

The Effect of Dentist's Attire on Treatment Acceptance in Children

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Abstract

Objectives: While great advances have been made in the field of pediatric dentistry, creating a friendly relationship with pediatric patients and getting them to readily accept dental treatment and cooperate remains challenging. Cooperation by children can affect the quality of dental visit and the required time for the treatment. Dentists' attire could be one of the factors that significantly affect children's cooperation. The aim of this study was to assess children's preferences towards dentists' attire and to determine the influence of its design, color, and other factors on treatment acceptance.

Methods: A total of 103 children aged between 6-12 years were randomly divided into three groups (68 children in two study groups and 35 children in one control group). The children were examined by the pediatric dentists wearing different attires. Two questionnaires were designed; one was supposed to be answered by the parents before the dental visit and one by the children after the visit.

Results: The majority of children preferred the shirts that were adorned with Winnie the Pooh, while the treatment acceptance was not significantly different between the groups. Sex, age, number of family members, birth order, patient's personality type, and parents' educational level had no significant impact on treatment acceptance.

Conclusion: Although the attire design did not significantly affect treatment acceptance, it helped to establish a good relationship with pediatric patients in their first visit. The results help pediatric dentists choose attire that are better received by pediatric patients.

Keywords: Pediatric Dentistry; Clothing; Patient Acceptance of Health Care.

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Introduction

The goal of treatment in pediatric dentistry is to resolve dental problems in the best possible way and to receive maximum cooperation from pediatric patients. Despite many advances in the field, the biggest challenge for pediatric dentists is alleviating patients anxiety and enabling them to accept the treatment easily (1). Dealing with anxiety-producing stimuli would be easier when a child feels comfortable in the dental

office, and it can assist in delivering more efficient treatment (2). As Taylor (3) in 1987 described previously, the patient's first impression of a doctor could strongly affect the physician's competence level and the perception of the care provided. In addition, children's response to dental treatment may affect the required time as well as the quality of treatment. Children's reaction can also indicate their acceptance and attitudes towards dental treatments that they may receive in future (4). Miller (5) in 1970 has emphasized the need to decrease patients'

anxiety and fear of dentistry as much as possible.

Establishing a strong rapport and a friendly relationship with a child on his/her first dental visit helps to create a comfortable atmosphere in which the child does not feel threatened (6). As a result, the child will be more likely to visit the dentist in the future and consequently will have better oral health (6).

Human behaviorists have stated that it is impossible to wear clothes without transmitting social signals (7). Walsh (8) in 1993 suggested that the appropriate appearance is a crucial part for development of a successful professional relationship. Review of an existing literature about patient's preferences towards doctors' attires indicates that what is considered formal, traditional, and proper is a changing topic and is subject to change over time (9).

Previously, several studies have compared pediatric patients' preference of dentists' attire (10-15). Most of these studies showed that children prefer traditional white coats (10,13-15), while others revealed that children like informal and colorful attire (11,12). Recently, the effect of dentists' attire on children's anxiety was assessed and no significant correlation was found (16). However, none of the above mentioned studies assessed pediatric patient's treatment acceptance as a dependent variable of dentists' attire.

Considering the different results obtained from various studies and regarding the cultural and geographic differences, it appeared that it would be beneficial to perform a study on Iranian children aged between 6-12 years. Therefore, this study

was conducted to find out Iranian children's preference for dentists' attire to improve their treatment acceptance. As stated above, it can also change children's attitude toward dental services they will require later on.

Methods

In this experimental study, we used convenience sampling method to enroll children aged 6-12 years who visited a pediatric dentist between January 2013 to May 2013. The study protocol was approved by the ethics committee of Isfahan Dental School.

Patients were excluded from the study if they met one of the following criteria: 1- difficulty on the way to the dentist office that would cause anxiety, 2- any exams in the upcoming week, 3- a history of emergency dental treatment in the past which might have caused a negative perception towards dentists in the child, 4- any problems which would interfere with children's understanding of the questionnaire, 5- any other factors which could affect treatment acceptance in children.

