

# Metaphorical perceptions of dental students towards pediatric dentistry clinic

## Diş hekimliği öğrencilerinin pedodonti kliniğine ilişkin metaforik algıları

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### SUMMARY

**Aim:** Metaphors are strong tools used in describing the perceptions of people about a certain phenomenon in detail. The aim of this study was to determine the perceptions of dental students towards pediatric dentistry clinic (PDC) through metaphors.

**Materials and Methods:**The study group consisted of 441 dental students (DS) who were selected by convenience sampling method. The participants were asked to fill in gaps in the statement "PDC is like ....., because ....." . The conceptual categories under which the metaphors produced about PDC were investigated and also examined whether there were any significant differences between these conceptual categories in terms of the genders and grades (preclinical or clinical) of the participants. The mixed method including the quantitative and qualitative data collection techniques was used for statistical analysis.

**Results:**DS produced 320 valid metaphors under a total of 17 sample metaphors that best reflect all of them. The metaphors were collected under 4 conceptual categories which are; PDC is like; 1) an educative place; 2) a curative place; 3) a playground place; and 4) a scary place. No statistically significant differences were found between the groups in terms of gender ( $p>0.05$ ). A statistically significant difference was found between the groups in terms of grades ( $p<0.05$ ). While clinical dental students showed a heavy distribution in educative and curative categories, preclinical dental students showed a distribution mostly in scary and playground category.

**Conclusion:** Metaphor analysis was seen as a beneficial measurement tool in determining the perceptions of the dental students.

**Key words:** Dental students, Metaphor, Pediatric dentistry clinic, Perceptions

### INTRODUCTION

While dental students (DS) are educated theoretically on the diagnosis and treatment of oral health problems observed in childhood in the preclinical period in their early years at dental curriculum<sup>1</sup>, they begin to treat pediatric dental patients during the clinical period in their later years of dental curriculum in pediatric dentistry clinic (PDC).<sup>2</sup> Most DS, however, have difficulties in treating children because of the dental anxiety, cooperation problems and spiritual-mental immature status of pediatric dental patients.<sup>3,4</sup> In addition, it has been shown in previous studies that clinical students have higher stress levels than preclinical students.<sup>5-7</sup> These difficulties and stress affect the perceptions and attitudes of DS in PDCs.<sup>8</sup> Furthermore, academic success levels of students are also associated closely with this perception and attitude.<sup>9,10</sup> For this reason, determining the perceptions of dental students towards PDCs is important to develop their dental training.

The perceptions and attitudes of an individual about a phe-

nomenon may be determined with various methods like questionnaire, interview, structured interview and metaphor analysis.<sup>11</sup> Metaphor (mental image, figurative expression) is defined as a word used in another meaning other than its actual meaning as a result of an interest or simulation.<sup>12</sup> Metaphors can be used to visualize and describe an abstract concept in a more concrete way.<sup>13</sup> Lakoff and Johnson<sup>14</sup> stated that the thinking processes and conceptual systems of humans were constructed with metaphors. In addition, metaphors are among the most powerful mental means that construct, guide and control our thoughts about the formation and functioning of the events around us.<sup>15</sup> For this reason, metaphors have been used frequently to describe the perceptions of people about a phenomenon. Using metaphor analysis, which has not been used in medicine and dentistry before, with the mixed method analysis by investigating the subject matter in terms of several variables constitutes the specificity of the present study.

The aim of this study was to determine the perceptions of

DS towards PDC by using metaphors. The research questions of the study were as follows:

1. What are the metaphors produced by DS towards PDC?
2. Under which conceptual categories can the metaphors be gathered?
3. Are there any significant differences between these conceptual categories?
4. Do these conceptual categories differ according to the gender and grades of the DS?

## MATERIALS AND METHODS

### The Research Model

The mixed method in which the qualitative and quantitative methods are used together was used in this study.<sup>16</sup> The mixed method ensures that a certain phenomenon is understood better by using qualitative and quantitative methods together.

### The Participants

The study protocol was approved by the Ethical Committee of Cumhuriyet University, Turkey and written consent was obtained from all participants after verbal explanation regarding the purposes of the study. The study group consisted of 441 DS who were selected by convenient sampling method. The study was conducted with the DS studying at Faculty of Dentistry, Cumhuriyet University, Si-

vas, Tukey in 2016-2017 academic year. The distribution of their education levels was as follows: Preclinical Dental Students (PDS) (n = 232; 52.60%), Clinical Dental Students (CDS) (n = 209; 47.40%). In the study group, 47.84% (n = 211) were males and 52.16% (n = 230) were females.

