Assessing anxiety in pre-school dental patients with a doll placement test

Hisaaki Shinji*[1], Miho Kimura*[1], Shinji Iizuka*[1], Toshie Miura*[1], Shoko Shinji*[1], Sadao Sato*[1], Masao Ozaki*[2] and Wataru Motokawa*[2]

*[1] Department of Craniofacial Growth and Development Dentistry, Kanagawa Dental College
   82 Inaoka-cho, Yokosuka, Kanagawa 238-8580, JAPAN
*[2] Department of Oral Growth and Development, Fukuoka Dental College
   2-15-1 Tamura, Sawara-ku, Fukuoka-shi, Fukuoka 814-0193, JAPAN

Abstract   The prospect of dental treatment causes many young patients to be anxious and/or afraid. Because it is helpful to know in advance how much anxiety a child is experiencing, we have devised a test in which the child places dolls in a miniature dental office. We used this model to study 48 children, aged three to five years, who visited our paediatric dental office. We prepared a doll-house-sized model of a dental office with a dental chair, a dentist, and dental hygienist. We asked children to place two dolls, one a self-doll and the other a parent/guardian-doll at a location of their choosing in the model clinic. The positions children chose to place the dolls helped us to gauge the anxiety they were experiencing as they anticipated dental treatment. The majority of children we tested were not anxious, and they placed the self-doll in the dental chair. In contrast, we observed that many children who did not place the self-doll on the dental chair were uncooperative during subsequent dental treatment. Thus, our doll-placement test is a valuable predictor of the anxiety of children who will receive dental treatment. Although how children placed the parent/guardian-doll also provided useful information, we gained the most valuable information from whether or not the child put the self-doll on the dental chair.

Introduction

The prospect of dental treatment causes many young patients to be anxious and/or afraid[1]. Paedodontists take care of patients that range from toddlers to adolescents, and it is frequently difficult to cope with children under the age of six who need dental treatment. Paedodontists must be knowledgeable about child psychology, the influence of environment factors, and the physical and mental development of children, in order to insure that children can be coexist into cooperating during dental treatment. Through the suitable correspondence of dental staffs for the individual child, dentists are saved for dental treatments and it may become good effect to children about social nature and adaptability in future.

Before attempting to provide dental treatment for a child, it is helpful to know how much anxiety they are experiencing. Ozaki[2] instigated studies in which he analyzed the anxiety of children with a method using a miniature dental office. Following upon that lead, we have devised an objective assessment method that, while differing from that of Ozaki, still measures anxiety with a test in which the child places dolls in a miniature dental office. Here we report the results of a trial of this method of assessing anxiety.

Subjects and Methods

We studied 48 children, aged from three to five

Table 1   Number of subjects

Age	Boys	Girls	Total
3 years	12	9	21
4 years	6	8	14
5 years	7	6	13
Total	25	23	48

Fig. 1   Dolls for use with the miniature model

Fig. 2   A miniature model of the dental office

Fig. 3   Face panel to show child's feeling during treatment

choices made by the children, no facial features were marked on the dolls (Fig. 1). The floor of the model was marked with a grid that allowed us to quickly estimate the distance between the self-doll position and the dental chair (Fig. 2).

At the beginning of each test, we explained to the child which person each doll represented and we showed him or her the miniature model of the dental office with the dental chair, the dentist, and the dental hygienist already in place. Then we asked the child to place the self-doll and the parent/ guardian-doll in the model without coaching from anyone. We recorded their choices with digital images in order to assess their anxiety and for future analysis. Several observers independently observed each child's behavior during dental treatment and subjectively classified his or her anxiety level as falling into one of four categories:

Level 0: Relaxed; smiling
Level 1: Accepted treatment, but experienced some anxiety
Level 2: Refused treatment because of strong anxiety, but verbal communication was still possible
Level 3: Verbal communication was impossible; behavior was out of control

As an auxiliary measure, we requested each child to chose one of five faces contained in a face panel to convey their own feelings during treatment (Fig. 3).

Results

Based on the distance from the dental chair, we assigned each child's placement of the self-doll to one of the following four categories (Fig. 4a–d):

Type A: put the self-doll on the dental chair
Type B: put the parent/guardian-doll on the dental chair
Type C: put the self-doll near the dental chair but not on the chair
Type D: put the self-doll far from the dental chair

