

# Angel or Devil? Dentists and Dental Students Conceptions of Pediatric Dental Patients through Metaphor Analysis

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**Purpose:** The aim of this qualitative study was to identify the conceptions of dentists and dental students (DSs) about pediatric dental patients (PDPs) using metaphor analysis. **Study Design:** The study group (N = 259) consisted of dentists and DSs. Participants completed the sentence “A pediatric dental patient is like ... because .....” in order to reveal the metaphors they use about the concept of PDPs. The data were analyzed using the mixed-methods: qualitative (metaphor analysis) and quantitative (chi-square) data analysis techniques. **Results:** The dentists and DSs produced 259 metaphors. These metaphors were gathered under six different conceptual categories that define a PDP as unpredictable, dangerous, uncontrollable, requiring care and sensitivity, valuable, and orientable. The most important factors leading to these conceptions were the uncooperativeness of some PDPs and the effectiveness of behavior management. **Conclusions:** The results of this study indicate that there was no significant difference among DSs, general dentists and specialist dentists with respect to six conceptual categories that identify the conceptions about PDPs.

**Key words:** dental education, qualitative research, pediatric dentistry, pediatric patients

## INTRODUCTION

Dental students (DS) are educated to diagnose and treat early childhood caries and diseases within the concept of dentistry education curriculum.<sup>1,2</sup> However, many dentists look on dental treatment of PDPs as being too hard and complicated. The factors relating to this perception originate from patients, dentists, parents and the public.<sup>3</sup> Immature cognitive, physical and mental development of PDPs,<sup>4</sup> attitudes of families/caregivers,<sup>5</sup> and the frightening image of dentists perceived by public<sup>6</sup> trigger PDPs to become prejudiced against and fearful of dentists.

Dentists must consider the physical and cognitive development of the PDPs, the characteristics of parents, socioeconomic levels of families, and their own abilities in determination of dental treatment plans.<sup>7</sup> Dentists use various behavior management techniques (BMT) such as “communication and communicative guidance, direct observation, tell-show-do, ask-tell-ask voice control, nonverbal communication etc.”<sup>8</sup> Knowledge of the scientific basis of behavior

guidance and skills in communication, empathy, tolerance, cultural sensitivity, and flexibility are requisite to proper implementation.<sup>8</sup> These guidance techniques must meet the requirements of the child and should not be rigid in nature.<sup>9</sup> Therefore, the dentist-patient relationship is specific to each patient and linguistic and cultural factors have roles in perception, cooperation and behavior management (BM) of a child.<sup>10</sup>

Many dentists prefer to extract teeth rather than take a conservative treatment approach, and even they do not accept PDPs to dental clinics. On the contrary, many dentists can allocate more time for PDPs than to adults.<sup>11</sup> The character of a dentist is important for dental treatment procedures and BMTs.<sup>12</sup> Also, personal or cultural discrepancies have a dominant influence on the conceptions of dentists about patients.<sup>13</sup>

The rationale for this study was using the metaphor analysis, an innovative qualitative analysis method for dentistry, as a tool for exploring the dentists’ and DSs’ attitudes and perceptions about PDPs in order to identify a conceptual framework, which identifies and categorizes PDPs. Although the studies using qualitative methods in dental literature are not very common, there has been a recent spate of qualitative research studies in the literature.<sup>14-19</sup> In a review of the qualitative research in dentistry, Meadows *et al*<sup>19</sup> stated that qualitative research is much like dental practice. It can be intuitive with common sense. A metaphor is a figure of speech in which an implied comparison is made between two different things that actually have something important in common.<sup>20</sup> Using the cognitive linguistic definition of metaphor was initiated by Lakoff and Johnson<sup>20</sup> and elaborated and refined by others<sup>21,22</sup>. Since then, there has been an increase in examining the metaphorical nature of

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pretending. Schmitt<sup>23</sup> suggests metaphor analysis as an effective method that can be used as a research tool in qualitative research studies to understand and explore a person's perception of a complicated or theoretical event. According to Davies and Hughes,<sup>24</sup> metaphor analysis is a qualitative research methodology related to content analysis, but it also lets researchers carry out quantitative analysis on categorical data that are clustered through a metaphorical relationship.

In dental literature, PDPs' dental anxiety and fears with caused-related factors and clinical effects have been investigated,<sup>4, 25</sup> but no study has examined dentists' and DSs' conceptions about PDPs yet.