In this study, two questionnaires were used for data collection. Since no similar questionnaires had been used in previous studies, the parents' questionnaire was designed by the consulting psychologist and had four parts: 1- demographic data (age, gender, educational level, number of family members, and birth order), 2- dental information (emergency dental treatments and number of previous dental visits), 3- background information (talking to the child about going to dentist, how was the way to

the dental office, and whether the child had been disturbed in the past few days) 4-personality type of the child.

The children's questionnaire was developed in several steps. Initially all dentists in the Department of Pediatric Dentistry at Isfahan School of Dentistry were asked to suggest their questions. The proposed questions were edited by the consulting psychologist and the study supervisor. Finally a questionnaire consisting of 25 questions was developed. Subsequently, the questionnaire was sent to the faculty members of the Department of Pediatric Dentistry, to evaluate its content validity [content validity ratio (CVR) and content validity index (CVI)]. To examine the CVR, the answers were designed based on a three-point Likert scale consisting of necessary, helpful but not necessary, and not necessary. Finally, the questionnaire's CVR was assessed according to the Lawshe table (17). If an item's score was over 0.62, the item was considered appropriate and was included (18). We used the input from 20 faculty members in the related field to distinguish between CVI of the means and Waltz and Bausell's CVI (19). We examined the indices of relevance, clarity, and simplicity of the questionnaire based on a four-point scale and a separate CVI was calculated for each item. Items with a score ≥ 0.75 were included (20). A visual analog scale consisting of very happy, happy, neutral, and sad faces was designed for the children to answer each question. Faces corresponded to scores of 1 to 4 and the treatment acceptance score was defined as the total score of the answers to the questions for each child (range 7 to 28), such that a higher total score indicated better

treatment acceptance. Finally, a self-report questionnaire including 9 items was developed to evaluate patients' treatment acceptance. Subsequently a pilot study was conducted by asking 50 children to fill out the questionnaires and the validity of the questionnaire was examined in the pilot study ($\alpha=0.89$). The questions included in the children's questionnaire were regarding children's opinion about the dentist, his/her attire, children's cooperation and eagerness to learn, children's return possibility, and finally children's desire to become a dentist and if so what they would wear.

As there were no similar studies, the sample size for this study was calculated to detect a minimum difference of 2, and assuming a standard deviation of 2.9 on the designed questionnaire, with α of 0.05 and 80% power. The minimum sample size needed for this study was 34 parent-child pairs in each group.

Subjects were randomly assigned by permuted blocks into one of the three groups. The patients in the control group were seen by dentists wearing white coats, while the patients in the study groups were visited by dentists wearing coats with either Angry Birds or Winnie the Pooh cartoon characters printed on them (Figure 1).



Figure 1- Dentist's attire. A) pooh design B) angry bird design

The purpose of this study was explained to parents and written informed consent was obtained before participating in the study.

Before visiting the dentist, the first part of the questionnaire was answered by the parents and oral health instructions were given. Upon completion of the dentist visit, children were asked to fill out their questionnaires before meeting their parents in the waiting room.

All collected data were recorded and analyzed using SPSS software. A $P < 0.05$ was considered significant. T-test was used to compare treatment acceptance between boys and girls. We used one-way ANOVA used to compare age, birth order, the number of family members, as well as treatment acceptance between the three groups. Chi-squared test was used to compare gender distribution, background information, and personality traits among the three groups. The Kruskal-Wallis test compared parents' education and questions on children's questionnaire among the three groups. If any of the variables were significantly different

between the groups, a regression model was applied to control the effect of confounders on treatment acceptance difference among the three groups.

Results

A total of 103 children (61 females and 44 males) were studied, 34 children in each of the two study groups and 35 in the control group. Demographic data and personality traits of the children are listed in Tables 1 and 2, respectively. Table 3 shows distribution of answers to questions on background information section of the parents' questionnaire. Statistical analysis did not show any significant differences in the variables on the parents' questionnaires among the three groups ($P > 0.05$), except for the mean age ($P = 0.019$) and personality traits ($P < 0.001$), which were significantly different among the three groups.

