SOCIAL PERCEPTIONS OF INDIVIDUALS MISSING UPPER FRONT TEETH 1,2

MARY S. WILLIS AND CYNTHIA WILLIS ESQUEDA
University of Nebraska, Lincoln

RYAN N. SCHACHT
University of California, Davis

Summary.—Although it is assumed that there are negative social consequences for individuals missing visible front teeth, no study of the way in which edentulous individuals were perceived in a social context and the potential social repercussions could be located. This initial study concerned college students’ perceptions of individuals missing visible upper front teeth. 200 volunteers, 19 to 50 years of age (M=20.6, SD=4.4), rated five photographs depicting tooth presence or absence, from a full dentition to missing as many as four upper front teeth, on social traits including attractiveness, health status, educational attainment, satisfaction with life, active social life, aggressiveness, intelligence, trustworthiness, amount of caring, friendship, dating, and likelihood to live as a neighbor. Analysis suggested a person missing visible teeth was more negatively perceived on all social traits than a person with full dentition. Results were strongest when students were proposed to be linked to the edentulous individual in a personal way, i.e., dating or living as neighbor. Men and women agreed on perceptions of social traits and dentition condition. These results suggest the presence of strong Western cultural values, whereby those who are missing teeth may experience significant barriers to personal and social success.

Anecdotes about the effect of missing teeth on one’s life success in the United States are common. For example, The New York Times Magazine featured photos of a college-educated woman who is missing front teeth and emphasized that at least one consequence of an edentulous condition might be employment options (Shipler, 2004). Within “A Poor Cousin from the Middle Class,” Shipler (2004) described a potential employer’s reaction to a woman missing visible front teeth in the following way:

Probably no employer would ever admit to passing her over because she was missing that radiant, tooth-filled smile that Americans have been taught to prize as highly as their right to vote. Caroline had learned to smile with her whole face, a sweet look that didn’t show her guns, yet

1Correspondence concerning this article should be addressed to Mary S. Willis, University of Nebraska Lincoln, Department of Anthropology, 929 Oldfather Hall, Lincoln, Nebraska 68588-0368 or e-mail (mwillis2@unl.edu).

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it came across as wistful, something less than the thousand-watt beam of friendly delight that the culture requires. Where showing teeth was an unwritten part of the job description, she did not excel. (p. 22)

What Shipley described might be true; yet no study was found with an exclusive focus on how a person with missing teeth is viewed by others. Consequently, the present study was designed to address a significant gap in the literature on social perception; how are individuals missing teeth perceived? What kinds of social penalties might be exacted upon those who do not replace their visibly missing front teeth? This study examined the perceptions held by university students of individuals missing as many as four upper front teeth, but with no other dental anomalies, to understand the potential effect of an edentulous condition alone on one's social success.

There is no doubt, at least in Western cultures, that when one has a visible dental anomaly, e.g., the incisors are crowded, too far apart, nonsymmetrically aligned or missing, the person is considered less attractive (Sergi & Strod, 1970; Shaw, 1981; Helm, Kreiborg, & Solow, 1985; Shaw, Rees, Dawe, & Charles, 1985; Kerosuo, Hausen, Laine, & Shaw, 1995; Wolfart, Brunzel, Freitag, & Kern, 2004). Moreover, it has been suggested that the mouth may be one of the most important components of facial attractiveness (Terry & Davis, 1976; Alley & Hildebrandt, 1988). Certainly, dental status influences one's own self-image and social behavior, perhaps because dental anomalies, and in particular a missing tooth, are considered 'unacceptable', whether restoration is possible or not (Helm, et al., 1985; Oosterhaven, Westert, & Schaub, 1989). Using full facial photographs and depicting multiple dental conditions in a series of facial snapshots, a single lateral incisor missing from the upper jaw was rated less favorably for friendliness, social class, popularity, and intelligence by a British sample; however, it was also noted in that study that general facial attractiveness was considered more influential to these rating outcomes (Shaw, 1981; Shaw, et al., 1985). Nevertheless, dental anomaly of any kind, and hence compromised facial attractiveness, is said to bring social disadvantage (Shaw, 1981; Kerosuo, et al., 1995) and an affirmation of the general construct related to overall facial attractiveness that "what is beautiful is good" (Dion, Berscheid, & Walster, 1972). So although there is evidence suggesting dental abnormality, particularly in the form of missing teeth, could affect life success, i.e., employment opportunities and professional outcomes (Jenny & Proshak, 1986), the role of one's social environment in terms of quality of life has not been measured (and hence clarified) for most dental conditions (Reisine, 1988; Oosterhaven, et al., 1989).

