

# ASSESSING THE PERCEPTION OF SMILE ATTRACTIVENESS IN YOUNG ADULTS. A PILOT STUDY



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**OBJECTIVE:** To assess the perception of dental, art and business students on the importance of smile attractiveness and the understanding on effect of skin tone on tooth shade value as perceived by the 3 groups.

**METHODOLOGY:** It was a cross sectional, analytical study conducted in Art, Business and Dental Schools. Ninety 90 students (3 groups of 30 each) were selected by non probability, purposive sampling. 24 pictures were run in front of the participants as power point presentations. The pictures were of two individual smiles, a male and a female, with changes made to colour of teeth and skin, in Adobe Photoshop. The participants were asked to grade each picture on a rating scale. SPSS 17.0 was used for data analysis. Frequency distribution of all variables was determined. Association of smile attractiveness with gender and profession was determined using Chi-square test. Mean ranks and score (of the 24 pictures) of smile attractiveness as perceived by the 3 groups were compared using Kruskal-Wallis test. Level of significance was set at 0.05.

**RESULTS:** The sample size consisted of 34.1% males and 64.8% females. For the dental group smile attractiveness was very important as opposed to the business and art students. For females, smile attractiveness was more important than their male counterparts. Fair skin with bright and moderately bright teeth rated as the most attractive smile, whereas fair skin with dark teeth rated as the least attractive smile.

**CONCLUSIONS:** There is a difference in perception of smile attractiveness between males and females. Art, business and dental students also have different perceptions of smile attractiveness with respect to skin tones and tooth shade values.

**KEYWORDS:** Smile, Attractiveness, Skin tone, Tooth shade  
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## INTRODUCTION

Smile is a facial expression formed by flexing the muscles near both ends of the mouth.<sup>1</sup> It is the most important of facial expressions and is essential in expressing friendliness, agreement and appreciation. Smile is a feature that makes an impression on observers. In our beauty-conscious society, people are often judged, and therefore judge themselves, by their smile. When that smile is destroyed by dental disease, the result is often loss of self-esteem and damage to overall physical and mental health.<sup>2</sup> However some people are highly satisfied with their smiles while others are not. Dental help is most often sought because people want better smiles, occasionally in comparison to movie stars. It is common understanding that an attractive smile causes an interest or desire in someone's smile because dental appearance has been shown to influence other people's judgment of a person's facial attractiveness as well as of personal characteristics.<sup>3</sup>

Tooth shade is a highly significant factor in perceptions of smile attractiveness<sup>4</sup> followed by the amount of gingival display.<sup>5</sup> Samorodnitzky-Naveh and colleagues<sup>6</sup> reported that only 43 per cent of a U.S. study population were satisfied with their tooth colour, and of those dissatisfied, 88 per cent would have preferred to have their teeth whitened. Also, unattractive smiles have not only been known to be judged negatively, but are also perceived to be related to personality characteristics such as neuroticism and self esteem<sup>7</sup>; whereas attractive smiles have been reported to be related to personality traits such as warmth, calmness, extroversion, and low anxiety.<sup>8</sup> With increasing advertising of whiter, brighter smiles there is an increased demand for whiter teeth, irrespective of how they may look.

The success of dental treatment is determined on the basis of functional and aesthetic results. Many clinicians fail to distinguish between the aesthetic and cosmetic desires of the patients. Proper understanding and analysis of psychology, health, function and aesthetic (PHFA) components of smile design are essential for satisfying such desires.<sup>9,10</sup>

Tooth shade has a strong correlation with factors such as:

- Age
- Gender

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- Skin colour
- Colour of surrounding lips and gingivae

Tooth colour has a strong correlation with age, generally becoming darker and yellower with time.<sup>10</sup> After the age of approximately 35 years, teeth become darker, more red and more saturated, except in the cervical region, where they become yellower. Studies have shown that women have lighter and less yellow teeth than do men.

Advertisements imply that brighter smiles are the most attractive. This has resulted in greater demand for aesthetic dentistry, and tooth whitening is one of the most common dental treatments. A number of methods are available to improve the colour of teeth including whitening toothpastes, internal and external bleaching products, micro-abrasions and placement of crowns and veneers.