### The Data Collection

The perceptions of the DS were determined by using the statement "Pediatric Dentistry Clinic is like ....., because ....." . The relation between the subject matter of the metaphor and its source was determined with the word "like", and the reason of this meaning given to this metaphor was revealed with the word "because".

### Analysis of the Data

The metaphors produced by the participants were analyzed with following steps:<sup>13</sup>

- 1) Encoding and Decoding; 2) Category Development; 3) Validity and Reliability; 4) Transferring the Data to SPSS, Organization and Analysis.

**1)Encoding and Decoding:** The metaphors produced by the participants on the paper were transferred to the Excel Program together with the other information of the participants, and then the metaphors were listed in alphabetical order. The empty forms that had no metaphors in them, the ones that had no reasons although having metaphors, or the ones that had more than one metaphor were excluded from the study. For these reasons, 83 forms were excluded from the study. In the second step, the metaphors were revised and ranked. In this step, it was determined that the participants produced 358 metaphors.

**2)Category Development:** The metaphors were analyzed in terms of the subject matter, source, and the relation between the source and subject matter. In this step, 38 metaphors in which no logical relations were established between the source and subject matter were excluded from the analysis. In this way, it was determined that there were 320 valid metaphors. As a result of this analysis, each metaphor was associated with a certain theme by considering their rationales. As a result, four different conceptual categories were determined.

**3)Validity and Reliability:** The data were collected through forms, and were analyzed in detail with focus group interviews. The consistency was questioned in order to ensure the reliability of the study. Two of the authors of the study (BB and CG) separated the metaphors according to their conceptual categories in data analysis step. Then, the opinions of an expert pediatric dentist, who was a lecturer at the department of pediatric den-

tistry, was received. The expert was given a list in which the metaphors were written in alphabetical order and the names of the conceptual categories were also given. The expert was asked to match the metaphors with the conceptual categories. Then, the agreements and disagreements were determined, and the Miles and Huberman formula<sup>17</sup> (Reliability = Agreement / [Agreement + Disagreement] \* 100) was applied. It was determined that the consistency between the assessments of the expert and the authors was 93% (Excellent: >90).

**4) Transferring the data to SPSS, Organization and Analysis:** The conceptual categories, the entire data and the metaphors were transferred to the SPSS Program. Firstly, the demographical data of the participants were analyzed. Then, the frequency (f) and percentage (%) values that represented the four conceptual categories and the 17 sample metaphors which best reflect 320 metaphors were analyzed. After this step, the Chi-Square test was applied to see whether there was a difference between the conceptual categories. The analysis of whether the categories differed according to the grades and genders of the DS was tested with the Chi-Square Test for the two-variable structure.

**RESULTS**

DS produced 132 valid metaphors under a total of 17 sample metaphors that best reflect all of them. The most frequently repeated 17 sample metaphors among the participants were as follows; *kindergarten* (f=47), *school* (f=25), *workshop* (f=27), *horror tunnel* (f=18), *hospital* (f=19), *amusement park* (f=32), *garden* (f=17), *art gallery* (f=11), *prison* (f=18), *sky* (f=16), *hell* (f=8), *house* (f=20), *battlefield* (f=11), *factory* (f=17), *cake shop* (f=11), *drug* (f=10), *torture* (f=12). The metaphors were grouped under 4 conceptual categories: PDC is like; 1) *an educative place*, 2) *a curative place*, 3) *a playground place*, and 4) *a scary place*. The categories and the frequency of the sample metaphors are given in Table 1. The issue of whether there was a difference between the conceptual categories was tested with the single-sampling Chi-Square Test, and significant difference was detected between these categories according to the grade level variable. Table 2 shows the cross-tabulation of the DS' perceptions on PDC by gender and grade. The findings on each conceptual category are as follows.

**Table 1.** Conceptual categorization of the sample metaphors about dental students perceptions on pediatric dentistry clinic

Conceptual Category	f (%)	Metaphor (f)
Educative	92 (28.8)	<i>kindergarten</i> (f=47), <i>school</i> (f=25), <i>house</i> (f=20)
Curing	84 (26.3)	<i>workshop</i> (f=27), <i>hospital</i> (f=19), <i>factory</i> (f=17), <i>cake shop</i> (f=11), <i>drug</i> (f=10)
Playground	76 (23.8)	<i>amusement park</i> (f=32), <i>garden</i> (f=17), <i>sky</i> (f=16), <i>art gallery</i> (f=11)
Scary	68 (21.3)	<i>horror tunnel</i> (f=19), <i>prison</i> (f=18), <i>torture</i> (f=12), <i>battlefield</i> (f=11), <i>hell</i> (f=8)