One's dental appearance has been described as a significant part of the way an individual presents himself in a social situation (Linn, 1966) and these self-evaluations appear to hold for all age categories (Shaw, 1981; Shaw,
PERCEPTIONS OF MISSING TEETH

et al., 1985; Matthias, Atchison, Schweitzer, Lubben, Mayer-Oakes, & De Jong, 1993). Also, those with missing teeth are said to be more self-conscious in social situations than those with a complete dentition (Linn, 1966). But it has also been suggested that, because the mouth contributes to one’s overall quality of life, to both dental and mental health, success and happiness are clearly linked to the function and appearance of the mouth (Giddon, 1987). Yet most research in dental esthetics has centered on dental materials, not on the social and psychological effects of dental conditions (Goldstein, 1993). When research has been conducted on social and psychological implications, the focus has been on how the individual with the anomaly perceives his condition (e.g., Ashworth, Davis, & Spriggs, 1996) but not on how others perceive the individual socially (e.g., Espeland & Stenvik, 1991). Consequently, the research design reported here was focused exclusively on how someone with visibly missing teeth is viewed by others who might be potential friends, employers, and peers.

In this study, the number of upper incisors present in photographs of an individual’s mouth and teeth was manipulated, and the students who participated were asked to rate the pictured individual mouth in terms of attractiveness, health status, aggressiveness, intelligence, friendship, dating, and likelihood of living as a neighbor. Given that, even with dental anomalies present, one’s overall facial attractiveness can strongly influence how one judges or rates personality attributes (Shaw, 1981; Shaw, et al., 1985), students were not asked to rate complete facial photographs that included missing teeth. Rather, students were presented with photographs that encompassed an individual’s mouth and teeth alone, a methodology now common to the assessment of dental appearance (e.g., Wolfart, et al., 2004; Brunzel, Kern, Freitag, & Wolfart, 2006). Because dental anomalies of any kind are considered unacceptable to patients and dental professionals (Helm, et al., 1985; Oosterhaven, et al., 1989), it was predicted that individuals with a natural and full dentition would receive the highest ratings across all social desirability traits with the exception of potential aggression. For this variable, it was predicted that a full dentition would be associated with the least aggressive rating scores, whereas individuals with one or more missing teeth would be viewed as more likely to be aggressive. Also, because men have indicated less concern over dental appearance than women (Neumann, Chris tensen, & Cavanaugh, 1989; Vallittu, Vallittu, & Lassila, 1996) and have been less likely to emphasize beauty over function (Carlsson, Wagner, Od man, Ekstrand, MacEntee, Marinello, Nanami, Ow, Sato, Speer, Strub, & Watanabe, 1998), it was anticipated that women would be more negative in their perceptions of social desirability for those missing teeth. Lastly, it was expected that for both men and women, as the number of upper front teeth decreased, so too would mean ratings of social desirability.
Participants

Two hundred students from a large midwestern university participated. Data for three participants were eliminated from analyses when it was clear that they had not followed rating instructions. The remaining participants, 98 men and 99 women, were undergraduates from 19 to 50 years of age (M = 20.6 yr., SD = 4.4), and all but six were of Euro-American ancestry. Of the remaining six students, four self-identified as Hispanic, while two indicated that they were of Middle Eastern ancestry.

Materials

Five black-and-white photographs, 2 in. (5.1 cm) × 3 in. (7.6 cm) in size and laminated on 6 in. (15.2 cm) × 8 in. (20.3 cm) white cards, were stimuli. Images of the upper jaw were created using a Pedodont, a dental apparatus manufactured by the Colombia Dental Corp. The Pedodont is a complete replica of the mouth, including the upper and lower palates, gumline, and all 32 teeth. The gumline and teeth are of natural colors and the model allows removal of individual teeth in varying combinations.