The availability of over-the-counter tooth whitening products and at-home bleaching has lead people to believe that white teeth are a solution to their dental problems. This however is not true for all skin tones. To date, there are very few studies to assess the effect of skin tone on tooth shade value, and only one study conducted in the south asian sub continent has been reported.<sup>4,10,17</sup>

Different people belonging to different age groups and different professions may have different perceptions of an attractive smile depending on their social habits. Professionals with increased interactive habits may be more cautious of their physical appearance than those with introvert personalities. To date there are no studies that assess the perception of smile attractiveness as perceived by people belonging to various professions.

Cosmetic desires of most patients cannot be fulfilled by only applying the rules of natural smile aesthetics because such desires are mostly in contrast with their sex, race and/or age factors but are usually guided by trends and culture.<sup>6</sup>

This study was conducted to assess the perception of smile attractiveness in Pakistani young adults and the understanding of effect of skin tone on tooth shade value as perceived by people of different professions and interactive habits.

## METHODOLOGY

### Subjects:

Students were selected from three different professional schools of business, art and dentistry. A total of ninety students were included in the study by convenience sampling. Each group consisted of 30 students from the 3 undergraduate programs so that the participants were all belonging to similar levels of knowledge. The students ranged in ages from 18 years to 23 years.

Smiles of 2 individuals, one female (Figure 1a) and one male (Figure 1b) were selected, photographed and

cropped to eliminate the nose and the chin. The photographs displayed only the teeth, surrounding



Figure 1a



Figure 1b

gingivae and the lips.

The colour of teeth and skin were then edited in Adobe Photoshop 3, using 3 different values of brightness for skin tone and 4 different values of brightness for teeth. A set of 12 pictures was then obtained for each of the 2 smiles (Figure 2).

Two power point presentations consisting of the 12 pictures obtained were run in front of the participants, who were asked to grade each picture as the presentation moved along with auto timer set at 10 seconds per picture, and the participant could not move to the previous picture. An interval blue screen (wash out interval) played for 10 seconds between each picture as the participants graded the picture on the rating scale provided.

The participants saw randomly appearing pictures as the presentation moved along. The rating scale consisted of 5 scores per picture, 1 being the most attractive and 5 being the most un-attractive. In addition the participants were also asked to grade the colour of teeth as too dark, natural or too bright, for each picture.

The proforma to be filled in by the participants also

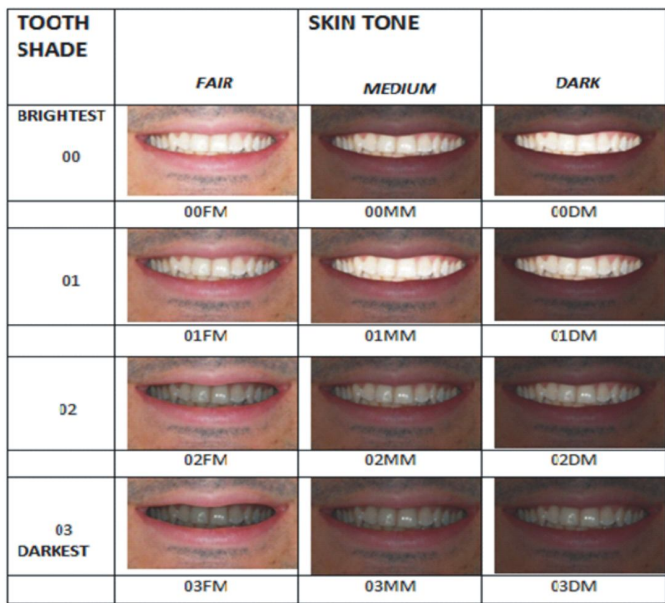
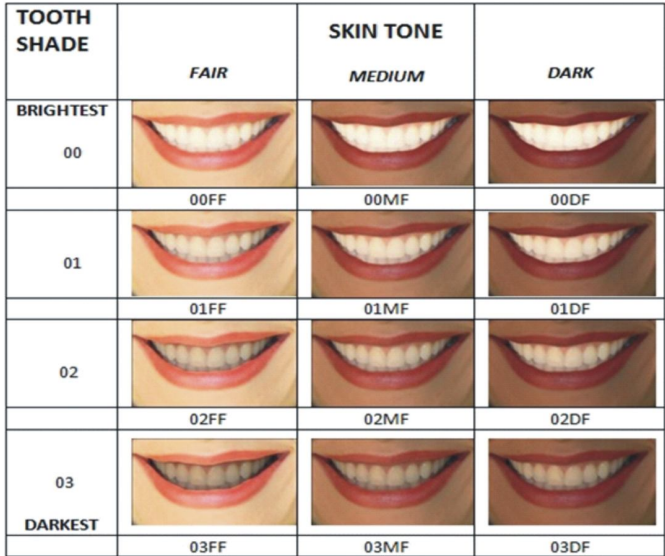


Figure 2

consisted of a question about how important is an attractive smile as part of an individual's personality. This was only added to assess the importance of smile attractiveness as perceived by the three groups.