The present study aimed to identify dentists' and DSs' conceptions related to PDPs. Within this framework, the research questions were: (a) What metaphorical images does a general dentist (GD), specialist dentist (SD), junior DS (JDS), and senior DS (SDS) use to conceptualize PDPs? (b) What rationales do they state to explain participants' choice of metaphors? (c) Which conceptual categories can be identified in respect to common features? (d) Do gender and education level variables influence participants' conceptions?

## MATERIALS AND METHOD

Ethical approval was obtained from the Health Ethics Committee, Cumhuriyet University, Sivas, Turkey. (ID: 2016-03/09). The study group consisted of 259 DSs and dentists. The study was conducted in Sivas, Turkey. Convenience sampling method comprised the study group. The distribution of participants' educational levels was as follows: SDs ( $n = 47$ ; 18.14%), GDs ( $n = 71$ ; 27.41%), JDSs ( $n = 77$ ; 29.73%), and SDSs ( $n = 64$ ; 24.73%). 48% ( $n = 125$ ) of the study group were males and 52% ( $n = 134$ ) were females. The mean age of the participants was 28 (SD = 6.86). SDs and GDs were chosen from the same faculty, in Cumhuriyet University. GDs were graduated from different faculties, and chosen regarding working in Sivas, from both dental hospital and private. SDs were expertise in different areas of dentistry, not only in pediatric dentistry.

## Data Collection

An open-ended questionnaire using the prompt "*A PDP is like ... because ...*" was given to all participants. The first part of the questionnaire asked for the demographic data (gender, age, education level) of the participants, and some metaphorical image examples from different fields of study were provided. The second part asked the participants to complete the prompt by focusing on a single metaphor. The first part of the prompt was about the "metaphorical image" that participants could use to transmit their personal understanding of PDPs using the prompt "*A PDP is like ....*" The second blank was designed to yield the "rationale of the metaphor," which was expected to be clarified through the use of the word "*because.*"

## Data analysis

The analysis of the data followed the methodology of metaphor analysis.<sup>26</sup> Firstly, all collected questionnaires were thoroughly examined for incomplete metaphor subject or rationale. A temporary alphabetical list of all metaphors was formed and each metaphor was simply coded with its name such as angel, flower, and play dough. All metaphors were re-examined with regard to the subject (PDPs) and metaphorical image-rationale relationship. Focus group discussion was performed by the researcher, two GDs, two DSs and two SDs.

The group re-examined and discussed a total of 259 metaphors with rationales and identified the best representative sample metaphors. A list of 49 total sample metaphors that most properly described the whole of the valid metaphors was created. Next, the same group performed thematic conceptual categorization by comparing similarities and differences among the metaphorical images and rationales. Also, for quantitative analysis, frequencies and percentages of every metaphorical image and conceptual category were calculated and tabulated along with gender, age, and education level.

## Validity and reliability

Within the frame of a theoretical triangulation, and to enhance the convincingness, a second focus group discussion was performed with six participants who had described the most effective sample metaphors and explanations. The group discussed whether or not the conceptual categories were compatible with their explanations. After reaching agreement, the abstraction of six conceptual categories and the classification of the 49 sample metaphors into these categories were put into the final form. To establish reliability, an encoder and a lecturer from the department of pediatric dentistry at the same faculty with the researcher, who had no information and conflict of interest about the content and process of the study, were asked to independently sort the 49 metaphors into six categories. Then, the encoder matched each sample metaphor to a conceptual category where no metaphor was left unmatched or no metaphor was matched to multiple metaphors. Inter-rater reliability was calculated using the formula described by Miles and Huberman (Agreement / Agreement + Disagreement). The encoder matched three metaphors (mountain, glass, and sparrow) into different categories, so the initial reliability was 0.94 (46 / 46 + 3). Afterwards, the researcher and encoder both agreed on the researcher's categorization.

## Quantitative data analysis

The data were entered into the Statistical Package for Social Sciences (SPSS) 22.0 program to calculate the descriptive statistics, frequencies ( $f$ ), and percentages (%) of the metaphors in each category. Cross tabulation (Pearson  $\chi^2$ ) was used to compare the differences between the six conceptual categories by gender and education level.