Photographs were taken using a Nikon Coolpix 2100, and images were loaded onto Adobe Photoshop, Version 5. A standard photograph of an open mouth was superimposed over each dental image so photographs appeared natural but were not readily identifiable in terms of sex, age, or ethnicity. Specifically, photographs were black and white and the mouth was the only portion of the face visible in each photograph to minimize features and characteristics that might signify sex or age (Fig. 1A–E). The photographs contained images of full and missing central and lateral incisors and were labeled as follows: Fig. 1A = full dentition; Fig. 1B = missing upper left central incisor (I1); Fig. 1C = missing both upper central incisors (Two I1); Fig. 1D = missing both upper lateral incisors (Two I2); and Fig. 1E = missing all four upper incisors (Two I1, Two I2).

Procedure

Participants were recruited on the campus in areas of high student density, including the student union building of the main campus and surrounding walkways leading to the central union facility. Students were asked to participate in a project concerning perceptions of people who are missing upper front teeth. If they agreed to participate, they were asked to complete a survey and rate photographs using a 7-point rating scale (see Table 1). On the scale, one was the lowest or most negative rating, while seven was the highest or most positive rating option. A 7-point scale was used to match the methodology of a dentofacial appearance study which included an individual with a single missing upper incisor as one of five conditions (e.g.,
Shaw, et al., 1985). The 7-point rating scale was selected because, as Alwin and Krosnick (1991) have reported, both direction and neutrality can be measured and more information can be communicated; so greater reliability of measurement is achieved (Alwin, 1997).

Photographs A to E were randomized for each participant to avoid presentation bias and then participants were asked to rate the dental photo-
graphs on social desirability traits or factors; attractiveness, health status, education, aggressiveness, satisfaction with life, active social life, intelligence, trustworthiness, and caring, and to rate their own friendship interest, dating interest, and the likelihood of living as a neighbor (Table 1). This resulted in a 2 (participant’s sex) × 5 (photographed dental depiction) mixed-model design, with repeated measures for the dental photograph condition and a between-participants’ condition for sex of the participant. The selected social desirability traits and factors were identified as common within other studies of attractiveness and dental status (Linn, 1966; Adams & LaVoie, 1974; Shaw, 1981; Shaw, et al., 1985; Chia, Allred, Grossnickle, & Lee, 1998; Eli, Bar-Tal, & Kostovetzki, 2001). A Cronbach alpha of .93 was obtained as a measure of internal reliability.

<table>
<thead>
<tr>
<th>TABLE 1</th>
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<tbody>
<tr>
<td><strong>SOCIAL TRAIT RATINGS SCALE</strong></td>
</tr>
</tbody>
</table>

Please answer the following using the scale provided for each question.

1. How attractive would someone be to you with these teeth?
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - Extremely Unattractive
   - Extremely Attractive

2. What would you rate the overall health status of the person in this photograph?
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - Extremely Unhealthy
   - Extremely Healthy

3. How educated is the person in this photograph?
   - No high school
   - Some high school
   - High school
   - Some college
   - College graduate+

4. How satisfied is the person in the photograph with their life?
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - Extremely Unsatisfied
   - Extremely Satisfied

5. Does this person have an active social life including many friends?
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - Extremely Inactive
   - Extremely Active

6. How would you rate the person in this photograph regarding aggressiveness?
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - Extremely Non-Aggressive
   - Extremely Aggressive

7. How intelligent is the person in this photograph?
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - Extremely Unintelligent
   - Extremely Intelligent

8. How trustworthy is the person in this photograph?
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - Extremely Untrustworthy
   - Extremely Trustworthy

9. How caring is the person in this photograph?
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - Extremely Uncaring
   - Extremely Caring

(continued on next page)
RESULTS

Using a general linear model, multivariate analyses of variance for repeated measures were conducted for the mixed-model effects on ratings of social desirability, with repeated measures for the photographs depicting dental conditions and a between-participants variable for sex.

As shown in Table 2, using a general linear model, the multivariate analyses for the within-participants dental condition indicated significant effects for perceptions of attractiveness (Wilks lambda $F_{4,59} = 7.05, p < .001, \eta^2 = .94$), health (Wilks lambda $F_{4,59} = 336.55, p < .001, \eta^2 = .88$), education (Wilks lambda $F_{4,59} = 183.21, p < .001, \eta^2 = .79$), satisfaction with life (Wilks lambda $F_{4,59} = 142.92, p < .001, \eta^2 = .75$), active social life (Wilks lambda $F_{4,59} = 158.80, p < .001, \eta^2 = .77$), intelligence, (Wilks lambda $F_{4,59} = 103.35, p < .001, \eta^2 = .68$), trustworthiness (Wilks lambda $F_{4,59} = 44.32, p < .001, \eta^2 = .58$).

