



The Dental Sub-scale of the Children's Fear Survey Schedule in Romania. Do We Need to Rethink Dental Fear Concept?

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Abstract

Aims: The aims of this exploratory research are (i) To assess the reliability and validity of the Romanian version of CFSS-DS, (ii) To examine the responses of children's caretaker and appraise the prevalence of dental fear in a private dental setting with pediatric profile in Romania and (iii) To analyze the usefulness of the survey.

Methods: The CFSS-DS survey was translated into Romanian and applied to 50 children - ages 8 to 12- attending a private dental office in Cluj-Napoca in the course of January 2018, on appointments or emergency calls. All surveys were filled out by their caretakers in the waiting room, previous to the dental session.

Results: (i) The Romanian version of CFSS-DS exhibited high internal consistency ($\alpha = 0.97$), (ii) The average of the overall scores on children in the sample group is 33.86 with a standard deviation of 13.68. (iii) The necessity for reconsidering the theoretical basis of the content and employment of dental fear surveys.

Conclusion: The employment of the CFSS-DS survey, although useful for the informative assessment of dental fear in groups, is obsolete when new models and orientations of health psychology and pediatric dentistry are considered. This paper provides a preliminary address to the question of whether the research of dental fear in children needs to be reconsidered.

Keywords: Dental Fear; Anxiety; Children

Introduction

Research motivations

Homogenous or heterogeneous expert teams of university or practicing dentists, psychologists, statistical engineers' write and publish on the topic of dental fear [1,2]. In January 2017, on MEDLINE, dental fear appears in 1375 articles while dental anxiety - 1429 times and dental anxiety in children - 504 times. Nevertheless, in pediatric dentistry, fear or anxiety appears to be often insufficiently apprehended, incorrectly approached, assessed and diagnosed. Furthermore, managing a child patient is often considered as simply a matter of common sense based on life experiences and especially, on the experience with other children but not on any formal understanding of the child behavior mechanisms and their origin [3]. Therefore, it is no wonder that the attempts on

preventing, decreasing or treating dental fear appear to have low efficiency [4] and even result in failure.

The lack of a study verifying the reliability and validity of the CFSS-DS survey and measuring children's dental fear in Romania and the theoretical confusions and uncertainties on the usefulness of surveys on children in the dental setting have compelled us to commence this theoretical and applied exploratory research.

Terminology

Fear has proved to be, in time, an object of reflection and study for philosophers, psychologists, politicians, historians and writers. Søren Kierkegaard (The Concept of Anxiety), Jean Delumeau (Pain and fear: the emergence of a Western guilt culture, 13th-18th

centuries) or Adrian Anthony McFarlane (A Grammar of Fear and Evil; A Husserlian- Wittgensteinian Hermeneutic- Studies in European Thought) are just a few representative examples. The entire literature studied provided that fear is a syntagma, a verbal concentrate defining a complex psychological phenomenon and offers a multitude of expression possibilities and meaning intents: fear, awe, fright, terror, horror, phobia, anguish, and anxiety. Dental literature acknowledged two terms: dental fear and dental anxiety. These fear and anxiety of dental treatment in children have been recognized as sources of serious health problems [5].

Fear, anxiety, dental fear, dental anxiety

Definitions, conceptualization.

Fear [6] is generally believed to be evoked by a real, specific stimulus, as it is found throughout childhood and adolescence. This psychological concept is often considered to be an essential and inevitable emotion, augmenting the <fight or flight> response in times of danger and providing an impetus to caution and prudence, thus providing children with a means of adapting to the stresses of life. According to Marks [7]: "Fear is a normal response to an active or imagined threat in higher animals, and comprises an outer behavioral expression, an inner feeling, and accompanying physiological changes". It is therefore normal for children to be afraid of new and potentially threatening situations and thus reasonable for them to be scared of something, or a situation, which has harmed them before. Numerous studies have documented the quantitative and qualitative changes that occur in the normal developmental fear pattern [8]. These fears are not of sufficient magnitude to be problematic.

