2006

The Effect of Media Advertising on Consumer Perception of Orthodontic Treatment Quality

Daenya T. Edwards
Virginia Commonwealth University

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THE EFFECT OF MEDIA ADVERTISING ON CONSUMER PERCEPTION OF ORTHODONTIC TREATMENT QUALITY

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

by

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Thank you to Dr. Chad Fowler for the statistical analysis, and to dental students Jean Hong and Syed Kalim Hussein for help in organizing and entering the survey data. A special thank you to my parents, my sister Keisha, and my fiancée Paul for all their continued love and support. I could not have made it this far without being truly blessed, so my final thank you is to God for my health, my happiness, and the opportunity to be a part of the wonderful specialty of orthodontics.
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Abstract

THE EFFECT OF MEDIA ADVERTISING ON CONSUMER PERCEPTION OF ORTHODONTIC TREATMENT QUALITY

by

Daenya T. Edwards, D.M.D

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

Virginia Commonwealth University, 2006

Thesis Director: Bhavna Shroff, D.D.S., MDSc
Program Director, Department of Orthodontics

A survey instrument was designed to evaluate factors influencing consumer selection of an orthodontist and consumer perception of different forms of media advertising (radio, television, newspaper, magazine, direct mail, and billboard) by orthodontic practices. The surveys were distributed by 8 orthodontic offices in and around the Richmond, Virginia area. Out of 676 surveys, 655 (97%) were returned. Respondents most often cited dentist and patient referrals as how they learned of the orthodontic practices they visited (50%-57%). However, a caring attitude and good practitioner reputation were cited as the top reasons influencing selection of an orthodontist (53% and 49% respectively). Fourteen percent to 24% of respondents felt that advertising orthodontists would offer a lower quality of care than non-advertising orthodontists. Newspaper, magazine, and direct mail advertisements were viewed more favorably than radio, television and billboard advertisements. Chi-square analyses revealed few statistically significant differences in perception between different income and education groups.
CHAPTER 1

Introduction

The primary purpose of marketing is to present products or services to potential consumers in a manner which increases their desirability.\textsuperscript{1} In modern society, most providers of retail or professional services compete for consumers, and dental health care services are no exception. This is particularly true of orthodontics which can at times be regarded as a discretionary service.\textsuperscript{2}

The 6 main ways of acquiring orthodontic patients are through patient referrals, dentist referrals, staff referrals, visibility through community involvement, advertising, and insurance sources.\textsuperscript{3} Traditionally, most new patients in orthodontics are procured through general dentist referrals and patient referrals, which has typically yielded satisfactory patient numbers.\textsuperscript{3} According to the Journal of Clinical Orthodontics 2005 Orthodontic Practice Study of 506 orthodontic practices, general dentist referrals accounted for a median of 50\% of all referrals, and patient referrals accounted for a median of 30\% of all referrals.\textsuperscript{4} There was a median of 200 case starts per practice reported for the 2004 calendar year.\textsuperscript{4}

Most established orthodontic practices rely heavily on internal marketing strategies, which inspire referrals from patients and parents. Internal marketing involves interacting with existing patients in a deliberately effective and positive way; it encompasses the practice philosophy, climate of the practice, office design, interior décor, and quality of customer service.\textsuperscript{5} In contrast, external marketing is the promotional communication directed toward potential patients and referral sources.\textsuperscript{5}
Advertising, sponsorship exhibitions, sales promotions, and public relations are all forms of external marketing.

In the past, a number of professions imposed codes of conduct on their memberships that prohibited most promotional activities and deemed these activities unethical. In 1977, the US Supreme Court decision in Bates and O'Steen versus The State Bar of Arizona ruled that restraints on advertising by professionals violated the right to free speech protected under the First Amendment of the US Constitution. The Federal Trade Commission also sought to prohibit professional associations from restricting advertising, arguing that consumers should not be deprived of the free flow of information. In 1982, the Federal Trade Commission won its 7 year anti-trust suit against the American Medical Association, claiming that bans on physicians’ advertising reduced competition and resulted in higher prices for consumers. The American Dental Association amended its code of ethics in 1979 to remove restrictions on dentists’ advertising. Although dentists, physicians, lawyers, accountants and other professionals are now free to utilize advertising to solicit business, many professionals feel that advertising commercializes, and hence demeans, professional services. This issue is particularly conflicting for health care practitioners, because they are held to a very high ethical code, with maintenance and improvement of health as the primary goal.

Since 1977, there has been an increase in the use of advertising by health care professionals fueled by increased consumer awareness and escalating competition among providers. Darling and Bergiel described increasingly favorable attitudes of professionals toward the use of media advertising from 1977 to 1987, and Caruna in
1997 reported that, in the United States, the general public had a more positive attitude towards advertising than medical professionals.

