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Leadership and dental aesthetics of adults as perceived by laypersons

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Leadership and dental aesthetics of adults as perceived by laypersons

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Dentistry at Virginia Commonwealth University.

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Abstract

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Virginia Commonwealth University, 2009

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The purpose of this study was to determine if dental aesthetics is perceived by adult laypersons to affect an individual's ability to emerge as a leader. An electronic survey was constructed using facial frontal smiling photographs of 10 patients selected from a private orthodontic practice in Richmond, VA. Statements were formulated to evaluate four leadership characteristics: intelligence, self-confidence, friendliness, and trustworthiness.

Evaluators indicated their level of agreement or disagreement with each statement for each subject using a 100mm Visual Analog Scale (VAS), and each answer was recorded as a numerical value. Using the data obtained from the 214 evaluators, picture ratings were analyzed using repeated-measures mixed-model analyses (SAS version 9.1, SAS Institute, Cary, NC). Evaluator factors (gender, race, age, questionnaire group) and

picture factors (gender, race, picture number) were considered when testing for crooked vs. straight teeth differences.

There was a significant difference in perception of individuals with straight versus crooked teeth for the leadership characteristics of intelligence, trustworthiness, and self-confidence. However, there was no difference found for the characteristic of friendliness. In addition, the gender and race of the evaluators influenced the rating of the subjects. Results from this study may support the importance of good smile aesthetics as produced by orthodontic treatment for an adult who seeks a leadership role in society.

Introduction

We have all heard great leaders are made, not born. Facial appearance and personality traits are two aspects of an individual that can influence if he or she is perceived as a leader. Information regarding leadership qualities and leadership emergence has resulted from a significant amount of research in leadership development. These topics and others have been researched from the perspective of facial appearance and the ideal personality traits that make an individual more likely to be perceived as a leader. Orthodontic therapy can enhance the attractiveness of a person's smile, thereby affecting their facial appearance. For instance, the aesthetics of the smile is influenced by several characteristics including alignment of the anterior teeth, incisor show, consonance of the smile arc, and gingival display.[1-6] As a result, the smile affects the attractiveness of the entire face.

Studies have established that tooth alignment and symmetry have a significant impact on the perception of an individual's smile. This perception of an individual's smile has also been shown to differ when the evaluator is a dental professional or a layperson.[4, 5] Kokich et al [4] examined the perception of symmetric and asymmetric changes of the dentition and surrounding soft tissue when evaluated by dental professionals and laypersons. Asymmetric alterations of the dentition were perceived to be unattractive by laypersons and dental professionals, and dental professionals were more discriminative toward some dental changes, such as crown length discrepancies, than laypersons. Jornung and Fardal[5] conducted a study to determine a patient's perception of their facial features compared to two dental professionals' perceptions, the

patient's own dentist and a periodontist. Overall, the patients were more satisfied with their smiles than dental professionals. The dental professionals rated the patients' smiles lower than did the patients themselves. Janzen[7] concluded that proper maxillary incisor position and angulation were necessary for maximum facial harmony and were the most important factors among all facial structures examined in his study. Isiksal et al[3] evaluated smile aesthetics by comparing untreated smiles and smiles treated with orthodontics. This study found that transverse characteristics, including the arch form and buccal corridors, were not perceived to be significant when judging an attractive smile. However, the authors concluded that the maxillary gingival display and the positions of the anterior teeth did affect the perception of an attractive smile.

Another aspect of the literature has examined how the smile affects the perception of the face. It has been previously found that the smile can influence a subject's perceived beauty.[2, 6] Flores-Mir et al[2] found that the anterior occlusion was a factor that affects the aesthetic perception of smiles. The anterior occlusion was perceived to have more impact when evaluated in an isolated dental view than when included in the full facial view. This study also found that evaluator gender affected the perception of smiles. Males were less critical in their smile perception than females when evaluating the same photograph. Kerosuo et al[6] found that the dental complex, especially the presence of incisor crowding or a median diastema, had an influence on how others perceived a person's beauty.