**Table 2.** Crosstabulation of the dental students perceptions on pediatric dentistry clinic by gender and grade.

Conceptual category	Gender		Grade	
	Male f (%)	Female f (%)	PDS f (%)	CDS f (%)
Educative	55 (51.8)	37 (40.2)	34 (37.0)	58 (63.0)
Curing	45 (53.6)	39 (46.4)	36 (42.9)	48 (57.1)
Playground	41 (53.9)	35 (46.1)	56 (73.7)	20 (26.3)
Scary	40 (58.8)	28 (41.2)	46 (67.6)	22 (32.4)
	$\chi^2 = 1.04, p = 0.79$		$\chi^2 = 31.87, *p = .00$	

Note. PDS: Preclinical dental students; CDS: Clinical dental students; \*p<0.05 statistically significant

**PDC as an Educative Place**

28.75% (n=92) of the participants stated their perceptions about the PDC under 3 sample metaphors. The participants, who produced metaphors in this category, stated that PDC provides training both for them and for children. The participants, who produced metaphors about educational institutions like school, kindergarten, and nursery class, emphasized that the dentists in PDCs approached child patients just like a teacher. One of the participants explained this situation as follows:

*"PDC is like a school, because children are cared for at PDC just like they are cared for at schools by teachers. While the educational needs of children are covered at schools, mouth care is provided in PDC (22, M, Class III)."*

Another issue that the participants emphasized was that the dental procedures performed in the PDC are explained in detail and performed in accordance with the mental and physical development of the pediatric dental patients. One participant explained as:

*"The PDC is like a kindergarten because it is meticulously approached to the children in PDC as it is in the kindergarten. Children are treated as if they are playing games. (25, F, Class V)."*

Participants also noted that dental education and dental treatment in PDC is different and more complicated than the other departments of dentistry. Participants expressed these opinions by producing metaphors such as surprise egg and university. One participant explained:

*"The PDC is like a surprise egg because every kid has a different character. We can not know from the outside what kind of child will behave during dental treatment. For this reason, the PDC is very complicated. (21, M, Class IV)."*

*"The PDC is like a university because there are so many les-*

sons in university that we need to learn about it, and there are many lessons that we need to learn and practice in PDC. While most adult treatments are performed in specialized departments of dentistry, all treatments for children are performed only in the PDC. (20, M Class V)."

#### **PDC as a Curative Place**

21.25% (n=68) of the participants stated their opinions on PDC under 5 sample metaphors in this category. In this category, the participants who produced metaphors intensified on the treatments and its difficulties with children in PDC. While some of the participants in this group mentioned the difficulties in the treatments applied to child patients, some others talked about the beauty of eliminating the pain of the children. The participants stated their opinions by producing metaphors like "hospital", "medicine", and "workshop" and explained as follows; "PDC is like a hospital because a patient arriving at hospital is discharged with recovery. Although the treatment is difficult in paediatric patients, there are all materials that are necessary to cure a child and the treatment is performed (22, F, Class I)."

"PDC is like a workshop because it is a place where various studies are conducted with necessary tools and equipment and a place where the works and jobs are cared for (27, M, Class IV)."

Another topic emphasized by the participants in this category is the feeling of happiness in the children themselves, parents and the dentist when the children are treated successfully. One of the participants explained this situation as follows;

"PDC is like a pastry shop because a pastry shop is a place where pastry is baked, ornamented and given a beautiful and delicious image, like the teeth of children are cleaned and filled with several materials in Paediatric Dentistry Department and given beautiful and healthy teeth. This makes everybody happy (24, M, Class V)."

#### **PDC as a Playground Place**

23.75% (n=76) of the participants stated their perceptions on PDC under 4 sample metaphors in this category. The participants who produced metaphors in this category stated that PDC is similar to a playground due to the design that is needed for children to love and the materials in the department by producing metaphors like "amusement park", "garden", "sky" and "game park". The participants explained this situation as follows:

"PDC is like a playground because toys are needed to convince a child, to adopt him/her to the treatment and make him/her love the environment (25, F, Class IV)."

"PDC is like a garden because a garden is a place where the gardener and a flower exist together in the most convenient, beautiful and enjoyable manner. PDC is the meeting point of

the child and the dentist (22, M, Class III)."

The metaphor and its rationale produced by one of the participants in this category claims that the games and similar materials are not adequate to demolish the prejudices on PDC, and the materials and the environment used in the treatment might be a problem for children;

"PDC is like a amusement park because although there are beautiful and funny places, there are also scary places in these parks. (20, F, Class II)."

#### **PDC as a Scary Place**

21.10% (n=68) of the participants stated their perceptions about the PDC under 5 sample metaphors. The participants, who produced metaphors in this category, stated that PDC is a frightening place for children, and that the children are forced into the PDC clinic by their parents only in emergency or painful situations. Participants expressed their views by producing metaphors such as "horror tunnel", "torture", "hell", and "prison".