Advertising can provide relevant information and can be a cost-effective way of fostering communication between providers and recipients of a service. Advertising also transmits news of innovative technology to consumers and can stimulate demands and markets for new and existing services. The co-founders of Invisalign, Kelsey Wirth and Zia Chishti, gambled that direct advertising to consumers would make their product so appealing that orthodontists would be enticed to offer it enthusiastically as one of their treatment options. Wirth, who estimated the company's 2004 sales to be $180 million, up from $122.7 million in 2003, stressed that the company would not have been as successful without the national consumer advertising campaign which directly targeted the affluent adult population.

Becker and Kaldenberg in 1990 conducted an exploratory survey of 386 dental practitioners in Oregon and 54% of the practices reported using media advertising (television, radio, magazines, or newspapers). Those most likely to advertise had either the smallest or largest practices based on annual gross income. The reported average annual advertising expenditure was $793 for solo practitioners, and $6,091 for group practices. The study also revealed that younger practitioners were more likely to advertise and that general practitioners were significantly more likely to use media advertising than specialists. Based on the 2005 Journal of Clinical Orthodontics Practice Study: 20.4% of American orthodontists advertised in local newspapers; 13.1% used direct mail promotions; 5.6% advertised on local radio; and 3.9% advertised on local television.
With increased oral health education, fluoride exposure, and sealant placement, there has been a steady decline in caries prevalence in the United States over the past 5 decades. From 1988 to 2002, the National Center for Chronic Disease Prevention and Health Promotion reported a reduction in the prevalence of caries of 10% among 6 to 19 year olds, and 6% among adults over 20 years old. White suggests that underutilized general dentists may find the field of orthodontics increasingly attractive, thus constricting the referral base that they have historically provided to orthodontic specialists. In 2006, the American Association of Orthodontists (AAO) Council on Communications is scheduled to initiate a public awareness campaign to educate consumers about orthodontic specialists. This campaign was initiated due to growing concerns from members that media focus on cosmetic make-overs and immediate smile improvement has prompted many non-orthodontists to provide cosmetic “quick fixes” by masking malocclusions. According to the AAO, this media bombardment can potentially jeopardize the orthodontic profession because the messages are reaching consumers who may be unaware that orthodontists are trained to correct malocclusions to optimal levels of esthetics, oral health, function, and stability. The AAO utilized focus groups as part of their market research, and reported that 112 out of 117 respondents screened were open to using their dentist for orthodontic services. A study by Hans in 2003 revealed that 11% of the 1047 Ohio high school students surveyed who received orthodontic treatment were treated by general dentists.

The current era will see more consumers who demand information and options as they make choices. According to McGarvey, the post-baby boom generation: generation X, (born between 1965-1980), is tech savvy, self-reliant, and more rule-shy than the past
generation of baby boomers. This subset of the American population, (44 million individuals), comprises the bulk of consumers currently seeking orthodontic treatment for themselves and their children. These generation X consumers are heavily influenced by the media and, thus, may be very receptive to media promotional strategies.18

Consumers seeking orthodontic services will do so on the basis of individual attitudes and perceptions as well as influential factors in the environment. Advertisements can be informative and tastefully designed to stimulate interest, educate consumers, and differentiate one practitioner from the others. However, many orthodontists are often hesitant to use media advertising due to cost concerns and the belief that a selective portion of consumers may interpret advertising as an indication of lesser treatment quality.5

There is little data available in the area of marketing in orthodontics. Research is needed to determine the effectiveness of various media strategies on attracting orthodontic patients, and to ascertain whether media advertising does in fact deter some potential patients. Deciding on which advertising strategies are likely to be most effective is a prudent course of action since high payout efforts maximize returns on time and energy.

**Purpose**

The purpose of the current study was to determine how consumers of orthodontic services perceive the treatment quality of orthodontic practitioners that utilize different forms of media advertising. The specific goals of the study were threefold:

1) to obtain demographic information on parents and adult patients in orthodontic practices and the main factors influencing their decisions to visit practices and
select orthodontic providers;

2) to determine how orthodontic consumers feel different forms of media advertising reflect the quality of treatment an orthodontist delivers;

3) to ascertain whether there is a difference in this perception among parents and adult patients in different income groups and with different education levels.

Null Hypotheses

Consumers perceive no difference in quality of treatment between orthodontic practitioners who use media advertising and those that do not use media advertising. Also, there is no difference in the perception between individuals in different income groups and with different education levels.
CHAPTER 2

Methods

A 2 1/2 page survey (Appendix A) consisting of 20 questions was developed by an orthodontic resident with input from an orthodontic faculty member, a statistician, the Virginia Commonwealth University Survey Research Lab, and 10 lay persons. Institutional Review Board approval was obtained. Thirty nine practitioners in the Richmond, Virginia metropolitan area with listings in the 2005 AAO directory were contacted by mail, phone call, or e-mail describing the study and seeking their involvement. Eight practitioners (11 sites) agreed to participate. Seven of the 8 participating offices were full-time solo-orthodontist practices. The remaining site was the Virginia Commonwealth University Orthodontic clinic. The solo practitioners were in practice an average of 23.5 years (range: 13 to 41 years).

