A pilot study about emotional experiences by using CFSS-DS in young patients

A. CAPRIOGLIO, L. MARIANI, L. TETTAMANTI

ABSTRACT. Aim The aim of this work is to study fears and anxieties of school age Italian children regarding dental experience. In particular, to assess the prevalence of this phenomenon and understand its possible correlation with five different variables: sex, age, social context, previous dental experiences, and self-consciousness of fear. Materials and methods 725 Italian children were divided according to five variables, and their anxiety studied through the self-filling of the Children’s Fear Survey Schedule-Dental Subscale (CFSS-DS). Statistical analysis: The obtained results are descriptive and they are expressed as percentage values. For the study of the five variables considered, we have carried out a statistical regression analysis, by using the S-PLUS 6.0 Professional software. Results 26% of the total sample are anxious about the dental experience (total score CFSS-DS>39). The objects of greater anxiety are: fear of being admitted to hospital, injections, and the use of drilling instruments. Every variable considered in the selection of the sample was significant (p <0.05) in explaining and influencing the phenomenon “anxiety”. In particular, the subjects aged 8, attending the third class of primary school were more anxious (they were also the most conscious of their emotional difficulties), and so little girls and subjects living in areas of low level of urbanisation and those who had never lived previous dental experiences. Conclusion The percentage of children who may exhibit more or less serious behaviours to dental treatments, including the borderline subjects, is above 50%. So it is easy to realise how this problem still exists in clinical dental reality, and it is fundamental for the dentist to understand and identify these frequent difficulties.

Key words: Child; Dental anxiety; CFSS-DS.

Introduction
As per definition, anxiety is a negative emotion characterised by the fear for imminent dangers against which we sadly feel our impotence; it is often associated with somatic symptoms which can vary from dyspnoea to increase in heartbeat rate up to a sense of suffocating or fainting. A patient anxious because of dental treatment can be described as a subject who opposes the treatment, refusing it and being uncooperative toward the operator [Majstorovic and Veerkamp, 2005; Paglia et al., 1993; Van Meurs et al., 2005]. The term “odontophobia” was coined to identify these feelings of aversion and fear to any dental experience. These emotional experiences make the life difficult to the patient and to the dentist because they have negative consequences on the health status of the former, causing a great loss of physical and psychological strength, and a waste of time to the latter, because of scarce collaboration and passive or active resistance to his/her actions [Cuthbert and Melamed, 1982]. For these reasons, it is important to understand the phenomenon and the variables able to influence it. During the last years, many research studies aimed to clarify the different aspects of odontophobia: its origin [Ten Berge et al., 2002], methods for measuring [Aartman et al., 1998], and methods for the clinical management of the phenomenon [Holmes and Girdler, 2005]. According to these researches, the phenomenon affects about 4 to 16% of adults, and between 6.7-20% of children [Lundgren et al., 2004].

Purpose: this was to investigate fears and anxieties of children in primary school about the different aspects of dental experience. In particular, to study the prevalence of these states of minds among Italian children and assess their correlations with five variables introduced: age, gender, social context, previous dental experiences and self-consciousness of fear.

Materials and methods
Composition of the groups. The sample, composed of 725 Italian school age subjects, was studied and classified according the following five variables (Table 1).
1 Age: subjects were divided by age: 6 years (first grade) n. 128; 7 years (second grade) n. 161; 8 years (third grade) n. 163; 9 years (fourth grade) n. 130; 10 years (fifth grade): n. 144.
2 Gender: 362 males, 363 females.
3 Geographic area of residence: three schools of
three different places, for a different level of total urbanisation were randomly chosen by the local education authority: school “A”, located in a metropolis (number of inhabitants >1,000,000); school “B”, located in a town (number of inhabitants >100,000); school “C”, located in a small town (number of inhabitants >10,000).

4 Previous dental experiences: the children were divided into two groups: those with previous dental experiences (85%, n. 614), and those who had never been to the dentist (15%, n°111).

5 Admission of fear because of the dentist: 181 children, 25%, admitted they were afraid of the dentist, and 544, 75%, stated they who were not frightened by him/her.