Studies have also shown how facial aesthetics affect the development of behavior and personality traits. Hunt et al[8] found that general dentists and orthodontists in

Northern Ireland believe that the top-rated benefits of orthodontic treatment were psychosocial factors including improved self-esteem, self-confidence, and physical attractiveness. Van der Geld et al[9] discussed the psychosocial importance of an attractive smile. An attractive smile was correlated to the size of teeth, visibility of teeth, and upper lip position. The amount of gingival display and the color of the teeth correlated to the perception of the smile. These components were found to be fundamental to one's satisfaction with their smile and the smile being viewed as a friendly and nonaggressive indicator to others. The authors also found that one's smile affected self-perception, as well as perception by others, and influenced an individual psychosocially. A relationship was found between smile attractiveness and the personality traits of neuroticism (emotional instability), self-esteem, and dominance. Helm et al[10] also concluded that malocclusions could negatively affect body image and self-perception from adolescence to adulthood.

The attractiveness of an individual affected his or her perceived social characteristics. Dion et al[11] found that more attractive individuals were expected to achieve more esteemed occupations and be happier professionally. In addition, attractive individuals were thought to be happier overall and were more socially desirable.

Self-perception and perception by others have been linked to personality traits. Several studies have suggested that an individual's attractiveness influences personality development and social interaction.[12] It has been indicated that attractive individuals are judged more positively,[11-13] and unattractive individuals are ascribed more negative characteristics.[11] Attractive individuals were perceived to be more friendly, intelligent,

pleasant, motivated, and less likely to be aggressive or to complain.[13] Cherulnik et al[14] investigated leader emergence and the attribution of leadership characteristics of subjects based on their physical appearance. Naïve observers made appropriate correlations between subject photographs and the subjects' true personality traits and leadership status. This study determined that appearance was related to one's leadership status, and that personality traits such as friendliness, intelligence, sincerity, honesty, dominance, and extraversion, were related to leadership. Other studies have confirmed a correlation between leadership and the following personality traits: self-confidence, extraversion, openness to experience, agreeableness, and conscientiousness.[15,16] From this literature, salient personality traits for leaders were selected for the current study.

The purpose of this study was to determine if dental aesthetics was perceived by adult laypersons to affect an individual's ability to emerge as a leader and have an effect on the development of personality traits. Questions were formulated to evaluate four leadership characteristics: intelligence, self-confidence, friendliness, and trustworthiness.

Materials and Methods

Following Virginia Commonwealth University's Institutional Review Board (IRB) approval, a survey was constructed using facial frontal smiling photographs of 10 subjects selected from a private orthodontic practice in Richmond, VA. These subjects were given a description of the study and how their photographs would be used and subsequently gave consent to use their photographs for this study. The patient sample (subject group) consisted of five females and five males of different ages and ethnicities. The subjects were chosen to represent an approximate cross-section of the population of middle-aged adults in Richmond, VA. To construct the survey, the subjects' original photograph was digitally altered to produce two versions of the same subject, with modifications limited to the dental complex. For example, an ideal smile and a crooked smile were extracted from a database of patients and digitally inserted into the image of the subject, giving that subject an ideal smile (straight teeth) or non-ideal smile (crooked teeth).

An electronic survey was constructed using the subject's photographs, which were split into 2 groups. The subjects were assigned a picture number and group number. Each group included ten subjects with either straight or crooked teeth. Group 1 consisted of five subjects with straight teeth and five subjects with crooked teeth. Group 2 consisted of four subjects with straight teeth and six subjects with crooked teeth. One picture of a subject with a non-ideal smile was used for each group to serve as a control photograph. Table 1 demonstrates the groups with the distributions of race and gender.

Table 1: Description of pictures

Picture #	Race	Gender	Subject Group 1	Subject Group 2
1	White	Female	Crooked	Straight
2	White	Female	Straight	Crooked
3	Asian	Female	Crooked	Straight
4	White	Male	Straight	Crooked
5	White	Female	Crooked	
6	White	Male	Straight	Crooked
7	White	Male	Straight	Crooked
8	African-American	Female	Crooked	Straight
9	African-American	Male	Crooked	Straight
10	White	Male	Straight	Crooked

Note: Picture #5 is a crooked-smile picture shown to both groups of evaluators

The survey was interactive and administered using laptop computers. It was linked to a database that compiled data points as they were entered on the laptop computer during the survey. For each subject photograph, four statements were proposed. They were:

(1) This person is a self-confident.

(2) This person is intelligent.

(3) This person is a friendly.