As noted also by Ollendick [7,8] nearly all children experience some degree of fear during their transition from infancy to childhood to adolescence. Further, while such fears vary in intensity and duration, they tend to be mild, age-specific and transitory. For the most part, these fears are adaptive; they appear to emanate from day-to-day experiences of growing children, and to reflect their emerging cognitive and representational capabilities.

On the other hand, some children exhibit fear reactions that are maladaptive persist for a considerable period of time and cause much distress. Fears of this nature are referred to as "clinical fears" or "phobias". Common examples of these phobias include excessive fears of animals, water, darkness and medical and dental procedures [7,8]. A first response to a feared object or stimulus is to avoid or escape the fearful situation. Avoidance reduces fear and is

therefore rewarding. Unfortunately, it does not allow the individual to find out if his first impressions were correct or not; that is, it reduces the opportunities for learning.

Following the tripartite models originally developed by Lange [9], childhood fears and phobias can be conceptualized in terms of three response systems: cognitive, physiological and overt-behavioral. King, *et al.* [8] have documented the variety of cognitive responses, physiological responses and overt-behavioral responses that may occur in the fearful or phobic child.

Anxiety, according to Stoudhart, arises from within the patient's psychic as a reaction to an undefined, unrealistic, anticipated stressor. Some researchers do not distinguish between fear and anxiety yet. This concept has been invariably regarded as a major motivating force behind human behavior. As such, it stimulated a considerable amount of theoretical and empirical research. Theoretically [10], efforts to describe the nature of anxiety have spawned a wide range of perspectives including:

- a) Freudian views of anxiety;
- b) A Sullivanian view of anxiety as a maladaptive reaction to disrupted interpersonal relationship;
- c) An existentialistic view of anxiety as a state of apprehension triggered by threat to important values of the individual or the loss of meaning for one's existence;
- d) Behavioral views of anxiety as a learned drive that creates neurotic conflict or as a generalized conditioned reaction to conflicting response sequence situations;
- e) A cognitive view of anxiety as an irrational or, at least, faulty tendency to appraise and respond to a situation as threatening or harmful;
- f) A humanistic (e.g. Rogerian) view of anxiety as the end result of compartmentalized self that can no longer harmonize incongruent external influences with one's inherent organismic experience [Ford and Urban, 1963; Maddi, 1989; Shedletsky and Endler, 1974].

Anxiety has been further regarded as a dichotomous concept comprised of two distinct entities, namely, state and trait anxiety [11]. Spielberger further alluded that people not only differ in the levels of their trait and state anxieties, but also in: (a) the extent of their prominent defenses against such states [11]; (b) the individual's past experience in using defense mechanisms in coping strategies [12]; (c) their ability to cope with threats to self-esteem [12] and (d) the development of specific coping responses used to reduce anxiety under specific stressful situations [12].

Dental anxiety is more specific concept than general anxiety. According to Aartman [5] it is a situation- specific trait anxiety- i.e. as a disposition to experience anxiety in the dental situation. Moreover, according to Rubin and colleagues [Rubin, Slovin, and Krochak 1988] these concepts, of dental fear and dental anxiety, may be described as a subjective state or feeling of reaction to a known source of danger which lies in the conscious.

Dental fear

The sole explanatory and theoretical model of dental fear in children within specialized literature is Chapman's and Kirby-Turner's model [13]. The model comprises five factors:

- a) Fear of pain or its anticipation;
- b) A lack of trust or a fear of betrayal;
- c) Fear of loss of control;
- d) Fear of the unknown;
- e) Fear of intrusion.

This multi-directional model exhibits three characteristics:

- (1) flexibility because it works to explain both increases and decreases in the level of fear experienced;
- (2) contextual variables, because the whole model is constantly shifting with time. This trait reflects the changes in children's perceptions, understanding and abilities brought about by learning and maturity. Maturity will usually work in a positive direction, serving to reduce fear;
- (3) linking constructs, because the model is not statistic or unidirectional. The factors seem to be interrelated to some extent as illustrated in the example of intrusion/ decision control.