**Design of the questionnaire**

The anxiety for dental experience has been estimated by using the CFSS-DS (Children’s Fear Survey Schedule-Dental Subscale). This scale derives from a revision of the FCS-FC scale (Fear Curve Schedule For Children) with the aim to obtain a specific questionnaire for children concerning fear of the dentist. Different studies carried out in different countries proved CFSS-DS as a valid and reliable means [Ten Berge et al., 2002; Yamada et al., 2002; Nakai et al, 2005]. In detail the CFSS-DS consists of 15 items concerning different aspects of the dental treatment (i.e. “use of drilling instruments”, “keeping the mouth open”, etc), that represent 5 states of minds, which are scored: “not afraid at all” (1 point), “little afraid” (2 points), “quite afraid” (3 points), “afraid” (4 points), very afraid” (5 points). According to the final score, we can classify potentially anxious subjects (>39 points), borderline (32-39 points) and not anxious (<32 points). The questionnaire was been filled directly by the children during school hours. To make the filling easier, especially by the youngest, we associated different “smiles” to each answers, each representing the 5 possible states of mind. This version of the questionnaire has been validated for semantic content and construct.

**Statistics**

The data was scored and coded and entered onto a S-PLUS 6.0 Professional software (Insighful, Seattle, Wa, U.S.A.). Data underwent frequency distribution to estimate the prevalence of the phenomenon “anxiety” into the experimental group and to statistical regression to deduce the significative aspects of the 5 variables in influencing this phenomenon (p <0.05). To avoid the Simpson’s paradox these variables were analyzed by a process of standardization.

**Results**

Anxiety, incidence: 26% (n°187) of the total sample is anxious about dental treatments, 22% (n. 158) is borderline and 52% (n. 380) is not anxious (Fig. 1).

Anxiety, causes: the most common causes of anxiety are: “fear of being admitted to hospital” (SD±2.4), “injections” (SD±1.4) and “dentist drilling”(SD±1.4) (Table 2).

Anxiety, age: the higher number of anxious subjects

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<table>
<thead>
<tr>
<th>Age</th>
<th>Nº</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Yrs</td>
<td>128</td>
</tr>
<tr>
<td>7 Yrs</td>
<td>161</td>
</tr>
<tr>
<td>8 Yrs</td>
<td>162</td>
</tr>
<tr>
<td>9 Yrs</td>
<td>130</td>
</tr>
<tr>
<td>10 Yrs</td>
<td>144</td>
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<table>
<thead>
<tr>
<th>Gender</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>362</td>
</tr>
<tr>
<td>Female</td>
<td>363</td>
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<table>
<thead>
<tr>
<th>Geographic area</th>
<th>Nº</th>
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</thead>
<tbody>
<tr>
<td>School A</td>
<td>203</td>
</tr>
<tr>
<td>School B</td>
<td>259</td>
</tr>
<tr>
<td>School C</td>
<td>263</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Previous experience</th>
<th>Nº</th>
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</thead>
<tbody>
<tr>
<td>Yes</td>
<td>614</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>111</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Admitted fear</th>
<th>Nº</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>181</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>544</td>
<td></td>
</tr>
</tbody>
</table>

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**FIG. 1 - Distribution of anxiety in the total sample.**

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>Sdª</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Having to go to hospital</td>
<td>3.1</td>
<td>2.4</td>
<td>3</td>
</tr>
<tr>
<td>2. Injections</td>
<td>3.1</td>
<td>1.4</td>
<td>3</td>
</tr>
<tr>
<td>3. Dentist drilling</td>
<td>2.9</td>
<td>1.4</td>
<td>3</td>
</tr>
</tbody>
</table>
Anxiety, age, previous experience, gender, geographic area, selfconsciousness: every variable employed for the logistic regression is useful in explaining the phenomenon “anxiety”. In particular, age, admission of fear, and geographic area of residence were the most significant (p < 0.05) (Table 4).