Table 1- Demographic data of patients included in the study

Variable		Study groups		Control group	P value
		Pooh group	Angry Bird group		
Age	Mean (\pm SD)	6.6 (\pm 1.4)	7.2 (\pm 1.6)	8.8 (\pm 1.6)	0.019
Gender	Male	24	19	17	0.400
	Female	10	15	18	
	Total	34	34	35	
Family members	Mean	3.41 (\pm 0.83)	3.69 (\pm 0.80)	3.85 (\pm 0.70)	0.340
Birth order	Mean	1.22 (\pm 0.63)	1.51 (\pm 0.82)	1.34 (\pm 0.59)	0.278
Previous dental visits	Mean	3.17 (\pm 2.97)	2.84 (\pm 0.2.69)	4.03 (\pm 3.48)	0.071
Mother's level of education	High school diploma or less	12 (35.3%)	14 (41.2%)	13 (37.1%)	0.810
	Graduate degree	14 (41.2%)	12 (35.3%)	13 (37.1%)	
	Post graduate degree or higher	8 (23.5%)	8 (23.5%)	9 (25.7%)	
	Total	34 (100%)	34 (100%)	35 (100%)	
Father's level of education	High school diploma or less	19 (58.9%)	18 (52.9%)	16 (45.7%)	0.342
	Graduate degree	12 (35.3%)	11 (32.4%)	10 (28.6%)	
	Post graduate degree or higher	3 (8.8%)	5 (14.7%)	9 (25.7%)	
	Total	34 (100%)	34 (100%)	35 (100%)	

Table 2- Children’s personality traits based on parents’ questionnaire

Personality	Study Groups		Control Groups	P value
	Pooh group	Angry Bird group		
Shy	3 (8.8%)	4 (11.8%)	2 (5.1%)	0.000
Normal	13 (38.2%)	11 (32.4%)	29 (82.9%)	
Talkative	18 (52.9%)	19 (58.9%)	4 (11.4%)	
Sociable	24 (70.6%)	26 (76.5%)	21 (60%)	0.228
Unsociable	10 (29.4%)	8 (23.5%)	14 (40%)	
Anxious	16 (47%)	18 (52.9%)	15 (42.9%)	0.763
Calm	18 (52.9%)	16 (47%)	20 (57.1%)	
Total	34 (100%)	34 (100%)	35 (100%)	

Table 3- Distribution of the answers to the questions about background information

Questions	Answer	Study groups			Control group	P value
		Pooh group	Angry Bird group			
“Have you talked to your child about going to the dentist today?”	Yes	34 (100%)	33 (97.1%)	35 (100%)	0.902	
	No	0 (0%)	1 (2.9%)	0 (0%)		
	Total	34 (100%)	34 (100%)	35 (100%)		
“How was the way to the dental office?”	Long way and boring	2 (5.9%)	1 (2.9%)	2 (5.7%)	0.830	
	Long way and fun	22 (64.7%)	19 (58.9%)	21 (60%)		
	Short way	10 (29.4%)	14 (41.3%)	12 (34.3%)		
	Total	34 (100%)	34 (100%)	35 (100%)		
“Was your child disturbed by anything in the past few days?”	Yes	2 (5.9%)	4 (11.8%)	4 (11.4%)	0.900	
	No	32 (94.1%)	30 (88.2%)	31 (88.6%)		
	Total	34 (100%)	34 (100%)	35 (100%)		

As demonstrated in Table 4, no significant differences were observed between the treatment acceptance scores of the study groups with the control group ($P=0.388$; Figure 2). Statistical analysis showed no significant differences in treatment acceptance between the boys and the girls ($P=0.73$).

As age and personality traits varied among the three groups, a regression model was applied to control the confounding effects of these variables, which revealed that none of them had a significant effect on the treatment acceptance score (Table 5).