Rachman also [14] proposed the sole etiological model of fear in which he described three pathways of fear acquisition: directly through classical conditioning, and indirectly via modeling or transmission of negative information. So far, no support for a simple straight-forward cause-and-effect conditioning relation has been found. One reason may be that the conditioning pathway is mediated by the aversion towards the stimuli and by the children's ability to cope, which in turn may be influenced by other factors.

Diagnostic considerations

In recognition of their seriousness and stability, specific fears of clinical intensity (specific phobias) are included in the two most widely accepted diagnostic classification systems [15]. Conse-

quently, the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM IV) [15] specifies seven criteria for "specific" phobia:

- a) Is out of proportion to demands of the situation;
- b) Cannot be explained or reasoned away;
- c) Is beyond voluntary control;
- d) Leads to avoidance of the feared situation;
- e) Persists over an extended period of time;
- f) Is nonadaptative;
- g) Is not age or stage appropriate.

As noted by King and colleagues [year], in relation to developmental factors, the DSM_IV acknowledges that children may not recognize their fears as excessive or unreasonable. Thus, phobias in young children may be expressed in "childhood" ways, such as crying, tantrums, freezing, or clinging. A similar definition of specific phobia is given in the ICD-10.

But as Chapman [13] clinically noted, fear has to reach the level of phobia before it is treated. This is commonly considered to be a fear which has a duration of more than two years or an intensity that is debilitating to the client's lifestyle. These strict definitions may need a more liberal interpretation when considering dental fears and phobias. Many children are not allowed to avoid, even if they would wish to dental treatment and, sometimes, the general health of children could be seriously affected if avoidance for two years was a criterion for treatment.

Dental fear - a state or a reflexion of a trait?

Dental fear may be located in the vulnerability of the individual, who may be inherently fearful and thus more vulnerable to being traumatized: the more robust the child, the greater will be the capacity to deal with events. Spielberger [12] developed the Spielberger Trait Anxiety Inventory for Children to assess similar constructs, i.e., state and trait anxiety with children in Grades 1 through 6 [16].

Short history of measurement instruments

Child and adolescent behavioral assessment is defined [7] as an exploratory, hypothesis-testing process in which a range of specific assessment procedures are used to understand a given child, group, or social ecology and to formulate specific intervention strategies. Furthermore, child behavioral assessment [17] is multimethod in its approach, empirically based and developmentally sensitive.

The first measurement instrument for dental anxiety-DAS (Dental Anxiety Scale) was conceived for adults by Corah and collaborators in 1969. An adapted version was employed in older children (9 to 15 years of age) by Parkin, [Parkin, 1989]. Wright, *et al.*, [Wright, *et al.*, 1980] have performed other extreme modifications for the DAS scale to become intelligible for younger children (4 to 9 years of age). Ever since, two main instrumental categories for measuring dental fear and anxiety were developed: techniques relying on the observation of children's reactions by others (physiological or behavioral measurements) and techniques relying on verbal-cognitive self-reports. Examples are drawings, observations of behavior, rating by dentists, and verbal-cognitive self-reports. Although some of these techniques are of questionable psychometric quality when used with adults, finding a reliable indicator of dental anxiety in children is even more problematic, mainly because many methods that are used successfully with adults cannot be used with children (e.g., some measurement techniques that rely on self-reports [5,8,17]).

