mean (sd)</i> |
| All | 7.5 (2.5) | 28.0 (11.0) | 81.6 (6.6) | 72.0 (15.8) |
| Boys | 7.4 (2.4) | 26.7* (10.8) | 81.3 (6.6) | 71.5 (15.1) |
| Girls | 7.7 (2.6) | 29.3* (11.1) | 81.9 (6.6) | 72.2 (16.3) |
| LAC, Less anxious children | 8.0* (2.5) | 22.0* (4.5) | 81.9 (6.6) | 71.5 (15.3) |
| HAC, Highly anxious children | 6.6* (2.0) | 42.1* (8.6) | 81.3 (6.4) | 73.9 (17.1) |
| NRC, non-referred children | 8.8* (2.5) | 20.8* (5.1) | 81.9* (5.7) | 71.9 (15.4) |
| RC, referred children | 7.1* (2.3) | 30.2* (11.4) | 81.5* (6.9) | 72.1 (15.9) |

* $p < 0.05$ independent samples t-test

Table 2. Pearson's correlations between dental anxiety (CFSS-DS), age and parental rearing-style (CRPR subscales Restrictiveness and Nurturance)

| | <i>CFSS-DS: Child Fear Survey Sched- ule Dental Subscale</i> | <i>Nurturance of Child Rearing Practices Re- port subscale</i> | <i>Restrictiveness of Child Rear- ing Practices Report subscale</i> |
|-------------|--|--|---|
| Age (years) | -0.3* | 0.1* | -0.0 |
| CFSS-DS | | -0.1 | 0.2 |
| Nurturance | | | -0.1 |

* $p < 0.05$

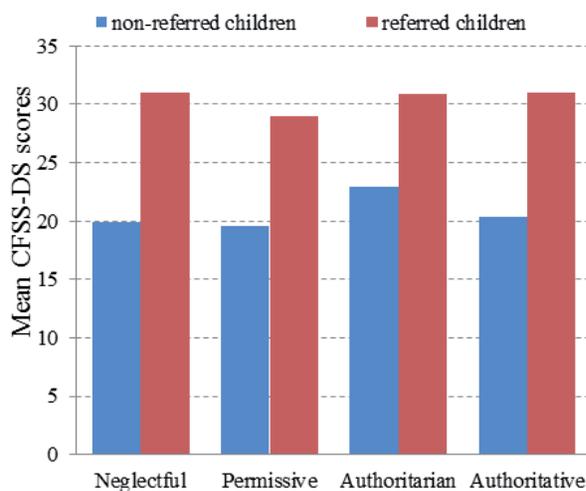


Figure 2. Mean CFSS-DS scores for each of Baumrind's parental rearing-styles

ety and rearing style of parents (a very weak correlation between age and subscale Nurturance does not seem to have much practical relevance).

Referred children and non-referred children were equally distributed across the four parenting-styles, $X^2(3)=0.6$, $p=0.89$. Also boys and girls were equally distributed with respect to the parenting styles, $X^2(3)=1.3$, $p=0.74$. For the total group of children, no differences existed between

the four parenting styles on dental anxiety, $F(3, 418)=0.9$, $p=0.46$. For the non-referred children, a significant difference was found between authoritarian parents and the other parents on dental anxiety, $F(3, 105)=2.7$, $p=0.047$. This difference however, did not exist for the referred children, $F(3, 309)=0.6$, $p=0.64$ (Figure 2).

Age did not act as a moderator for the association between Restrictiveness and dental anxiety (Beta=-0.002, $t=-0.03$, $p=0.98$) nor for the association between Nurturance and dental anxiety (Beta=-0.028, $t=0.59$, $p=0.56$).

Discussion

The aim of the present study was to investigate the possible association between parental rearing-style, child dental anxiety and referral status of children. Differences were assessed between referred children and non-referred children on dental anxiety, age and parental rearing style. Referred children were younger and more anxious than non-referred children. No differences existed between referred and non-referred children in rearing style. Non-referred children of authoritarian parents were more anxious than the other non-referred children. A weak negative correlation existed between dental anxiety and the age of the children. These results suggest that an association may exist between parental rearing-style and dental anxiety of children, but parental rearing style does not seem to be associated with the referral states of children.

The results of our study are consistent with earlier research, in which the association between parental rearing style and child dental anxiety was also not straight forward (ten Berge *et al.*, 2003; Krikken and Veerkamp, 2008). In one study, parental rearing style was not associated with either dental anxiety or dental behaviour (Krikken and Veerkamp, 2008). However, an association was found between parental rearing style and the parental attitude towards dental treatment of their child. Another study used both referred and non-referred children, but used a different questionnaire to assess parental rearing style (ten Berge *et al.*, 2003). Based on their findings, it was concluded that parents might play a more secondary, mediating role in the aetiological process of dental fear.

Children in the non-referred group were older than those in the referred group. Younger children are more likely to be referred for behavioural management problems because

they tend to be more anxious possibly because they lack the cognitive skills to cope with dental treatment. In addition, younger children have a bigger treatment need, as the older children (9-12 year old) are already shedding their primary teeth. As the children's age was not associated with the rearing style of the parents in our study, this age difference seems of no clinical significance. Non-referred children of parents with an authoritarian parenting style are more anxious than the other non-referred children. Apparently, this level of dental anxiety and possible associated behavioural management problems, were manageable by the respective dentist and did not lead to referral.

A number of discussion points need to be addressed here. Recently, the validity of the CFSS was questioned by some authors (Gustafsson *et al.*, 2010; Luoti *et al.*, 2010), in particular the extent to which parents and children can accurately rate each other's fear. However, in a previous study we demonstrated that most parents are accurate reporters of their child's dental fear (Krikken *et al.*, in press), therefore we felt secure in using parents as a proxy measure for their children's dental fear.

Another point of discussion relates to the CRPR which was used to measure parental rearing style. The mean item scores for the Nurturance subscale are all very high (>4). In other words, there is not much variance in the data because most parents agree with the items in this factor. All parents care for their child, spent warm moments with them and play with their children. So, this factor does not differentiate well between parents and the items might be especially sensitive to socially desirable answers. Moreover, it may account for the lack of association found between parental rearing style and referral status, if it exists.

The response rate in our study is very high which may be misleading. The non-referred children were part of a larger study (n=1200) and the referred group were children two practices in one city. In other words, in both groups some selection bias exists, which may have influenced the results.

Whether or not children are referred by their dentist is partly dependent on the interaction between child, dentist and parent. In the present study the influence of parental rearing style was investigated. In conclusion, no definite answer can be given concerning the possible relationship between parental rearing style and referral status of children. Given the shortcomings of our sample, and the questionnaire used, it is necessary to extend the present study using more representative samples and a different measure for parental rearing style. Besides investigating parental aspects, future research can also focus on aspects related to the dentist (such as personality variables) and his/her practise, or the child's temperament or personality.

Acknowledgements

We thank all parents for participation in this study and the boards of the schools for their help in informing the parents about the study. Also we thank the dental practices for participation.

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