<table>
<thead>
<tr>
<th>Social Trait</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attractive</td>
<td>6.1^a</td>
<td>0.9</td>
<td>2.7^b</td>
<td>1.2</td>
<td>1.9^c</td>
</tr>
<tr>
<td>Health</td>
<td>6.2^a</td>
<td>0.8</td>
<td>3.9^b</td>
<td>1.1</td>
<td>3.0^c</td>
</tr>
<tr>
<td>Education</td>
<td>4.5^a</td>
<td>0.6</td>
<td>3.3^b</td>
<td>0.9</td>
<td>2.8^c</td>
</tr>
<tr>
<td>Satisfaction with life</td>
<td>5.7^a</td>
<td>0.9</td>
<td>3.9^b</td>
<td>1.2</td>
<td>3.3^c</td>
</tr>
<tr>
<td>Active social life</td>
<td>5.8^a</td>
<td>0.9</td>
<td>4.1^b</td>
<td>1.2</td>
<td>3.5^c</td>
</tr>
<tr>
<td>Intelligent</td>
<td>5.4^a</td>
<td>0.9</td>
<td>4.0^b</td>
<td>1.1</td>
<td>3.4^c</td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>5.0^a</td>
<td>1.1</td>
<td>4.0^b</td>
<td>1.1</td>
<td>3.7^c</td>
</tr>
<tr>
<td>Caring</td>
<td>5.1^a</td>
<td>1.1</td>
<td>4.2^b</td>
<td>1.1</td>
<td>3.8^c</td>
</tr>
<tr>
<td>Friendship</td>
<td>5.9^a</td>
<td>0.9</td>
<td>4.1^b</td>
<td>1.4</td>
<td>3.4^c</td>
</tr>
<tr>
<td>Date</td>
<td>5.7^a</td>
<td>1.2</td>
<td>2.2^b</td>
<td>1.2</td>
<td>1.6^c</td>
</tr>
<tr>
<td>Neighbor</td>
<td>5.9^a</td>
<td>1.1</td>
<td>3.8^b</td>
<td>1.5</td>
<td>3.3^c</td>
</tr>
</tbody>
</table>

*Conditions: A = Full dentition; B = 1" (missing one central incisor); C = Two 1" (missing two central incisors); D = Two 2" (missing two outer incisors); E = Two 1", Two 1" (missing four incisors). Different superscripts indicate significant differences at $p < .05$. 
.48), caring (Wilks lambda $F_{4,392} = 41.31$, $p < .001$, $\eta^2 = .46$), friendship (Wilks lambda $F_{4,392} = 141.96$, $p < .001$, $\eta^2 = .75$), dating (Wilks lambda $F_{4,392} = 431.77$, $p < .001$, $\eta^2 = .90$), and living in neighborhood (Wilks lambda $F_{4,392} = 89.25$, $p < .001$, $\eta^2 = .65$). These analyses had large effect sizes, indicating that dentition has a meaningful association with social traits.

Using a general linear model, repeated comparisons post hoc examination of means indicated that the full dentition condition was significantly different from all other conditions ($p < .01$) for these social traits. The significant repeated-measures pair-wise comparisons of means ($p < .05$) are shown in Table 2.

Using a general linear model, a multivariate analysis indicated a significant interaction for within-participants dental condition and the between-participants sex of participants for perceptions of aggression (Wilks lambda $F_{4,392} = 2.38$, $p < .05$, $\eta^2 = .05$). An examination of the simple effects by participant’s sex for 98 men and 99 women indicated a significant main effect of dental condition on perceived aggression by men with repeated-measures corrections for the dental condition (Wilks lambda $F_{4,392} = 2.62$, $p < .04$, $\eta^2 = .10$) as shown in Table 3. Perceptions of aggression were lower with full dentition than for conditions with two central incisors missing or four incisors missing. The simple effect test for women was not significant ($p = .82$).