"The PDC is like a prison because children are forced here like prisoners and they always want to escape from here. (19, F, Class I)."

"The PDC is like a torture because the dental treatment or tooth extraction are always frightening for a child no matter how the clinical environment is (20, M, Class II)."

Another point emphasized by the participants in this category was the fact that the negative behaviors of pediatric dental patients pose a risk for them. In addition, the participants also mentioned the difficulties of establishing communications with children and the difficulty of treatment procedures, and defended the idea claiming that the PDC is more difficult than the other dental clinics. One of the participants stated this situation as follows;

"PDC is like a hell because hell is bad for everyone. PDC is a terrible place for dentists, students and patients (24, M, Class IV)."

#### **DISCUSSION**

In this study, the perceptions of the DS toward PDC were compared in terms of gender and grades by using metaphors. The results of the study showed that the perceptions of the DS are collected under 4 conceptual categories that included 132 metaphors with 17 sample metaphors. Among the conceptual categories, no difference was detected in terms of gender. There was a statistically significant difference between PDS and CDS. While CDS were mostly distributed highly at educative and curative categories, PDS showed high distribution in scary and playground categories.

The results of the current study showed that CDS consider the PDC as a place where heavily educational and curative activities are performed. PDS stated that they

considered the PDC as a scary place or as a playground. The main difference between the two groups is that, unlike PDS, CDS have begun to treat patients in the PDC. The perceptions of PDS can be considered as the reflection of a prejudice on pediatric dentistry or as the reflection of childhood anxiety about dental treatments. CDS, on the other hand, assessed their metaphors in terms of pediatric dental patients and their treatment. For example, some of the CDS and PDS defined the PDC as a scary place. However, PDS defined this scary definition in the eye of children, and defended this opinion over dental worries of children. However, CDS stated similar perceptions and as well as the treatment of pediatric dental patients was difficult and scary.

Another point focused on the participants was the fact that the PDC was considered as an educational place for pediatric patients. For this reason, the participants mentioned metaphors like kindergarten and school. The majority of the participants established similarities between the dentist and teacher. The participants also stated that the dentists should behave in a way that is similar to a class teachers at school, and added that the PDC should be designed according to pediatric patients.

The PDC being considered as a curative place was another issue mentioned by the participants. The participants who stated viewpoints in this category said that treating children's diseases was difficult both for themselves and for children. Some participants produced negative metaphors about the PDC due to these difficulties, and some of them emphasized that although it was a difficult process but the result was very entertaining for themselves and for children.

Among the reasons for the participants to define the PDC as a scary place were the frightening image of dental procedures and the dental fear and anxiety of pediatric patients. The participants also argued that the PDC is scary for both the DS and the pediatric patients because of unpredictable and dangerous behaviors of pediatric patients, such as the sudden closure of the child's mouth during dental treatment or biting dentists' hand.

This study provides contribution to the literature in several aspects. Determining the perceptions of DS about PDC helps us to understand their developments and changes in pediatric dentistry education and whether these perceptions have effects on their spiritual and psychological behaviors and successes when they are treating children in clinics. Another contribution of our study is to the lecturers and academicians at faculty of dentistry. The instructors and academicians may change the perceptions of dentistry students towards positive by changing the general structure of the PDC or general education given at department of pediatric dentistry when they understand the perceptions of the students within the findings of this

study.

Metaphor analysis is not used frequently in the medicinal field and is not well-known. The advantage of this method to traditional qualitative methods is that it enables the participants to write their emotions and thoughts with their own words and sentences; and presenting the perceptions of the participants together with their justifications makes the researcher handle and analyze the topic in many different aspects.<sup>18</sup> In addition, using the mixed-method by adding qualitative and quantitative data increases the validity and reliability of the study.<sup>19</sup> The study has several limitations as well as advantages. One of these limitations is the objectivity of the authors of the study in encoding and classification steps in metaphor analysis method. In order to eliminate this limitation, focus group interview was applied in this step in the study. Another limitation is the difficulty in reflecting the data obtained in the study to general population, which is the case in all qualitative studies.<sup>20</sup> It is necessary to work with more participants from different faculties in further studies.

Although metaphor analysis is a powerful research method which is often used in social and educational sciences, to our knowledge, it has never been used in dental literature. For this reason, we could not compare the results of our study with previous studies. We recommend further studies consisting of more participants selected from different faculties of dentistry.

## CONCLUSIONS

In conclusion, metaphor analysis was seen as a beneficial measurement tool in determining the perceptions of the dental students. Within the limitations of the present study, significant difference existed among CDS and PDS in regard with four conceptual categories that identify the perceptions towards PDC. It should be investigated to evaluate more participants who should be chosen from different societies in future studies.

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