The anonymous survey and an explanatory cover page were offered to parents and adult patients of the 11 sites. Participants were asked to complete the survey while waiting in the reception area and to place it in a provided collection box after completion. The survey sought information on consumer demographics, on factors influencing their selection of orthodontic practices, and on their perceptions of media advertising by health care professionals. Seventy five to 150 surveys were distributed to each site in January of 2006 (900 surveys total), and 676 of these surveys were offered to parents and adult patients. The surveys were collected after 4 weeks.

Statistical Analysis

The data from the surveys were entered into a Microsoft Excel spreadsheet by two research assistants and statistical analysis was computed using SAS statistical software
(SAS Institute Inc., Cary, NC). Descriptive statistics for demographic data and factors influencing consumer selection of an orthodontic practice were calculated. To determine whether the responses to advertising options differed significantly among different income and educational groups, Chi-square analysis was used. The significance level was set at $p \leq 0.05$. 

CHAPTER 3

Results

A total of 676 surveys were offered to parents and adult patients, and 655 surveys were returned, for a response rate of 97%. 510 (75%) surveys were filled out completely. When non-response to a question affected the validity of data analysis, the incomplete survey was not included in the analysis. The demographic characteristics of the respondents are shown in Tables 1 through 4.

Demographic Characteristics of Respondents

Table 1: Description of Respondents

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>494 (80%)</td>
</tr>
<tr>
<td>Male</td>
<td>123 (20%)</td>
</tr>
<tr>
<td>Married</td>
<td>513 (81%)</td>
</tr>
<tr>
<td>Unmarried</td>
<td>121 (19%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>42.8</td>
<td>8.2</td>
<td>18-83</td>
</tr>
<tr>
<td>Number in household</td>
<td>4.0</td>
<td>1.3</td>
<td>1-11</td>
</tr>
</tbody>
</table>

Table 2: Respondent Status

<table>
<thead>
<tr>
<th>Respondent status</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent of patient</td>
<td>517 (80%)</td>
</tr>
<tr>
<td>Patient of practice</td>
<td>80 (13%)</td>
</tr>
<tr>
<td>Both (parent of patient and patient)</td>
<td>47 (7%)</td>
</tr>
</tbody>
</table>
Table 3: Educational Levels of Respondents

<table>
<thead>
<tr>
<th>Highest Education Level</th>
<th>n</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some high school</td>
<td>17</td>
<td>(3%)</td>
</tr>
<tr>
<td>High school graduate</td>
<td>86</td>
<td>(13%)</td>
</tr>
<tr>
<td>Some college</td>
<td>167</td>
<td>(26%)</td>
</tr>
<tr>
<td>College graduate</td>
<td>248</td>
<td>(39%)</td>
</tr>
<tr>
<td>Post-graduate education</td>
<td>119</td>
<td>(19%)</td>
</tr>
</tbody>
</table>

Table 4: Annual Household Income (2004 pre-tax)

<table>
<thead>
<tr>
<th>Annual Household Income</th>
<th>n</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$25 000</td>
<td>45</td>
<td>(7%)</td>
</tr>
<tr>
<td>$25 000-$50 000</td>
<td>104</td>
<td>(17%)</td>
</tr>
<tr>
<td>$50 001-$75 000</td>
<td>116</td>
<td>(19%)</td>
</tr>
<tr>
<td>$75 001-$100 000</td>
<td>133</td>
<td>(22%)</td>
</tr>
<tr>
<td>$100 001-$125 000</td>
<td>101</td>
<td>(16%)</td>
</tr>
<tr>
<td>$125 001-$150 000</td>
<td>48</td>
<td>(8%)</td>
</tr>
<tr>
<td>$150 001-$175 000</td>
<td>20</td>
<td>(3%)</td>
</tr>
<tr>
<td>$175 001-$200 000</td>
<td>11</td>
<td>(2%)</td>
</tr>
<tr>
<td>&gt;$200 000</td>
<td>35</td>
<td>(6%)</td>
</tr>
</tbody>
</table>

Factors Influencing Selection of Orthodontic Providers

In the first section of the survey, respondents were asked to identify how many orthodontic practices they visited in their search for an orthodontist and how they became aware of the orthodontic practice(s) they visited. They were also asked to choose the top 3 factors which influenced their decision in selecting an orthodontic provider.

Of the 655 returned surveys, 59% of respondents reported visiting only one practitioner when seeking an orthodontist, 25% reported visiting two orthodontists and 16% reported visiting 3 or more offices (Figure 1).