<table>
<thead>
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<th>TABLE 3</th>
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<tr>
<td>MEAN AGRRESSIVENESS RATINGS BY PHOTOGRAPHED CONDITION AND PARTICIPANTS’ SEX (N = 197)</td>
</tr>
<tr>
<td>Participants’ Sex</td>
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<tr>
<td>Sex</td>
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<tr>
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</tr>
<tr>
<td>Men</td>
</tr>
<tr>
<td>Women</td>
</tr>
</tbody>
</table>

*Conditions: A = Full dentition; B = One $I_1$ (missing one central incisor); C = Two $I_1$ (missing two central incisors); D = Two $I_1$ (missing two outer incisors); E = Two $I_1$, Two $I_2$ (missing four incisors). For men, different superscripts indicate significant differences at $p < .05$. For women there were no significant differences.

**Discussion**

These results suggested that the social implications for missing one or more visible front teeth are generally negative and may have far-reaching consequences. For example, highly qualified applicants who are missing teeth might be eliminated as a job prospect simply because they are perceived to be unhealthy and of limited intelligence. Similarly, social interactions and housing choices for a person with missing teeth may be constrained by perceptions associated with this dental condition. In this study, as predicted, when a single tooth was missing from the upper jaw, a clear rating of social perception changed. In many cases, the overall rating differences between photographs depicting an individual missing more than one tooth but in dif-
ferent locations were not significantly different. In other words, it did not
matter to the participants if the individuals missing teeth had the most cen-
tral teeth or the outer teeth missing; they were not interested in having a per-
sonal interaction with such a person. The individual with full dentition re-
ceived the most favorable ratings for all social variables, including attractiv-
eness, health status, intelligence, and potential as friend, date, and neighbor.
Likewise, the individual missing the largest number of teeth usually received
the lowest ratings for these same social characteristics. Although psychologi-
cal benefits for aesthetic improvement are often deemed more important to
individual patients than what might be accrued from receiving traditional
dental procedures (Christensen, 1989), replacement of missing teeth should
be considered as both aesthetic and standard, traditional practice—a proce-
dure not just about restoring one’s vanity but about functionality and need.
In fact, missing anterior teeth generally renders the opposing teeth useless
for functional occlusion, i.e., nipping and biting food (Willis, Schacht, &
Toothaker, 2005). Consequently, anterior tooth replacement should be con-
sidered a serious health issue and given a high priority for all individuals, re-
gardless of socioeconomic status, given the potential role in life quality and
social success (Giddon, 1987). Thus, for the most visible teeth, what is con-
sidered beautiful might be defined as something beyond good; what is cul-
turally defined as beautiful might be a necessary component of a healthy and
productive life. Recently conducted studies of dental restoration imply this is
true. For example, when patients received fixed bridges to restore missing
teeth, the majority noted “significant improvement in their lives,” including
improved self-image as well as functional ability (Blomberg & Lindquist,
1983). Likewise, surgery to correct dental alignment may lower social anxiety
and increase the quality of personal interactions (Lovius, Jones, Pospisil,

Ratings of aggression were surprising. That the individual in photo-
ograph A (with all teeth present) would be rated the least likely to be aggres-
sive in comparison with others missing one or more visible front teeth was
expected. In previous studies, a single missing incisor was often associated
with likelihood of aggression (Shaw, 1981); however, present findings indi-
cated men, but not women, rate full dentition and the absence of one or
two nonsequential teeth as indicative of aggression. When both central inci-
sors or all four incisors are missing, then aggression was rated higher than
full dentition. An entirely different outcome might have occurred had other
teeth been missing in the photographs, e.g., one or both maxillary canines
missing from the jaw. Among nonhuman primates, the canine teeth are most
often associated with aggression (Washburn & Choochon, 1974). Despite size
reduction within the human primate species, canines remain a distinctive
shape, have heavier roots, and on the average, are larger in men than wom-
en. Also, the linking of missing teeth with aggressive tendencies obtained in a British sample (Shaw, 1981) might reflect cultural differences between the British and U.S. samples. Nevertheless, this particular issue, whether missing specific teeth is likely to be associated with aggressive behavior, requires further investigation.