**Discussion**

From our results it can be inferred that the percentage of children who may develop more or less serious anxious behaviours to dental treatments is above 50%. It is therefore easy to realize how this problem still exists in dental practice routine. According to previous studies, the issues considered the most anxiogenous are: fear of being admitted to hospital, use of drilling instruments, and injections. In fact, a child feels a great sense of incapacity and passivity facing these situations, dangerous and terrifying in his/her imagination. The most anxious subjects are those attending the third grade, namely 8

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**Table 3 - Distribution of anxiety according to age.**

<table>
<thead>
<tr>
<th>Sample</th>
<th>6 yrs</th>
<th>7 yrs</th>
<th>8 yrs</th>
<th>9 yrs</th>
<th>10 yrs</th>
<th>Totale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not anxious</td>
<td>88</td>
<td>88</td>
<td>72</td>
<td>64</td>
<td>68</td>
<td>380</td>
</tr>
<tr>
<td>Borderline</td>
<td>22</td>
<td>38</td>
<td>33</td>
<td>27</td>
<td>38</td>
<td>158</td>
</tr>
<tr>
<td>Anxious</td>
<td>18</td>
<td>35</td>
<td>57</td>
<td>39</td>
<td>38</td>
<td>187</td>
</tr>
</tbody>
</table>

**Fig. 2 - Distribution of anxiety among males (a) and females (b).**

**Value Std. Error t-value**

<p>| | | | |</p>
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-2.8715130</td>
<td>0.61185596</td>
<td>-4.693119</td>
</tr>
<tr>
<td>Fear</td>
<td>2.4429342</td>
<td>0.26269829</td>
<td>9.299391</td>
</tr>
<tr>
<td>School B</td>
<td>0.6811264</td>
<td>0.24797844</td>
<td>2.746716</td>
</tr>
<tr>
<td>School C</td>
<td>0.7021114</td>
<td>0.24726717</td>
<td>2.839485</td>
</tr>
<tr>
<td>Age</td>
<td>0.2102809</td>
<td>0.06979466</td>
<td>3.012852</td>
</tr>
</tbody>
</table>
years old. The reason is that during this period most of
the children usually have their first dental experience.
They possess a degree of cognitive development that
allows them to understand and remember experiences
they have lived more deeply (they are those who have
a greater consciousness of their difficulties).
Nevertheless, in many cases they are mature enough to
face and overcome their fears. It is interesting to notice
that it is among little children that we find the highest
percentages of not anxious subjects. In fact, among 6-
7 years old children the percentage of not anxious
subject is above 50%. In detail, in first grade is 69%,
in second grade 54%, whereas in the other cases it is
lower than 50% (third grade 45%, fourth grade 49%,
fifth grade 48%). Nevertheless, it can be hypothesised
that these subjects actually have a more anxious
behaviour than that showed through the answers of the
test. This hypothesis is even more credible if we
consider the difficulties they may have had in filling
the questionnaire and, more than this, the fact that they
never had a previous dental experience, and most of
those who had, never underwent a treatment but only
checkup visits.
Females are more anxious than males, maybe for a
different sensitiveness of temperament. This is a
characteristic of this phase of development.
Finally, children living in more urbanised localities
(school “A”) are less anxious than those living in small
urban areas and in small town (school “C”). The
explanation might be related to the different level of
information and the different stimuli coming from
external environments, thus influencing the cognitive
and behavioural development of a child. In fact, the
fear of the dentist can be acquired through information
the subject learns from the environment where he/she
lives. This environment is deeply different if we
consider a metropolis or a small town.
Finally, the results about the geographic area should
be interpreted with caution because other predictors
not included in the study, such as family social status,
or parents level of education, and others, could be
important factors to be considered together with the
level urbanisation.

Conclusion
These results have useful implication for paediatric
dentists.
Although the Italian population has a high level of
health education, it is still frequent for the the dentist
to meet extremely anxious or phobic children. The
child anxious the dental treatment should be assisted
in facing and overcoming a situation that he feels he
cannot control or manage, at least not completely. All
efforts should be done in order to prevent his/her fears
from becoming chronic and turn into real phobias.

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