Mean ranks of each picture were then compared between the 3 professions using the Kruskal Wallis test. Mann-Whitney U test was applied to compare the preference of males and females for the various smiles. Chi square test was applied to assess the association of smile attractiveness with respect to profession. The level of significance was set at 0.05.

**RESULTS**

Thirty (30) students from each group were selected. The mean age of the participants was 21.74 years with a

standard deviation of 1.75.

Out of the 90 participants 64.8% were females while 34.1% were males.

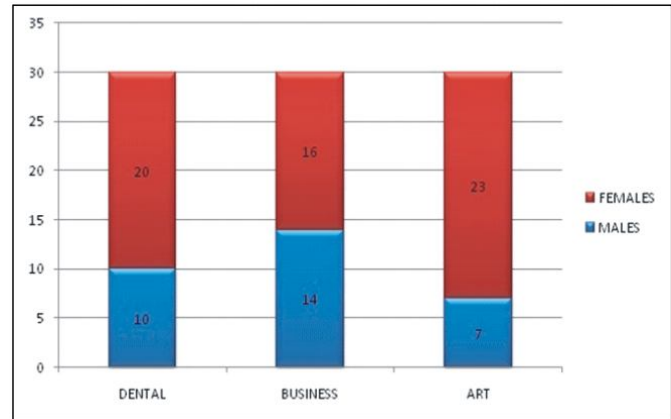


TABLE 1: The distribution of males and females in the 3 groups (n=90)

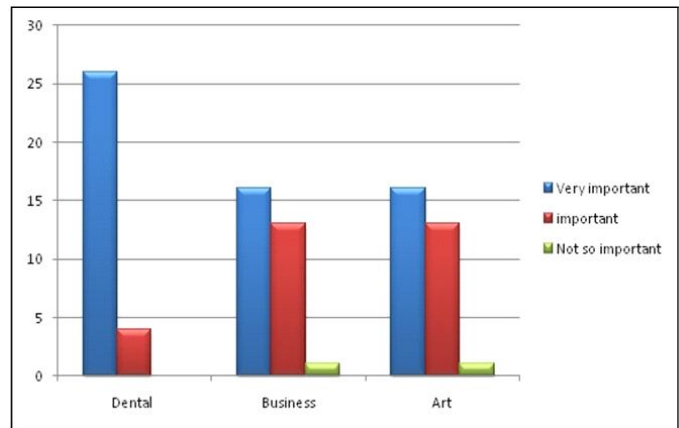


TABLE 2: Importance of an attractive smile as perceived by the

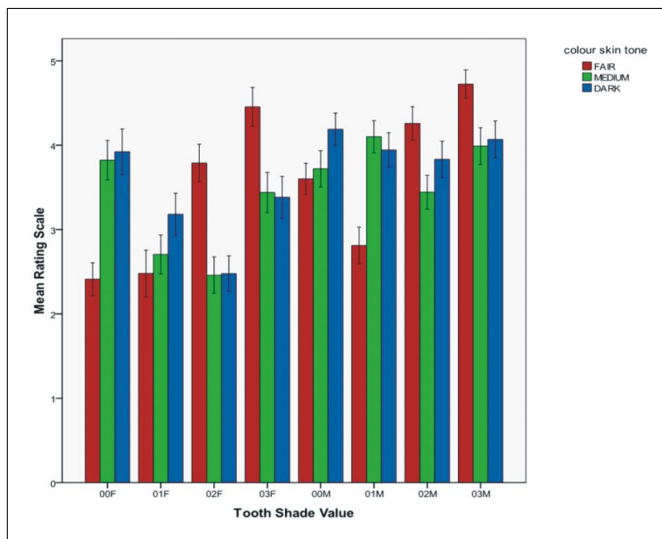
	Extremely attractive	Extremely unattractive
Female	00FF(2.4)	03FF(3.4)
Male	01FM(2.8)	03FM(4.7)

TABLE 3: The best and the worst rated pictures and mean scores

3 groups (n=90), evaluated from the question “How important do you think is an attractive smile as part of an individual’s personality?”