The CFSS-DS survey (see Annex) is part of the second category of instruments (verbal-cognitive self-reports) and was found to be the most frequently employed instrument for fear measurement in children in the dental setting. Many previous studies have shown that this scale exhibits great validity and reliability. The survey is one-dimensional, measuring solely the reaction of the child to the potential anxious stimuli of the dental setting and it is a revised form of the CFSS by Sharer and Nakamura survey which was added [18] another scale comprising 15 items characteristic to the dental setting. DS serve as an indicator of global fear in addition to its more focused intent. High scores on the DS are indicative of general predisposition to respond fearfully. In certain surveys on older children DS was directly filled out by children (self-report), while others were filled out by parents, similar to this particular study. The fear level may be assessed on a 5 level scale (from inexistent- score 1 to high- score 5). The total score of a subject may vary between 15 and 75. The majority of score averages vary with different studies, between 20 and 40. CFSS-DS was employed for different purposes: for some, to assess the fear prevalence in children, as for example in Singapore; for others, in order to register the difference between a study and a control group; and to select the fearful from the non-fearful children within a large population.

Normative data published by Aartman and Hoogstraten on the American, Swedish, Singaporean, Finish and Chinese populations are reported in several studies. According to Klinberg, [19] children having a total score of below 15.2 are non-fearful. Two different

cut-off points are mentioned. In one study subjects are categorized as having high level of dental fear, when they score one standard deviation above the sample mean (± 42). This score is derived from a study in which score for boys and girls per age group were given. Others use a score of 45 or higher as it represents an average answer of "fairly afraid" on every item. On the other hand, [20] on the Dutch children population, out of which, approximately 14% suffer from a certain degree of dental fear. Dutch researchers established a different set of cut-off scores. It has indicated that scores below 32 as "non-clinical", between 32 and 38 as "borderline range" and scores of 39 or higher represent "clinic range" or dental fear. The cut-off score of 32 on the CFSS-DS was used to divide children into low-fearful and fearful categories.

Methodology

The first stage of this study was the investigation of dental and psychological literature, mainly on the look for definitions, concepts, explicative theoretical models of dental fear/anxiety and on the other hand, searching for child and adolescent assessment procedures used in the evaluation of children's fear/anxiety. This research was carried out within the Universities of Dental Medicine, Iuliu Hatieganu in Cluj and Victor Segalen in Bordeaux and on the MEDLINE electronic library or through inter-librarian exchange.

The second stage of this study was carried out in the context of dental setting, specifically on pediatric clients. The dental practice of this office provisions prevention: not only the prevention of cavities, but also the prevention of dental fear. No child is therapeutically approached before obtaining his optimal dental acceptance. Unfortunately, in Romania, for many children, the first visit to the dentist is due to an emergency. This does not allow us the time for the child's psychological preparation. Moreover, these unexpected treatments, such as emergency treatments at night or during the week-end are also indicated as possible opportunities to trigger fear [21]. Abroad, as for example in the Netherlands, and France, children with disruptive behavior can be referred to a Special Dental Care Center. In Romania, this kind of centers are missing. For the time being, dental fear is a colloquial and proverbial expression, eloquently rendering the children's need for help. Thus, the efforts to teach the dental team how to recognize elevated dental fear are desperate, towards the aim of preventing its development. Hence, no such study measuring a psychological variable, such as dental fear, was done. The authors aim via this study to be the first in a longer series of quantitative and qualitative studies in the field.

The survey was taken by 50 children in Cluj-Napoca, Romania, ages 8 to 12, attending the dental office during the month of January 2008. 12 children (24%) came on emergency calls. This age group is homogenous in terms of behavioral and cognitive abilities.

The CFSS-DS survey was translated into Romanian and filled out by the children’s caretakers, before the actual dental consultation and after being explained the purpose of the study. The verbal accord of caretakers was obtained. The children were accompanied by 16 fathers (32%) and 33 mothers (66%) and one by another accompanying person.

Primary data were processed by a psychologist of UBB Cluj-Napoca, making use of the SPSS 10 program.

Results

The coefficient of internal consistency was found to be very high ($\alpha = .97$).

Upon item analysis (see Table 1), anxiety towards the dentist item is very high, with a general score mean of 2.86 in 40% of subjects (a little higher than the doctor item-2.70) (see also Figure 1).