## RESULTS

The participants produced 49 sample metaphors that were grouped into six conceptual categories that defined the concept of PDPs as unpredictable, dangerous, uncontrollable, requiring care and sensitivity, valuable, and orientable. The frequencies of the metaphors ranged from 1 to 16; with an average of five participants per metaphor. Table 1 shows the distribution and frequencies of six conceptual categories with 49 sample metaphors. The descriptive analyses and cross tabulations regarding the effects of the participants' genders and education levels are presented in Table 2.

## PDPs as unpredictable

There were 42 participants (16.21%) and nine sample metaphors in this category. Participants frequently used metaphors like surprise egg, cartoon movie, and gift pack. Main idea of this category was that participants cannot predict the senses and reactions of PDPs against dentists and dental treatment procedures. One participant wrote;

*“A PDP is like a surprise egg because every child undergoing dental treatment has a different character and surprises us with his/her behaviors and speech. We cannot know how the PDP will behave before the dental treatment” (JDS,19,F).*

Another important concept was the unknowable and changing moods of PDPs. The participants’ responses related to this idea were emphasized with the metaphors like ocean, sea, and sky. One participant wrote;

*“A PDP is like sky because we cannot exactly know when it will be rainy, snowy or sunny. PDPs can be happy for a moment but they can cry a few minutes later like the sky” (30,SD,M).*

**PDPs as dangerous**

There were 42 participants (16.21%) and nine sample metaphors in this category. They frequently used metaphors like bomb, scary movie, and monster. Main idea of this category was that PDPs have more aggressive, dangerous, and uncooperative behaviors against dental teams, which leads to jeopardized health for both dental teams and PDPs. The participants stated that they were afraid of the PDPs biting their hands, suddenly closing their mouths while an aerator was being used, or trying to swallow dental tools. A representative example is;

*“A PDP is like a bomb because with one false move during treatment, they show an extreme reaction like a bomb and irreversibly give up the treatment” (27,GD,M).*

**PDPs as uncontrollable**

There were 22 participants (20.08%) and seven sample metaphors in this category. They frequently used metaphors like bird, cat, flying balloon, and mad. Main idea of this category was the belief that they cannot control both physical and emotional behaviors of PDPs during dental treatment. They believed that controlling a PDP is like using precision scales; a minor action by a dentist, positive or negative, can affect a PDPs’ willingness to collaborate or refuse dental treatment. A participant emphasized that;

*“A PDP is like a bird because if you want to catch a bird you must patiently and carefully move on it. Once you do something wrong, the bird flies and you cannot catch it. If we do something wrong that the patient does not like, we lose the control of the patient (23,SDS,F).*

Participants also thought that an aggressive approach to control may have a negative effect on PDPs. One participant wrote;

*“A PDP is like a cat because we try to hardly treat the PDP, the patient will run away like a cat that is stalemated and afraid” (19,JDS,F).*

Some participants emphasized that limitations of movement and losing control makes PDPs more fearful and persistent in refusing treatment. Another issue that the participants had problems with was the limits and degrees of controlling PDPs. They said that a very soft approach can spoil PDPs and cause inadequate authority; on the other hand, an aggressive, authoritative approach can scare PDPs. A representative example is:

**Table 1: Conceptual Categorization of the metaphors about the dentists’ and dental students’ perceptions on pediatric dental patients**

Conceptual Category	f (%)	Metaphor (f)
Unpredictable	42 (16.21)	Surprise egg (16), cartoon movie (6), gift pack (5), ocean (5), sky (3), dream (2), land (2), equation (2), mountain (1),
Dangerous	42 (16.21)	Bomb (12), scary movie (8), monster (6), devil (5), snake (2), mouse (2), beetle (3), swindler (2), volcano (2)
Uncontrollable	52 (20.08)	Bird (12), cat (11), flying balloon (10), goat (8), mad (6), schizoid (3), dragon(2)
Requiring care and sensitivity	39 (15.06)	Flower (12), sapling (7), tree (5), seed (4), mimosa(3), baby (3), old people (2), gazelle (2), sparrow (1)
Valuable	38 (14.67)	Artwork (12), diamond (8), angel (6), gold (5), pearl (3), silk (2), treasure (2),
Orientable	46 (17.77)	Play dough (15), car (8), music (6), canvas (5), fabric (5), sculpture (4), plain paper (3), glass (1)