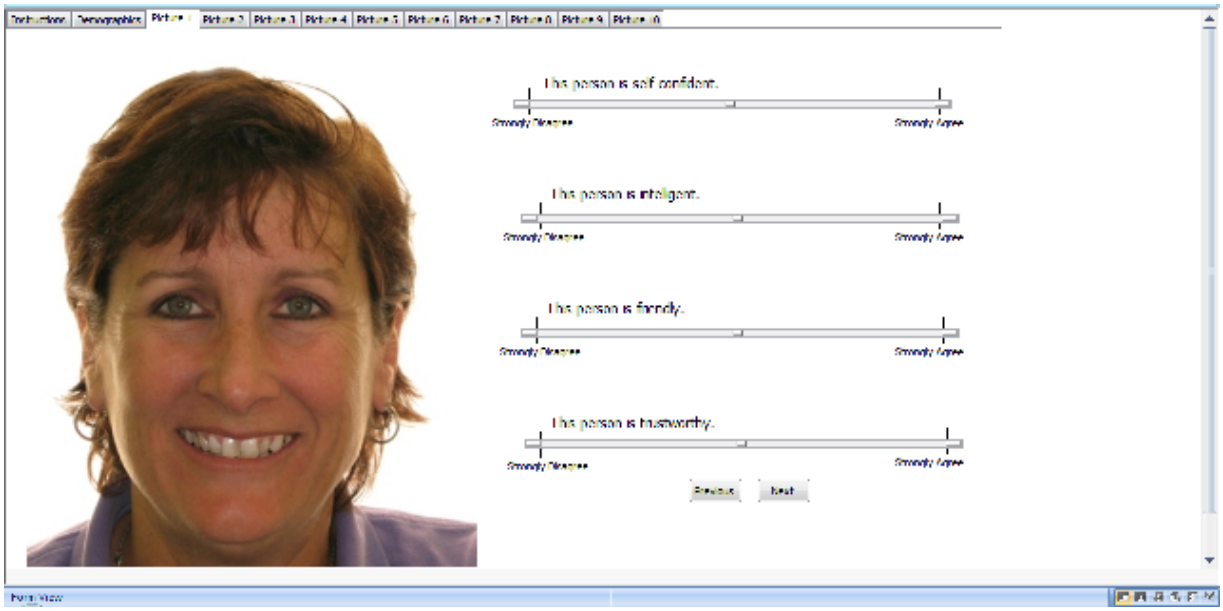
(4) This person is trustworthy.

Evaluators indicated their level of agreement or disagreement with each statement for each subject using a 100mm Visual Analog Scale (VAS). Each answer, a numerical value, was recorded. Figure 1 is an example of a page from survey group 1. Evaluators

were asked to provide their age, race, and gender and evaluate the statements for all 10 subject photographs for a total of 40 survey statements. The survey was administered to 221 adults at shopping centers and universities in the Richmond, VA area.

Using the data obtained from the evaluators, picture ratings were analyzed using repeated-measures mixed-model analyses (SAS version 9.1, SAS Institute, Cary, NC). Evaluator factors (gender, race, age, questionnaire group) and picture factors (gender, race, picture number) were taken into account when testing for crooked vs. straight differences.

Figure 1: Sample Page of Electronic Survey



Results

A total of 221 evaluators were surveyed and gave judgments on the pictures. However, seven evaluators were removed from all further analyses because their responses had little or no variability. The final number of evaluators was 214, and their demographics are described in Table 2. Overall, 54% of the evaluators were male and although there were nominally more males in group 1 than in group 2, the difference was not statistically significant. This was determined using a chi-square analysis ($p > 0.3$). There was also no group difference depending upon race ($p > 0.7$). Overall, 16% were African American, 67% were Caucasian, 11% were Asian and the other race/ethic groups comprised less than 7%. The age of subjects ranged from 18 to 78 with a mean age of 28.7 years ($SD = 11.7$). The two groups did not have a significantly different average age ($p > 0.09$). These comparisons are given to establish the comparability of the two evaluator groups' demographic characteristics.

Table 2: Description of Evaluators Surveyed

Evaluator Characteristic	Group 1 (N =115) n	Group 2 (N = 99) n	p-value*
Gender			
Female	55	40	0.3137
Male	57	55	
Race / Ethnicity			
African American	19	14	0.7115
Asian	14	8	
Caucasian	71	67	
Hispanic	2	1	
Other	6	5	
Age			
n	112	95	0.0912
Mean	27.41	30.16	
S.D.	11.44	11.80	
Min.	18	18	
Max.	61	78	

* p-values comparing groups by chi-square or a t-test.