	General mean	Mean: boys	Mean: girls
Dentist	2,86	2,75	3,00
Doctor	2,70	2,58	2,84
Injections	3,20	3,25	3,20
Mouth examination	2,08	2,08	2,08
Mouth opening	1,94	1,87	2,04
Touch	1,74	1,58	1,92
Look	1,62	1,62	1,64
Drill	2,74	2,70	2,80
Drill image	2,34	2,33	2,36
Instruments	2,32	2,50	2,60
Lack of air	1,60	2,08	2,56
Hospital	2,68	1,45	1,76
White robe	2,02	2,70	2,72
Teeth cleaning	1,80	1,75	1,84
Parental anxiety	1,96		

Table 1: Comparative presentation of the mean score dimensions according to stimuli: (the CFSS-DS survey was filled in by caretakers).

However, children most fear injections (3.20), then the drill (2.34), followed by the hospital (2.68), the drill image (2.34) and the other instruments. Children still fear the white robe (2.02), mouth examination (1.94) and having their teeth cleaned (1.80). The lack of air was not signaled to be a real impediment in dental treatment (1.60).

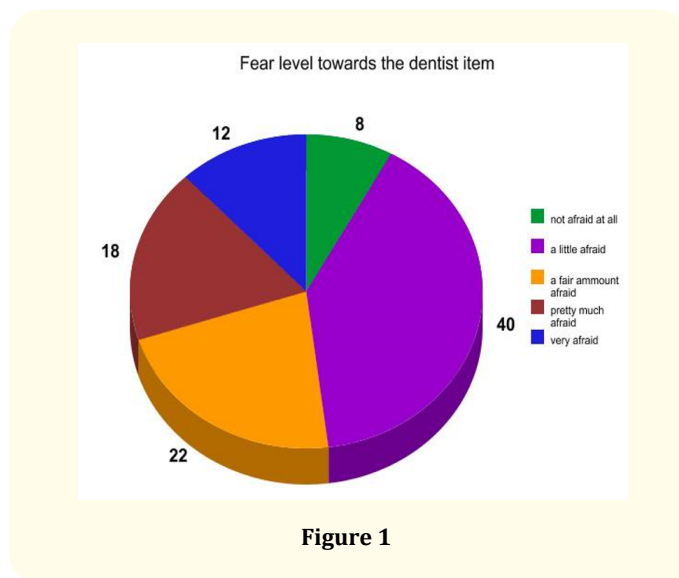


Figure 1

The average of the overall scores on children in the sample group is 33.86 with a standard deviation of 13.68. The minimum score was 15 and maximum score was 73. The total score mean being given, 28% of children were placed above the cut-off points (42 - 45) and 6% were classified between 15 and 18, namely they are non-fearful.

According to gender, girls displayed a higher degree of fear, when compared to boys and according to age, it was showed that younger children of 8 and 9 years exhibit a greater fear than 11 year-olds.

Discussions

We drew out two direct and paramount pieces of information:

- The high reliability of the survey and the assessment of the prevalence of anxious children within a group observed in the dental setting.
- As 24% of the patients attended the office on emergency, it seems to explain the 28 percent- very-fearful children placed above the cut-off score (42 - 45 points) and the 33.86 average of the overall scores on children in the sample group.

Further study outcomes either confirm already-acknowledged data in specialty literature, (gender fear, caretakers fear, etc) or others consist in the questions that the study arises. In this respect, these questions make reference to the clinical relevance of one survey, and in this case, of CFSS-DS:

- a) The first reason concerns in the explicit or implicit construct underlying this measure. What do we measure? Dental fear or dental anxiety? Dental fear stimuli or dental fear reactions? Dental fear level or dental fear components?
- b) Do we need to specify the theoretical construct that lies at the foundation of each survey?