Percentages for the doll placement groups are
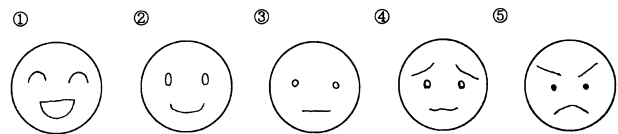
years, all of whom visited the paediatric dental clinic at Kanagawa Dental College between April and August, 2003. Details are shown in Table 1. We assessed anxiety with a set of dolls (dentist, dental hygienist, and family members, father, mother, sister, brother, etc.) ranging from 4 to 10 cm in height and a scale model dental office measuring about 36×24 cm with a dental chair in the center. In order to avoid unnecessarily biasing of the placement
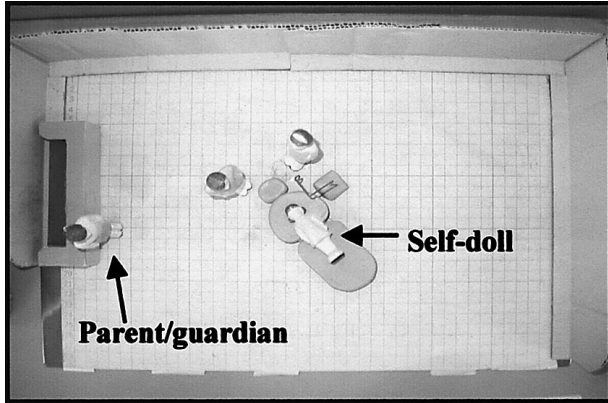
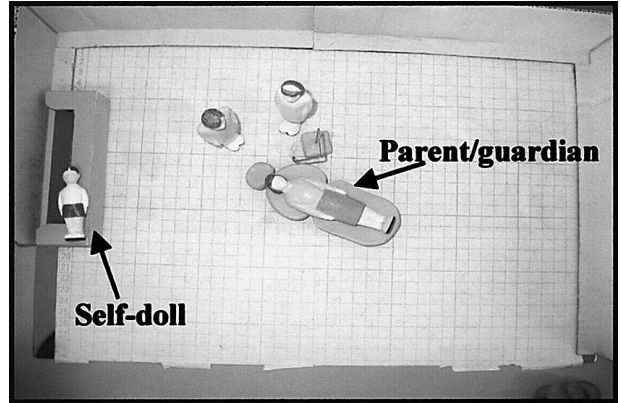Fig. 4a   Type A: Placed the self-doll on the dental chair

Fig. 4b   Type B: Placed the parent/guardian-doll on the dental chair
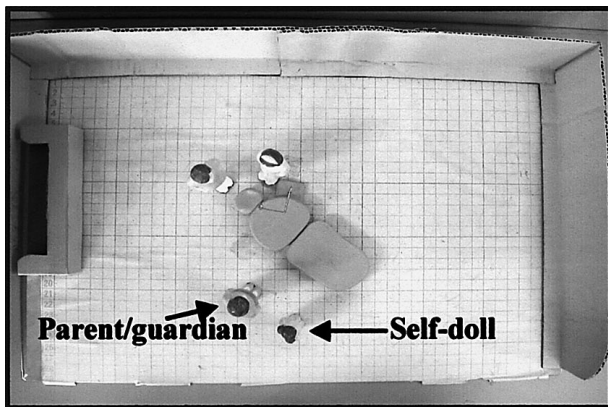

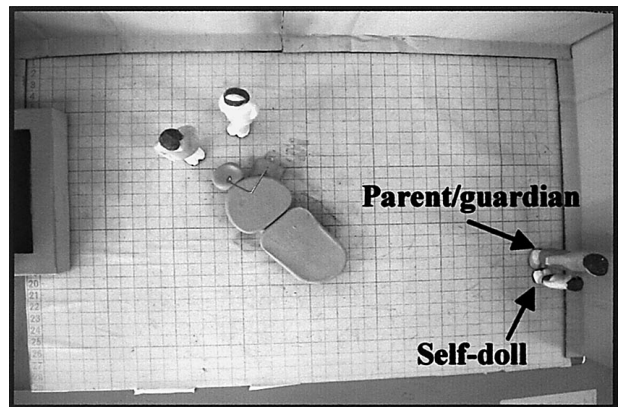Fig. 4c   Type C: Placed the self-doll near the dental chair

Fig. 4d   Type D: Placed the self-doll away from the dental chair

Table 2   The doll placement patterns

	Number	%
Type A	26	54
Type B	4	8
Type C	11	23
Type D	7	15

shown in Table 2. In descending order of frequency, placements were in Type A, Type C, Type D, and Type B. The majority of children (72%) who were treated without anxiety placed the self-doll on the dental chair. On the other hand, many children who did not cooperate during dental treatment did not place the self-doll on the dental chair (Fig. 5). Among children whose doll placement was Type A,

most of them (77%) accepted dental treatment with good behavior and 50% of them received a Level 0 rating for dental treatment. More children who were classified as Type B and Type C were classified as Level 1, 2 and 3 than were classified as Type A. In addition, about 50% of the children classified as Type B expressed sadness when they were separated from their parent/guardian during dental treatment (Fig. 6). Children whose placement of the self-doll was Type D (far from the dental chair) were more cooperative during dental treatment than were children whose placement of the self-doll was Type C (near the dental chair). The next most cooperative children were those at Level 3 and Type C. Otherwise children at Level 0 were less than for Type C. Each level was the same percentage as in Type B.