The ten pictures were rated on four scales, the raw average response for each picture on each characteristic is shown in Table 3-Table 6.

Table 3: Average Ratings for Self-Confidence

Picture #	Characteristic: Self-Confidence					
	Crooked			Straight		
	N	Mean	Std Dev	N	Mean	Std Dev
1	115	48.89	20.33	99	55.08	21.07
2	99	47.81	18.92	115	61.17	17.98
3	115	48.29	21.13	99	58.56	15.80
4	99	60.44	18.38	115	62.18	17.83
5	214	48.30	22.45			
6	99	55.72	20.54	115	57.28	21.36
7	99	57.60	16.25	115	52.34	20.37
8	115	52.02	21.66	99	67.77	16.64
9	115	47.84	20.56	99	59.88	19.44
10	99	55.21	19.61	115	62.08	16.66
All	1169	51.67	20.73	971	59.54	19.09

Table 4: Average Ratings for Friendliness

Picture #	Characteristic: Friendliness					
	Crooked			Straight		
	N	Mean	Std Dev	N	Mean	Std Dev
1	115	66.10	18.80	99	65.06	18.52
2	99	64.02	13.65	115	62.97	17.21
3	115	67.16	18.58	99	67.04	17.29
4	99	59.41	16.64	115	58.07	17.97
5	214	63.57	20.33			
6	99	53.16	18.40	115	53.62	18.80
7	99	60.93	16.91	115	61.71	18.11
8	115	63.24	18.12	99	63.82	18.13
9	115	57.58	18.05	99	61.85	16.50
10	99	53.36	16.94	115	59.06	17.04
All	1169	61.27	18.52	971	61.27	18.09

Table 5: Average Ratings for Intelligence

Picture #	Characteristic: Intelligence					
	Crooked			Straight		
	N	Mean	Std Dev	N	Mean	Std Dev
1	115	52.44	16.48	99	53.51	13.96
2	99	52.28	12.92	115	61.02	15.66
3	115	59.87	16.81	99	64.13	14.08
4	99	56.20	15.26	115	58.68	16.05
5	214	44.97	18.06			
6	99	42.25	15.89	115	46.54	21.71
7	99	59.75	17.03	115	60.08	17.89
8	115	56.08	17.62	99	63.82	15.28
9	115	45.86	18.61	99	55.12	16.44
10	99	59.87	18.52	115	63.23	18.05
All	1169	52.21	18.05	971	58.41	17.65

Table 6: Average Ratings for Trustworthiness

Picture #	Characteristic: Trustworthiness					
	Crooked			Straight		
	N	Mean	Std Dev	N	Mean	Std Dev
1	115	55.60	19.99	99	55.24	17.38
2	99	55.49	14.87	115	57.72	16.68
3	115	60.30	17.43	99	59.42	17.31
4	99	53.02	17.65	115	53.24	17.97
5	214	53.48	18.29			
6	99	40.66	17.85	115	41.67	18.09
7	99	54.11	17.49	115	57.05	16.93
8	115	57.94	17.35	99	59.95	15.97
9	115	48.73	18.21	99	54.84	16.98
10	99	51.45	19.12	115	53.89	16.20
All	1169	53.26	18.52	971	54.61	17.79

Picture 5 was included as a validity check. The same picture was used for both evaluator groups and identical ratings were expected in the two groups. Separate ANOVA were performed for the four rated characteristics to test whether there was a group difference, after covarying out the effects of gender, race, and age of the raters. Table 7 shows that

there was no difference in the rating of picture 5 for the four characteristics studied (all $p > 0.1$).

Table 7: Picture 5 Group Comparisons

	Self-Confidence				
Group	Estimate	SE	95% CI		p-value
1	42.76	3.54	35.79	49.74	0.2708
2	46.32	3.76	38.89	53.74	
	Friendliness				
1	40.61	2.82	35.05	46.17	0.1380
2	44.43	3.00	38.51	50.34	
	Intelligence				
1	59.96	3.21	53.64	66.29	0.8436
2	59.39	3.41	52.66	66.12	
	Trustworthiness				
1	48.11	2.86	42.46	53.75	0.5718
2	49.58	3.05	43.57	55.59	

The picture ratings were analyzed using a repeated-measures mixed-model analysis (SAS version 9.2, SAS Institute, Cary NC). The following effects were used in the analysis: Evaluator factors (Gender_Evaluator, Race_Evaluator, Age, Group), the research comparison: (CS), Picture factors (Gender_Picture, Race_Picture, Picture #), and the four characteristics (Self-Confidence, Friendliness, Intelligence, and Trustworthiness). The intent of this analysis was to identify which factors could be safely ignored in the final analyses of crooked versus straight differences (CS).