- c) Even if anxiety assessment by survey provides information for the dentist or for research, is it relevant and useful enough to confer a psychological benefit to patients?
- d) Even after learning everything about fear and anxiety, can we really understand and categorize a single child (fearful or non-fearful) by solely assessing the fear level with CFSS-DS?
- e) Is a fear level under 42 - 45 points a non-clinical fear? If so, how can this be of use for the dentist?
- f) Is a fear level over 42 - 45 or 39 a clinical fear and do we need to confer with the seven criteria of DSM IV? Could the child’s fear reside in a general vulnerability state which can be detected using the STAI-Children Survey? Can a non-psychologically-trained dentist deal with such a child by himself?
- g) Can item formulation (e.g. How afraid are you of injections or drill?) be anxiogenous or at least cynical in itself? (see Figures 2 and 3).
- h) Can parents project their own level of fear onto the child, by filling in the survey themselves? (see Figure 4).
- i) Does the new approach of health psychology discourse [23,24] compel us to replace the risk discourse (to have fear) with the chance discourse (to learn and to cope)? Regarding it above, the new, modern and promising dental coping concept appears in specialized literature due to Weinstein [25] and Versloot and colleagues [26]. We think that until now the studies searched for, looked for, measured, paid attention to too much negativity (such as dental fear) and to too little positivity (such as coping strategies) [27, 28, 29] Statov (Van Gelder) [2006,2010,2011].
- j) Can the one-dimensional CFSS-DS survey provide us with a picture of the child’s fear? Could a five-dimensional survey (see Chapman’s model) provide us with a better picture? Can a single survey offer an adequate psychological portrait of the child [30]?