**Table 2: Crosstabulation of the dentists’ perceptions on pediatric dental patient by gender and education level.**

Conceptual Category	Gender		Education Level			
	Male f (%)	Female f (%)	SD f (%)	GD f (%)	SDS f (%)	JDS f (%)
Unpredictable	23 (18.40)	19 (14.18)	6 (12.77)	10 (15.63)	11 (15.49)	15 (19.48)
Dangerous	22 (17.60)	20 (14.93)	6 (12.77)	11 (17.19)	11 (15.49)	14 (18.18)
Uncontrollable	25 (20.00)	27 (20.15)	8 (17.02)	13 (20.31)	14 (19.72)	17 (22.08)
Requiring care and sensitivity	17 (13.60)	22 (16.42)	7 (14.89)	10 (15.63)	11 (15.49)	11 (14.29)
Valuable	18 (14.40)	20 (14.93)	6 (12.77)	10 (15.63)	12 (16.90)	10 (12.99)
Orientable	20 (16.00)	26 (19.40)	14 (29.79)	10 (15.63)	12 (16.90)	10 (12.99)
	$\chi^2 = 1.77, p = .88$		$\chi^2 = 7.46, p = .94$			

*“A PDP is like a flying balloon because if we very tightly hold the balloon, it explodes, or if we very loosely hold, it will slip through our fingers and will go to sky. We must carefully hold children with behavior guidance” (29,SD,M).*

### PDPs as requiring care and sensitivity

There were 39 participants (15.06%) and nine sample metaphors in this category. They frequently used metaphors like flower, sapling, seed, and old people. Main idea of this category was that PDPs are so innocent they require care and sensitivity. They believed that patience and special care are needed for a good PDP-dentist relationship and this process usually takes a long time. One participant wrote:

*“A PDP is like a flower because PDPs are so sensitive. Once we make a mistake against them, they are offended by us and wither like flowers. Once we do not show interest or act carefully, we cannot make a hit with them (19,JDS,M)”.*

Also, the participants stated that dental teams must show more attention and care to PDPs since their abilities to tell of their distress is weak and inadequate. One participant wrote;

*“A PDP is like a mimosa because if we do something wrong to a PDP during treatment, this leaves a negative mark for all his/her life. A PDP gets offended and never accepts treatment like mimosas never bloom again after closing” (30,GD,M).*

### PDPs as valuable

There were 38 participants (14.67%) and seven sample metaphors in this category. They frequently used metaphors like artwork, diamond, and angel. Main idea of this category was that the dentists treating children must behave extremely kindly and carefully because of the value of children to both parents and dentists. One participant wrote;

*“A PDP is like an artwork because an artist deeply plans the work and wants no mistake. Like the artists, the dentists always want to excellently treat children without any mistake” (28,GD,M).*

The participants also stated that parents especially want more attention from a dentist for their children. Parental expectations and satisfactions are great for a dentist who collaborates with their children. Children are the most important value for their parents and parents want to see dentists treating them with attention. One participant wrote;

*“A PDP is like an angel because they are owned by their parents like a god. Parents want to be highly active during treatment. But it is not bad since if I guide the parents, they can help me to guide the patient. Parents, their child and the dentist are happy. Win-Win” (29,SD,M).*

### PDPs as orientable

There were 46 participants (15.06%) and eight sample metaphors in this category. They frequently used metaphors like play dough, canvas, plain paper, and car. Main idea of this category was that dentists' BMs and the dentist-PDP relationship are the master keys in dental treatment of children. Most of them believe that the behaviors of the dentist are the primary tools that should be used to guide a PDP. One participant wrote;

*“A PDP is like a play dough because however we give shape to a play dough, it takes that shape. How we manage and direct PDPs, they will response to us in the same way. Good communication brings good PDP cooperation to the dentist (23,SDS,F).*

Participants in this category believed that patience and special care are needed for a good PDP-dentist relationship and this process usually takes a long time to cultivate. Also, effectively communicating with PDPs poses challenges for a dentist. A dentist must use appropriate behavior management techniques consistent with the cognitive and intellectual development of a PDP. A representative example is;

*“A PDP is like a plain paper because the content of the paper depends on the writer. The writer gets what he/she writes on the paper. Similarly, the response of the child to dental treatment depends on the behavior guidance of the dentist” (29,SD,M).*

### Effects of gender and education level

Two-way Chi-square ( $\chi^2$ ) tests of independence were performed to determine whether the six conceptual categories were associated with participants' genders and education levels (Table 2). In terms of gender, the minimum expected cell count was 18.34 and  $\chi^2 = 1.77$ ,  $df = 5$ ,  $p = .88$ . Both males and females identified PDPs as uncontrollable. In terms of education level, the minimum expected cell count was 6.90 and  $\chi^2 = 7.46$ ,  $df = 15$ ,  $p = .94$ . JDSs, SDSs and GDs the most identified PDP as uncontrollable, but SDs the most identified PDP as orientable.