Table 8: Full Model Results

Effect	df		F Value	p-value
	Num-erator	Denom - inator		
Gender_Evaluator	1	206	0.37	0.5433
Race_Evaluator	4	206	0.97	0.4240
Age	1	206	1.75	0.1870
Group	1	207	0.76	0.3830
CS	1	1916	58.35	<.0001
Characteristic	3	6417	104.41	<.0001
Gender_Picture	1	1916	20.80	<.0001
Race_Picture	2	1916	10.43	<.0001
Picture # (Gender_Picture, Race_Picture)	6	1916	24.35	<.0001

Table 8 demonstrates the following: there was no differences in rating depending upon the gender of the evaluator ($p > 0.5$) but there was a difference in ratings depending upon the gender of the picture ($p < .0001$). The evaluator's race had no effect on the rating ($p > 0.4$), but the race of the subject in the picture had an effect on the rating ($p < .0001$). Neither age ($p > 0.1$) nor group ($p > 0.3$) had an effect on the average rating.

Finally, since the characteristics ($p < .0001$) were different, and there was an overall CS difference, simplified repeated-measures mixed-model analyses were performed separately for each characteristic. The simplified analyses included the group and all the significant effects seen in Table 8. The results from these analyses are shown in Table 9. Before concentrating on the question of interest—crooked versus straight—the other effects are described.

Table 9: Separate Analyses for Each Characteristic (p-values)

Effect	Characteristic			
	Self-Confidence	Friendliness	Intelligence	Trust-worthiness
Group	0.0081	0.9937	0.3542	0.8971
CS	<.0001	0.2009	<.0001	0.0109
Gender_Picture	0.0055	<.0001	0.5369	<.0001
Race_Picture	0.3162	0.0310	<.0001	0.0003
Picture # (Gender_Picture, Race_Picture)	<.0001	<.0001	<.0001	<.0001

Group 2 had an average rating of self-confidence that was 3.7 units higher than group 1 (SE = 1.36). This difference was not seen in the other characteristics (all $p > 0.3$) as shown in the Appendix, Table 13.

The ratings differed depending upon the gender of the picture in the case of three of the characteristics (all $p < .02$) but not in the case of Intelligence ($p > 0.5$). These gender-related differences are summarized in Table 10. In all cases, male pictures were rated nominally higher than female pictures.

Table 10: Gender of the Picture

	Self-Confidence			
Gender	LS Mean	SE	95% CI	
Female	54.53	0.83	52.90	56.15
Male	56.79	0.94	54.95	58.63
difference	2.27	0.84	0.61	3.92
	Friendliness			
Female	65.26	0.81	63.67	66.85
Male	59.02	0.89	57.27	60.77
difference	6.24	0.72	4.83	7.66
	Intelligence			
Female	57.08	0.75	55.59	58.56
Male	57.43	0.84	55.79	59.08
difference	0.35	0.70	-1.02	1.73
	Trustworthiness			
Female	57.94	0.80	56.36	59.51
Male	52.51	0.88	50.78	54.23
difference	5.43	0.70	4.06	6.81

The ratings differed depending upon the race of the picture in the case of the Intelligence and Trustworthiness characteristics (all $p < .0003$) and Friendliness ($p = 0.03$) but not in the case of Self-Confidence ($p > 0.3$). These race related differences are summarized in Table 11. In the case of Friendliness, the ratings of Asians were higher than those of the White pictures and the African-American ratings were not significantly different from either of the others. In the case of Intelligence, Asian ratings were higher than both White and African-Americans and African-Americans and Whites were not different from one another. In the case of Trustworthiness, Whites were rated significantly lower than either African-American or Asian, and African-American and Asian were not different from one another.