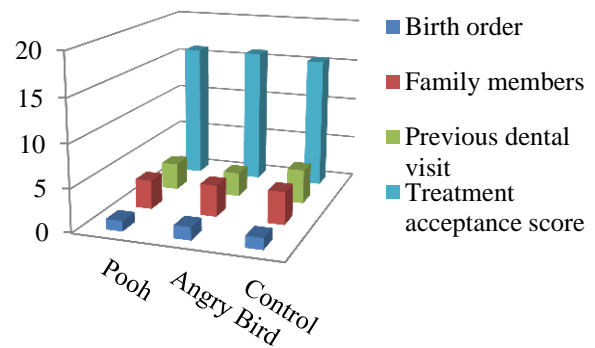


Figure 2- Comparison of quantitative variable between three groups

Table 5- General linear model controlling the effect of age and personality trait on difference of treatment acceptance between groups

Variable	Groups	Beta	P value
Age	-	0.649	0.665
Personality trait	Shy	0.925	0.436
	Normal	2.727	0.116
	Talkative		
Group	Pooh	0.091	0.814
	Angry Bird	0.43	0.795
	Control		

a- Reference groups

Table 4- Mean treatment acceptance scores

Group	Score		P value
	Mean	Standard deviation	
Pooh	16	3	0.388
Angry Bird	16	3.6	
Control	15.5	3.8	

All questions on children's questionnaire were compared among the groups independently. Children who were seen by dentists wearing coats with Winnie the Pooh cartoon characters were significantly more interested in their dentists' attire compared to the children in the Angry Birds group ($P=0.006$). However, as mentioned before, treatment acceptance (overall score assessed by questionnaire) was not significantly different among these groups ($P=0.388$)(Table 4). There were no significant differences in the answers to the other questions ($P>0.05$).

Discussion

We studied treatment acceptance children of from dentists wearing coats with cartoon characters as apposed to those who wore a traditional white coat. The results showed that children who were seen by dentists wearing coats with Winnie the Pooh cartoon characters were significantly more interested in their dentists' attire compared to the children in the Angry Birds group ($P<0.006$). However, as mentioned before, treatment acceptance (overall score assessed by questionnaire) was not significantly different among these groups. Previously, some authors assessed the effect of physicians' attire on their patients (9-13,21). Previous studies, which assessed children's preferences of dentists' attire were all cross-sectional descriptive studies (10-15, 22). Their questionnaires included photos of dentists in various attires and children had to pick the one that they preferred. This study is unique because it is an experimental one and the children were examined by dentists

wearing different coats. None of the demographic data showed a significant effect on treatment acceptance. Treatment acceptance was not significantly associated with the parents' education, nor the children's age or gender. These findings are similar to those of previous studies (16,23). In a study by Chen (23) in 2001 children preferred their dentists to wear traditional white coats and age, gender and parents' education level had little to no effect on the attire preference. Similarly, Tong *et al.* (16) showed that age and gender did not influence children's preference of their dentist's attire.

In contrast to the current study, Asokan *et al.* (11) showed that there was a significant difference between boys and girls regarding their preferred dentist attire. They showed that boys liked colorful coats more than girls did. On the contrary, Mistry and Tahmassebi (12) reported no differences in attire preference between the two genders and showed that while the boys preferred male dentists the girls preferred female dentists. In our study, there was no significant difference between boys and girls with regards to preference for the dentists' coats and their treatment acceptance.

In the current study, the number of shy children was different between the control and the study groups, but the difference between the number of normal and talkative children in both groups was not noticeable. However, after controlling for this difference, treatment acceptance remained similar among the three groups.

Another factor that might have affected our results was the children's sociability. The distribution of sociable and unsociable

children was equal between the groups; therefore, it cannot be considered as a confounding factor. Comparing the mean score for treatment acceptance between sociable and unsociable children, a non-significant difference was observed. The unsociable children had a lower mean score of treatment acceptance. These children could not establish a good relation with the society or the dentists, which leads to lower treatment acceptance compared to that of the sociable children. This difference could be significant in larger sample sizes.