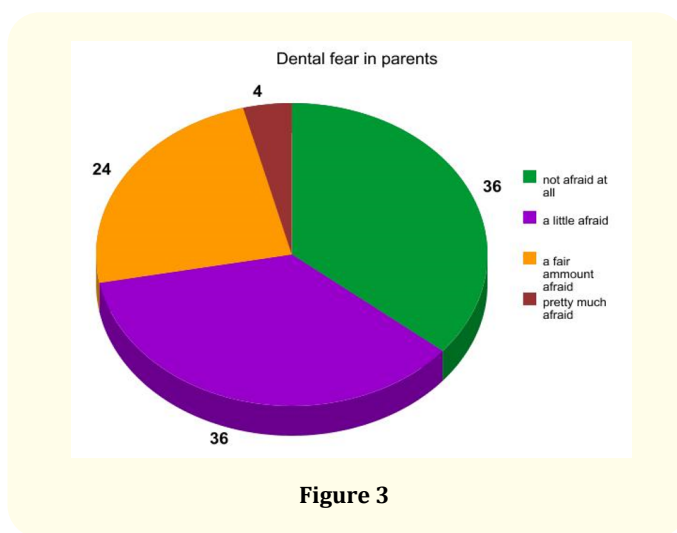


Figure 3

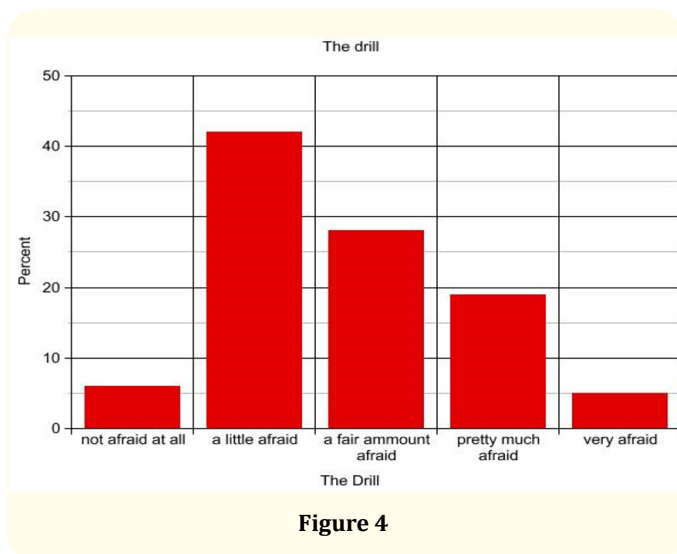


Figure 4

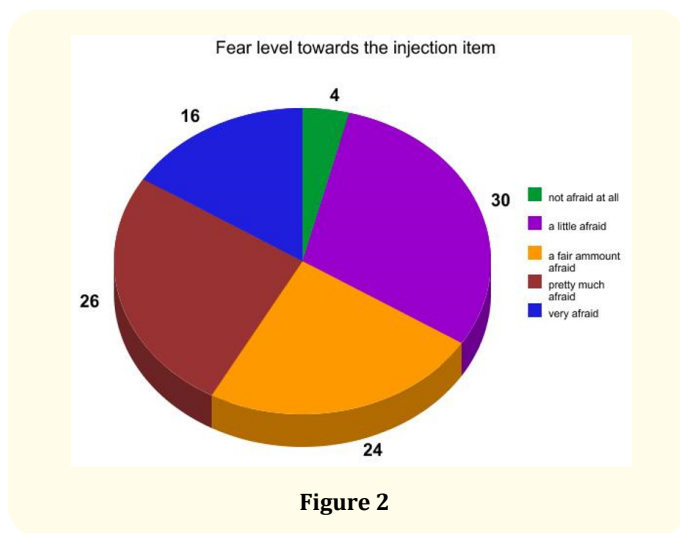


Figure 2

Conclusion

The concept of fear or anxiety is purely psychological in nature but when fear is applied to the field of dentistry, the two fields must work hand in hand to help both patient and dentist achieve the best care for children suffering from fear/dental anxiety. We must accept that stress perceived (such as the dental fear) has a reverse: control perceived as an inventory of personal resources. Modern, coping is an active and combative concept. It differs from defines mechanisms. The coping makes reference to the means of adaptation to a situation and moreover to handle or manage a successful response. It is thus obvious that theoretical advances have been made, but these advances have not yet been employed in research or daily dental practice. In the absence of any “gold standard”, one immediate solution to the problems of measurement is to use more

than one measure of dental fear/anxiety or coping strategies in each study and to look for corroborating evidences, those having usefulness for child and his dental treatment needs indeed [31-34]. Future research should focus on the development of a standard psychological protocol for an overall, multidimensional and multimethod assessment of the child in the dental setting.

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Annex

CFSS-DS (English version)

Date of birth: _____

Completed by: father / mother / other: _____

Signature: _____

Please estimate your child’s level of fear for each of the following situations. Place an “X” at the level of your choice. There are no “good” or “wrong” answers.

I. How afraid is your child of	Not afraid at all	A little afraid	A fair amount afraid	Pretty much afraid	Very afraid
	1	2	3	4	5

- 1. dentists 0-----0-----0-----0-----0
- 2. doctors 0-----0-----0-----0-----0
- 3. injection (shots) 0-----0-----0-----0-----0
- 4. having somebody examine your mouth..... 0-----0-----0-----0-----0
- 5. having to open your mouth 0-----0-----0-----0-----0
- 6. having a stranger touch you 0-----0-----0-----0-----0
- 7. having somebody look at you.....0-----0-----0-----0-----0
- 8. the dentist drilling 0-----0-----0-----0-----0
- 9. the sight of the dentist drilling 0-----0-----0-----0-----0
- 10. the noise of the dentist drilling 0-----0-----0-----0-----0
- 11. having somebody put instruments in your mouth ... 0-----0-----0-----0-----0
- 12. choking 0-----0-----0-----0-----0
- 13. having to go to the hospital 0-----0-----0-----0-----0
- 14. people in white uniforms 0-----0-----0-----0-----0
- 15. having the nurse clean your teeth 0-----0-----0-----0-----0

II. How afraid are you yourself of visiting the dentist?

1 5

Please indicate your own level of dental fear : 0-----0-----0-----0-----0

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