Table 11: Race of the Picture

	Self-Confidence			
Race	LS Mean	SE	95% CI	
African-Am.	56.78	1.04	54.75	58.82
Asian	54.60	1.42	51.81	57.38
White	55.60	0.73	54.16	57.04
	Friendliness			
African-Am.	61.56	0.97	59.66	63.47
Asian	64.01	1.28	61.50	66.52
White	60.85	0.74	59.40	62.30
	Intelligence			
African-Am.	55.14	0.92	53.34	56.94
Asian	62.26	1.22	59.86	64.66
White	54.36	0.68	53.02	55.71
	Trustworthiness			
African-Am.	55.29	0.96	53.41	57.16
Asian	57.26	1.25	54.80	59.71
White	53.12	0.73	51.67	54.56

The significant picture-number effect indicated that even after the effect of the gender of the picture and the race of the picture was taken into account, there remained significant differences between the individual pictures. Difference between groups, genders, races, and pictures were taken into account when estimating the effect of interest: Crooked versus straight.

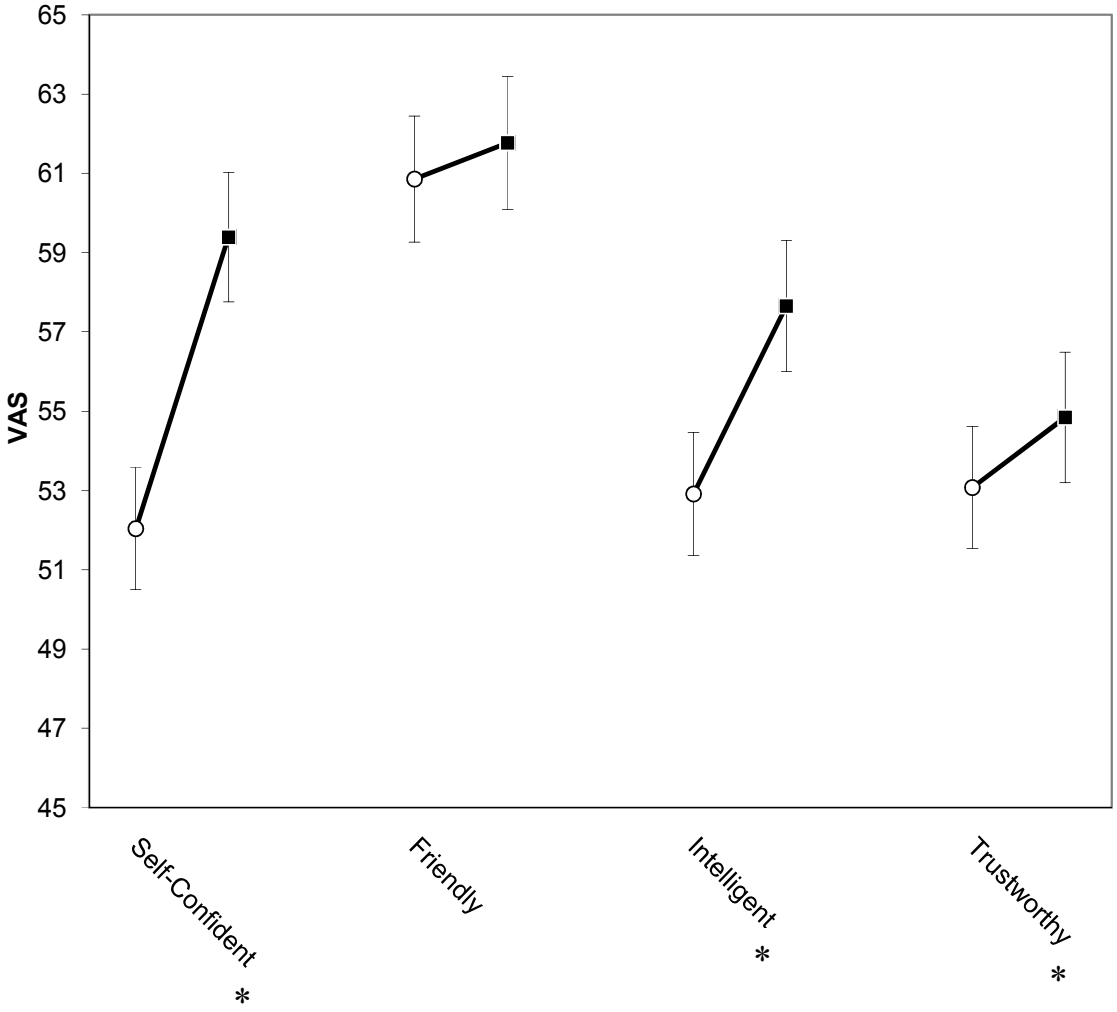
The differences due to crooked vs. straight were nominally consistent in that straight was always rated higher than crooked. However, this difference was significant in ratings of Self-Confidence, Intelligence, and Trustworthiness but not significant in rating of Friendliness. The differences can be found in Table 12 and are demonstrated graphically in Figure 2. The open circles represent the mean value for crooked and the black squares represent the mean value for straight. The steepness of the lines represent size of the difference found between crooked and straight teeth for each of the