Stratification of gender was done and Mann Whitney U test was applied to evaluate the preference of males and females for the various smiles shown to the participants. No statistically significant differences were seen between males and females for the female smile. ( $p > 0.29$  for female smile and  $p > 0.24$  for male smile)

Chi square test was applied to evaluate the best rated and worst rated pictures, by the 3 groups and cumulative scores showed that 00FF rated as the most attractive picture whereas 03FF rated as the least attractive picture for female smiles. For male smiles, 01FM rated as the most attractive smile, whereas 03FM rated as the least attractive smile (Table 3).



**Table 4:** Mean ranks with 95% confidence interval

## DISCUSSION

To our knowledge, there have not been any studies to assess the perceptions of smile attractiveness amongst different professions. The purpose of this study was not only to evaluate the importance of an aesthetically pleasing smile in our beauty conscious society, but also to assess the understanding that skin tone has an effect on tooth shade value.

Cosmetic dentistry has since long been interested in the aesthetics of the smile. More recently this topic has become important for restorative dentists as well as orthodontists. In the past dentistry was based on harmonious occlusal relationships, and a caries-free mouth. However in the more recent years, with advancement of materials and technology, and media playing a major role in the lives of lay people, cosmetic dentistry has come to be a very important part of dentistry, and patients more often come to dentists seeking for

better, whiter beautiful smiles, often in comparison to movie stars.

Standards of beauty vary tremendously among persons and racial groups, and according to socioeconomic mores. In our part of the world where people seek fair skin and white teeth, this study was conducted to evaluate whether people would accept the results of what they demand.

In a previous study by Ruchika, Naini and colleagues, perception of smile attractiveness and effect of tooth shade value on skin tone was evaluated, similar to our study, but they compared the perception of lay people to dentists.

Our study was conducted in different schools of undergraduate professional education, so that the perceptions of educated minds could be evaluated. Dental and Art students were selected because they have some knowledge and experience in the art and science of aesthetics. The business group was targeted as the lay group in the study.

Mean ages with respect to profession were calculated with art students being in the younger ages and the dental students being in the older age groups. This was primarily because the art students and business students belonged to first and second years as the more senior years had busy schedules whereas the dental students belonged to the clinical years that took more interest in our study and had lighter schedules being in clinics.

Most of the studies to date conducted on smile aesthetics and smile attractiveness, skin tone and tooth shade values have been conducted either in African, American, European or even multi racial subjects. Only one study was found to date that was conducted in south Asians, in Rajasthan India.<sup>17</sup>

Majority of our respondents were females, in all three groups. Cumulatively we had 64.8% females and 34.1% males who participated in the study (Table 1). These findings suggest that females have a greater level of interest in aesthetics than their male counterparts. This is in conformity to Samorodnitzky-Naveh who stated that females pay more attention to smiles than males<sup>5</sup>.

In response to the question “How important do you think is an attractive smile as part of an individual’s personality?” majority of dental and art students thought it to be important and very important whereas a lack of consensus was seen amongst the business students (Table 2).

These findings suggest that art and dental students not only have a greater sense of aesthetics than business students, and but also seem to be more beauty conscious.

Mean scores of the female and male smiles by all the participants were evaluated and conclusively majority of the participants ranked fair skin with bright teeth as the best picture for female smiles, fair skin with moderately bright teeth as the best picture for male smiles, whereas

SOURCE	SAMPLE	RESULTS
AKUH study, 2011	Pakistani Young Adults	Fair skin with bright and moderately bright teeth rated as the most attractive smile
Ruchika Naini and Colleagues, 2009	Multiracial	Fair skin with bright teeth was ranked as most attractive smile by lay people Fair medium skin with moderately bright teeth was rated as best smile by dentists
Gozalo-Diaz and Colleagues, 2008	Multiracial	No relationship
Esan and Colleagues	Black African	No Relationship
Jahangiri and Colleagues, 2002	Multi Racial	Inverse relationship between skin colour and tooth shade

**TABLE 5:** Comparison of our results with other studies

### CONCLUSIONS

1. Dental students consider an attractive smile to be more important than business or art students.
2. Fair skin tone in combination with bright teeth was perceived as the most attractive female smile whereas fair skin with moderately bright teeth was perceived as the most attractive male smile.
3. There was no significant difference in the smile ratings given by the male and female participants.

The limitations of our study were that there was an unequal distribution of males and females that were selected by convenience sampling. Also reproducibility of the participants was not determined.

It is recommended that such studies be conducted with a larger sample size, and colour blindness should be determined in participants to get more accurate results.

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