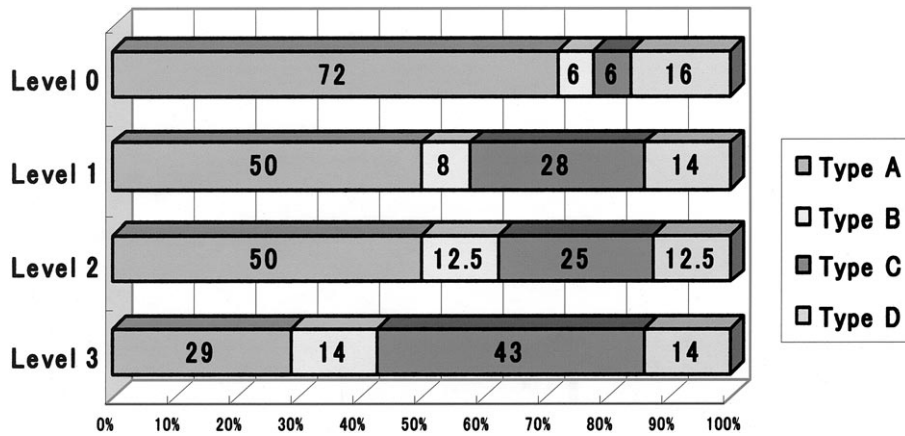The auxiliary strategy for measuring the

Fig. 5   The dental anxiety expressed as a percentage of the child's level of behavior
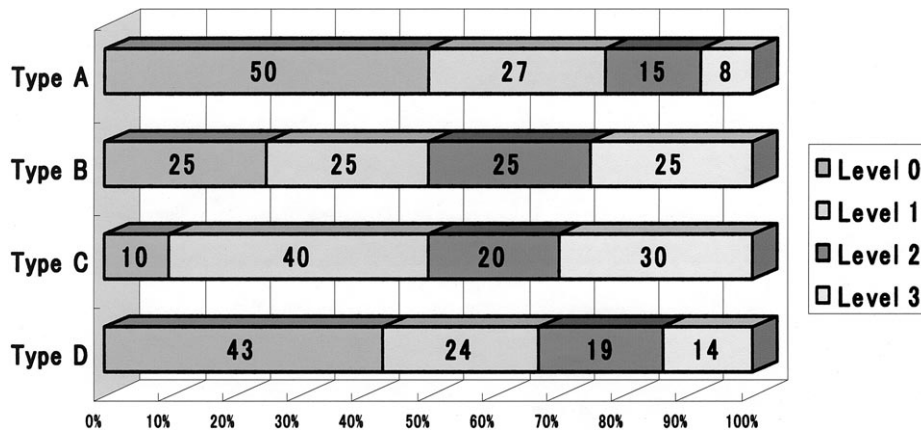

Fig. 6   The child's level of behavior expressed as a percentage of their dental anxiety

emotional state of these children yielded no useful results, because the face selected by most children did not represent how they felt.

Discussion

Dental researchers have published a number of reports about dental fear and anxiety[1–10]. Because many of these studies were done in unusual surroundings, they are not broadly applicable. Our method, on the other hand, was conducted in a natural environment and provide an objective way to understand children.

At first we requested children to place dolls other than the self-doll (those of the dentist, hygienist, parent/guardian, and sibling). Unfortunately, the greatly increased number of patterns of doll placement made it more difficult to assess the child's

dental anxiety. We therefore simplified the process to include placement of only two dolls (self-doll and parent/guardian-doll) into the model dental office. This improved our ability to assess the child's anxiety. The assessing method that has been introduced in this paper shows that it is possible to measure a children's dental anxiety objectively.

In spite of the fact that Type A and Type D are apparent opposites, they correspond to similar assessments of the child's behavior during treatment. There is a difference between a child's mental state and his or her behavior during dental treatment. As a consequence, we may not assess the child's anxiety correctly by inferring subjectively. We therefore need an objective method of assessing dental anxiety in children, and the model dental office provides that objective method.

The strength of the relationship between a child

and his or her parent/guardian has a great influence on whether the child will be cooperative during dental treatment or not[9]. Maruyama[10] reported that the method of Dental Drawing and Coloring (DDC) is available and that it is effective in changing a child's response to dental treatment. Because in some cases it is very hard to assess anxiety using doll placement in a model dental office, we must identify additional methods that are effective.

Conclusion

We can quantitatively assess the anxiety of young patients awaiting dental treatment with a doll-placement test. We found that the factor of greatest importance is whether the child puts the self-doll on the dental chair. In the future this method of assessment will become more useful before giving dental treatment to young patients as the size of the experimental data base grows and as we learn to combine it with other measures of mental state.

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