Another aspect of considering the children's personality type is calmness or anxiety. Calm and anxious children were distributed equally between the control group and the study groups. Comparing the treatment acceptance score between these two groups reveals that the mean score was higher in calm children but not significant, probably due to the small sample size. Data analysis showed that informing the child about going to the dental appointment does not make any significant difference in treatment acceptance.

Traffic on the way to the dental office may cause anxiety in parents and their children. Children who had difficulty on the way to the dental office were more likely to show anxiety, which could in turn affect their treatment acceptance. Furthermore, Zwart and Kimpen (24) found that anxiety can be a confounding factor in children's preference for dentists' attire. Our results showed no difference in traffic on the way to the office among the groups, and traffic had no significant effect on children's treatment acceptance.

Problems in daily life can psychologically affect and alter our behavior. We tried to find out whether these problems could also affect treatment acceptance by children. Our results showed that 10.6% of the patients in the study groups and 11.4% of the children in the control group had experienced some problems in the days leading to their dentist appointments. However, there was no significant difference in treatment acceptance among these children and those who had not experienced any problems during the days leading to their appointments. This can be explained by the fact that compared to adults, children live in the present rather than the past (25).

Alsarheed (6) reported that appearance was an important factor for patients in choosing their dentist. He showed that even though a dentist's appearance is important for children, it is less important compared to other characteristics of the dentist, such as kindness, willingness to listen to patients, and clinical competence.

Similar to our results, Tong *et al.* (16) showed that children's preference of attire is not influenced by previous dental visits. They also showed that patient anxiety, which was assessed by Children's Fear Survey Schedule-Dental Subscale, was not affected by the dentist's attire.

Our results show that there were no significant differences in treatment acceptance between the study groups and the control group. This is in accordance with the study carried out by Kuscu *et al.*, (14) in which they concluded that children's fear of white-coats is not true. In their study, many children preferred formal white-coats to less

formal attire. However, the concept of “child friendly” attire might be more suitable for anxious children in order to make a better first impression (14). Budny *et al.* (26) stated that 96% of children either preferred white-coat or were indifferent to it. They concluded that professionally dressed pediatricians may inspire more confidence in their patients. Similarly, Panda *et al.* (15) stated that most children preferred dentists to wear formal attire (a white-coat with a name label) with gloves and no ornaments. On the other hand, Barrett and Booth (27) observed that children considered doctors in formal attires competent, but not friendly. Mistry and Tahmassebi (12) compared children's preference for dentists' attire with that of their parents' and concluded that parents preferred white coats while children mostly preferred informal colorful coats. In contrast, assessment of 150 Indian children and their parents showed that child friendly attire was favored almost by two folds by the children and their parents (13). Similarly, a more recent study evaluating 1,155 Indian children revealed that colorful coats were preferred by children between 9-12 years of age (11). By comparing the children's questionnaires we found a significant difference between the children's response to the question “How did you like the dentists' coats?” between the two intervention groups, such that the patients liked the coats with Winnie the Pooh prints better. However, the treatment acceptance was not higher in this group

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compared to the others. This can be explained in two ways: First, the characteristics of Pooh and second, the interesting design. Winnie the Pooh is an anthropomorphic toy bear, which is very friendly and insightful and always tries his best to help his friends. Children aged 6-12 are taught similar traits in school and at home and therefore can identify with Winnie the Pooh's character, while the Angry Birds characters may not be appropriate for children in this age group. Furthermore, the printed Pooh appeared in a large print in orange and yellow and was selected as the best preferred colors by children. Further studies with larger sample sizes are recommended to evaluate the impact of attire design on children's treatment acceptance.

Conclusion

Considering the limitations of the current study, the results show that dentists' attire had no influence on children's treatment acceptance. However, the children liked the coats with Winnie the Pooh cartoon characters the most. Additionally, age, gender, number of previous dental visits, number of family members, and personality trait had no effect on treatment acceptance.

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