### DISCUSSION

The present study examined dentists' and DDSs' uses of metaphors in relation to the concept of PDPs. Actually, all participants in the study considered the same matter, BM, from different angles, like its effectiveness or difficulties and its effect on their conceptions.

Interestingly, the results of this study shows no statistically significant difference in the conceptions of PDPs by dental students, general dentists or dental specialists. Actually, a significant difference might be expected between these groups, especially in specialist dentists, since the dental education gets higher quality and more specialist with level expertise level. Vainio *et al*<sup>27</sup> emphasized that the better their dental education prepares dental students, the more confident they will be when treating patients and the more likely they will provide care for patients. On the contrary, the results of this study did not show any difference. A possible explanation for this lack of negative results maybe that the SDs in the study sample were not only from the pediatric dentistry but also from different dentistry areas. Also, this may be related with the relatively limited sample size of the study. Further studies are needed to include more

participants from different faculties of dentistry, and different cities and countries.

The participants who produced positive metaphors believed that the behavior of a dentist is the major key to guiding a PDP and that good communication and a dentist's appropriate behavior can reduce children's dental anxieties and motivate them to collaborate with their dentists. This finding is very compatible with dental literature<sup>4, 8, 9, 28</sup> and also the perspectives underlying pediatric dentistry.<sup>29</sup> Similar to this study, Law and Blain<sup>7</sup> stated that pediatric dentistry not only aims to prevent or diagnose and treat dental diseases, but also to effectively communicate with PDPs and their parents. This communication actually is the basis for BM. "An embarrassment of riches" is a term used by Chambers,<sup>30</sup> who argues there are too many BMTs explained in the dental literature but very few dentists can proficiently use all of them. The techniques used vary by the patient and the dentist. Similar to the findings of this study, Adair<sup>9</sup> suggested that BMTs must fulfill all of the needs of PDPs and dentists need to show tolerance for each patient.

On the other hand, the participants who produced negative metaphors argued that they were aware of uncooperative behaviors of PDPs but cannot find ways to address the problem. This is compatible with previous studies in literature.<sup>31, 32</sup>

Another interesting finding is that negative conceptions were very common in JDSs. This sheds light on two important points: (a) In the Turkish population, there is a dominant perception of PDPs that is reflected by JDSs who have never treated a PDP; (b) Dental educators should focus on increasing DSs motivations to treat PDPs. DSs should be educated with theoretical courses in combination with active clinical practice during their dentistry education in order to eliminate negative conceptions.

The methodological originality and contribution of this study is found in the use of a qualitative research method, metaphor analysis. Metaphor analysis is a relatively unknown and uncommon

qualitative method in dental and medical literature. Through metaphor analysis, participants can express their opinions with their own words. The participants were totally free to write down their cognitive world on paper. With this approach, the researcher may see the undeterminable or hidden beliefs of participants and observe from many different broads perspective. Similar to these advantages of the method used in the present study, Fitzgerald *et al*<sup>14</sup> stated that the findings from qualitative studies, are rich, detailed, meaningful, engaging, and immediately clinically relevant.

One contribution of this study is also for dental educators. Dental educators can classify students according to their conceptions and evaluate how pedagogical courses change or develop those conceptions. Also, they can evaluate and develop their courses to adjust how they teach behavior guidance to students.

One limitation of the study is that the results of the study only identify a limited population, which cannot be generalized to all. However, this is in the nature of qualitative research. According to Robinson *et al*<sup>18</sup>, qualitative research aims to capture a range of views and experiences.

## CONCLUSIONS

Within the limitations of the present study, it can be concluded that there was no significant difference among DSs, general dentists and specialist dentists with respect to six conceptual categories that identify the conceptions about PDPs. Further studies are needed to evaluate more participants who should be chosen from different faculties of dentistry, cities and countries.

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