characteristics. Even though the discrepancy for Trustworthiness is not as distinct as the other characteristics, the statistics indicate that there is a significant difference between crooked and straight teeth for that factor.

Table 12: Summary of Crooked vs. Straight Effect

CS	Estimate	SE	95% CI		p-value
	Self-Confidence				
Crooked	52.04	0.77	50.52	53.57	
Straight	59.39	0.82	57.78	61.00	
difference	7.35	0.83	5.73	8.97	<.0001
	Friendliness				
Crooked	60.85	0.77	59.34	62.37	
Straight	61.77	0.80	60.19	63.35	
difference	0.91	0.71	-0.49	2.31	0.2009
	Intelligence				
Crooked	52.91	0.71	51.51	54.32	
Straight	57.66	0.75	56.19	59.13	
difference	4.75	0.68	3.41	6.08	<.0001
	Trustworthiness				
Crooked	53.08	0.76	51.57	54.58	
Straight	54.84	0.80	53.28	56.41	
difference	1.77	0.69	0.41	3.13	0.0109

Figure 2: Graphical Summary of Crooked vs. Straight Effect



LEGEND
○ Crooked smile
■ Straight smile
* Denotes Statistical Significance

Discussion

Many studies[11,13,17-19] have indicated that attractive individuals are perceived more positively than less attractive individuals. Moreover, several studies[10,17,18,20, 21] show that a normal dental appearance leads to a more positive perception by others. The purpose of the current study was to investigate the association between certain positive leadership characteristics and the dental aesthetics of an individual's smile (straight versus crooked).

Facial photographs only including alteration of the dentition, were used for evaluation of subject characteristics in this study. The validity of using modified photographs to assess facial attractiveness has been previously established. Howells et al[22] found that this method provides a reliable and reproducible way to rate an individual's picture. Thus, the methods used in this study are consistent with the standard approach found in the literature to study attractiveness.

In this study, the dentition was the only aspect of the subjects' photographs that was altered, and no changes were made to the surrounding facial features. It has been proposed by Shaw[17] and Shaw et al[18] that background facial attractiveness is more significant, regardless of the dentition, in impression formation and perception. Tatarunaite et al[23] conducted a study to determine the factors that affect facial attractiveness and examined facial features including the cheeks, eyes, lips, complexion of the skin, and teeth. This study agreed with Shaw et al[18] and found that the teeth in smiling photographs were least associated with overall attractiveness. Because background facial characteristics were deemed significant, the current study left the background facial characteristics unchanged for each subject photograph. There were

two groups with the same subjects in both groups; the only difference between the subjects in each group was the change made to the dentition, crooked versus straight teeth.

This study was administered to adults older than the age of 18. The evaluators were shown photos and asked to rate the subjects on four criteria that have been shown in the literature[24] to be key elements in leadership and leadership emergence. In addition to the evaluators' ratings of the four criteria, demographic information such as race, age, and gender was gathered. This information was used to determine if there was any effect on the social judgments made.

The results of this study indicate that poor dental aesthetics affected the evaluators perception of the given leadership characteristics. For the characteristics of Self-Confidence ($p<.001$), Intelligence ($p<.0001$), and Trustworthiness ($p=.0109$), there was a significant difference in ratings between the crooked versus straight photographs. Evaluators rated these characteristics higher for the photographs with the more ideal smile. However, for the characteristic of Friendliness ($p=.2009$), there was no significant difference between subjects with crooked teeth versus straight teeth. This finding is not in agreement with Shaw et al[18] whose study found that young adults with a normal dentition were judged to be more friendly as well as intelligent, honest, and kind. Perhaps this discrepancy in the perception of an individual's friendliness is due to younger evaluators as a target population; Shaw administered his survey to college aged students only. There was also a difference in study design. In Shaw's study, only one picture was shown to each evaluator. It was concluded that perhaps the background

facial attractiveness influenced the evaluators. It has also been reported by others[13, 22] that the dentition can influence a subject's perceived intelligence. Thus, the results of the current study concerning the intelligence rating were in agreement with the findings in the literature.