It was anticipated that women would give more negative ratings of social variables for those missing teeth given as in previous studies men exhibited less concern for dental appearance than women (Neumann, et al., 1989; Vallittu, et al., 1996) and were less likely to emphasize beauty over function (Carlsson, et al., 1998). In this study, however, the opposite was noted. Men’s ratings of aggressiveness, not women's, were significantly different for photographs with full dentition and those with some teeth missing from the upper jaw. Nevertheless, social constructs which linked an individual with missing teeth to the respondents’ personal sphere, e.g., dating or likelihood to live as neighbor, received equally low scores from men and women. That both groups differed on so few social ratings suggests that the standards for missing teeth in the U.S. are widespread and probably not differentially held by men and women. These results support previous research of dental-facial attractiveness whereby mean ratings by men and women were very similar (Tedesco, Albino, Cunat, Slakter, & Walz, 1983).

There may be ‘norms’ for what is considered an appropriate or standard dentofacial appearance in many if not most Western cultures (Linn, 1966; Peck & Peck, 1970; Ashworth, et al., 1996), one that prescribes all teeth be present. This standard may also be separate from socioeconomic status and the ability to change or alter one’s dental condition. In addition, there may be differences between men and women for some kinds of perceived dental conditions but not others. Perhaps presence of teeth is more central to a dental standard than, say, tooth color, shape, or alignment. Attractiveness ratings in the combined sample are much lower once a single tooth was missing, from a mean of 6.1 for a complete dentition to 2.7 for one missing lateral incisor. As Cunningham (1999) noted, the import of facial attractiveness cannot be overlooked. In this study, although the photograph depicting an individual missing all four upper incisors received the lowest ratings on all social variables, all conditions with missing dentition yielded marked and significantly lower mean ratings for attractiveness.

Although the exact number of individuals who are missing or lose anterior teeth during adulthood is unknown, between 1 and 2% of those with European ancestry have congenitally missing upper lateral incisors (Robertson & Mohlin, 2000). Also, one out of 20 middle-age adults in the USA is missing all permanent teeth.¹ Tooth decay, periodontal disease, and trau-

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mastic injury certainly result in anterior tooth loss, but the exact numbers of people missing teeth for any reason who cannot afford to replace them are unknown. The Centers for Disease Control note that 40% of those in lower socioeconomic categories have at least one untreated tooth with decay, compared with 16% of adults who are not poor, so the potential for tooth loss is high in adults in the USA. Fees for dental implant restoration are often based upon the complexity of the required procedure, but average costs are from $1,200 to $2,500 per implant or tooth restored. Dental insurance plans, if available, do not always cover this more permanent treatment option, but cover less costly, more temporary choices such as removable dentures. Because more persons in the USA are without dental insurance than medical insurance, it is certain that many would have to cover dental restoration costs themselves. Clearly, some have resources through dental insurance plans and expendable income to cover dental care but choose not to apply these resources to restoration. Given the potential effects of missing teeth on one’s life, perhaps the replacement of anterior teeth, particularly for those in the lower socioeconomic categories, could become a higher priority within government-subsidized and charitable dental care systems. Yet before this consideration can be realized, the social cost of missing teeth must be examined through studies that incorporate a more representative population, one diverse in ethnicity, education, sex, socioeconomic, and age.

Conclusion

Photographs of an individual’s mouth missing one or more visible front teeth were rated lower on several social characteristics than those with apparently full or complete dentition. Male and female college students rated individuals with missing teeth as less attractive, less healthy, and less intelligent. Students also suggested that they would be less likely to befriend, date, or live as a neighbor to one missing teeth. Although these negative ratings were highest for the photograph depicting an individual missing four upper front teeth, social rating scores for all individuals missing teeth (from one to four) were significantly different from a photograph of an individual whose dentition appeared to be complete. These results suggest that dental replacement, often viewed as an aesthetic desire, might be viewed more appropriately as important to dental health, as well as social and economic outcomes. The only social perception for which there were no significant differences had to do with aggressive behavior; in this study, all conditions depicting upper incisors received similar rating scores. Researchers must include assessments of individuals missing teeth from both the upper and lower jaws, as well as

other visible tooth positions (e.g., the canines) in future studies. Also, participants should be drawn from a larger and representative population, including persons of different ages, socioeconomic status, and ethnicities. If missing teeth is socially negatively perceived throughout one’s life, considering new options for covering dental restoration costs might be pertinent.

REFERENCES


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