There were other differences found in the perception of the subjects. In addition to the differences between crooked and straight teeth, males were rated nominally higher than females in all categories. Previous studies have evaluated the relationship between gender and leadership characteristics and emergence. Magee and Hojat[16] concluded that females' personality factors must exceed the norm to a greater degree than males in order to be distinguished as a role model. This finding, however, contradicts the study of Goktepe and Schneier[25] who found no significant difference in the emergence of males versus females as leaders. These studies differed from each other, and the current study, in design and population. Magee and Hojat[16] investigated the personality characteristics of chosen role models in the medical field, whereas Goktepe and Schneier[25] observed groupings of students and their emergence as leaders. The studies' methods of assigning groups also differed from the current study and could have introduced a bias. These differences could explain the difference in results concerning leadership personality and emergence.

Another interesting finding in the current study was that the race of the subject picture had an effect on the evaluators' judgment of the leadership characteristics. However, the evaluators' race was not significant. For the pictures' races, Asians were judged to be friendlier than Whites, yet African Americans were not significantly

different than either group. Asians were also perceived to be more intelligent; this was significant compared to both Whites and African Americans. This perception is supported by Stevenson et al[26] who found that Asian children do have improved cognitive abilities as compared to their American counterparts. However, the authors concluded that the difference was related to home and school experiences and not to increased intelligence. These findings suggest a difference in environment, and not innate abilities, was responsible for the differences. Whites were considered to be less trustworthy than Asians or African Americans, though there was no difference between those two groups. These are interesting findings in that the evaluators were predominantly White, yet Whites were perceived more negatively in terms of friendliness, intelligence, and trustworthiness. This contradicts DeCuzzi et al[27] who found that members of one race tended to view members of the same race more positively as compared to other races.

The current study was designed to investigate if adults' dentofacial appearance affects judgments of certain characteristics associated with leadership skills. Many studies[14,15,24,28,29] have concluded that background appearance of the face and personality can influence an individual's perception as a leader by others. The results of the current study indicated that dentofacial appearance does influence perceptions by others pertaining to certain leadership characteristics and may therefore be a reason behind the increase in the adult population seeking orthodontic treatment.

Conclusion

The aesthetics of the smile represented in this study by the good alignment of teeth (straight teeth) influenced the perception of an individual's leadership characteristics of self-confidence, intelligence, and trustworthiness. The only characteristic that did not seem to be affected by the alignment of the teeth in the perception of leadership was friendliness. The importance of gender and race of the subject in judging an individual's leadership capabilities was also demonstrated.

Results from this study support the importance of good smile aesthetics that is produced by orthodontic treatment for an adult population seeking a leadership role in society.

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Appendix

Table 13. Group Comparisons

Group	Estimate	SE	95% CI		p-value
		Self-Confidence			
1	53.90	0.92	52.07	55.72	
2	57.54	1.00	55.56	59.51	
difference	-3.64	1.36	-6.32	-0.95	0.0081
		Friendliness			
1	61.32	0.95	59.44	63.19	
2	61.31	1.03	59.28	63.33	
difference	0.01	1.40	-2.75	2.77	0.9937
		Intelligence			
1	54.69	0.88	52.96	56.42	
2	55.89	0.95	54.02	57.75	
difference	-1.20	1.29	-3.75	1.35	0.3542
		Trustworthiness			
1	53.87	0.95	52.00	55.74	
2	54.05	1.03	52.03	56.07	
difference	-0.18	1.40	-2.93	2.57	0.8971

Vita

Dr. E. Britton Montgomery was born in Natchez, MS on August 23, 1978. She was raised in Natchez and Hattiesburg, MS and attended University of Southern Mississippi in 1996. She graduated with a Bachelor of Science degree, Summa Cum Laude, in 2000 and was accepted to University of Mississippi Medical Center School of Dentistry where she earned a Doctor of Dental Medicine Degree, Magna Cum Laude, in 2006. She was granted admission to the Department of Orthodontics at VCU where she received a Certificate in Orthodontics as well as a Master of Science in Dentistry in 2009. Dr. Britton Montgomery will enter the private practice of orthodontics in Madison, Mississippi.