Fifty seven percent of respondents learned of the orthodontic office(s) they visited through referral from a general dentist or a pediatric dentist (Figure 2). Fifty percent
reported learning of the office(s) through referral from friends or family. Visibility of the office/signage attracted 6% of respondents. Four percent of respondents became aware of the practice(s) they visited through Yellow Page advertisements and 1% through print advertisements and internet sites. These percentages total more than 100% because respondents were asked to select any option which applied, and some respondents selected multiple options.

The top factors reported in selection of an orthodontist were: caring attitude of the orthodontist (53%), a good reputation of the orthodontists (49%), dentist referral (38%), and convenient office location (38%)(Figure 3). Affordable fees and a convenient payment plan were each reported by 27% of respondents. Eighteen percent of respondents reported the atmosphere in the office, and 11% reported current treatment techniques as one of the top factors influencing their selection of an orthodontist.

**Consumer Perceptions of Media Advertising on Orthodontist Quality of Care**

In the second part of the survey, respondents were asked whether they felt health care providers that advertise through radio, television, newspapers, magazines, direct mail or billboards offer a quality of care which is the same as, better than, or lesser than the quality of care offered by providers that do not advertise in these ways. They were also asked whether this perception would hold true for orthodontic providers. In 94% of the responses to these questions, respondents reported that their view on advertising held true for orthodontists. The 6% of instances where perceptions did not pertain to orthodontists were excluded from the analysis so the conclusions drawn could be accurately applied to orthodontic professionals. Also, selections of “the same” or “better” were combined to simplify the analyses.
Overall, 78% of respondents felt the quality of care delivered by orthodontists who advertise on the radio was the same as, or better than, that of orthodontists that did not advertise in this way; 22% felt the quality of care of the orthodontists would be lower.

Eighty percent of respondents felt the quality of care delivered by orthodontists that advertise on television was the same as, or better than, that of orthodontists that did not advertise in this way; 20% felt the quality of the advertising orthodontists would be lower.

Eighty six percent of respondents felt the quality of care delivered by orthodontists that advertise in the newspaper was the same as, or better than, that of orthodontists that did not advertise in this way; 14% felt the quality of the advertising orthodontists would be lower.

Eighty six percent of respondents felt the quality of care delivered by orthodontists that advertise in magazines was the same as, or better than, that of orthodontists that did not advertise in this way; 14% felt the quality of the advertising orthodontists would be lower.

Eighty six percent of respondents felt the quality of care delivered by orthodontists that advertise through direct mail was the same as, or better than, that of orthodontists that did not advertise in this way; 14% felt the quality of the advertising orthodontists would be lower.

Seventy six percent of respondents felt the quality of care delivered by orthodontists that advertise on billboards was the same as, or better than, that of orthodontists that did not advertise this way; 24% felt the quality of the advertising orthodontists would be lower.
Significant Findings

Chi square analyses were used to assess whether there were any statistically significant differences in perception between respondents in different income groups or with different education levels. The analyses which revealed statistically significant differences between groups are presented in this section. All the Chi-square analyses are presented in Tables 5A through 7F.

Table 5D and Table 5E showed that respondents with annual household incomes greater than $50,000 viewed newspaper and magazine advertising more favorably than those with annual household incomes of lesser than, or equal to, $50,000. In other words, respondents with incomes of greater than $50,000 had a significantly higher proportion of individuals who felt the treatment quality of orthodontists that advertised in newspapers or magazines was the same as, or better than, orthodontists that did not advertise in these ways.

Table 5D Chi-square analysis for quality of care perception of practitioners advertising in the newspaper (Individuals with annual household income of less than, or equal to, \( \leq \) $50,000 vs. greater than \( > \) $50,000)

<table>
<thead>
<tr>
<th>Respondent Choice</th>
<th>Income ( \leq $50,000 ) n(%)</th>
<th>Income ( &gt;$50,000 ) n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>93 (79%)</td>
<td>359 (89%)</td>
<td>452 (86%)</td>
</tr>
<tr>
<td>Less</td>
<td>25 (21%)</td>
<td>46 (11%)</td>
<td>71 (14%)</td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
<td>405</td>
<td>523</td>
</tr>
</tbody>
</table>

DF=1 Chi-square value= 7.5233 \( p = .0061 \)
Table 5E Chi-square analysis for quality of care perception of practitioners advertising in magazines (Individuals with annual household income of less than, or equal to, $50 000 vs. greater than $50 000)

<table>
<thead>
<tr>
<th>Magazine</th>
<th>Respondent Choice</th>
<th>Income ≤$50 000 n(%)</th>
<th>Income &gt;$50 000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Better or Same</td>
<td>93 (78%)</td>
<td>361 (89%)</td>
<td>454 (86%)</td>
</tr>
<tr>
<td></td>
<td>Less</td>
<td>26 (22%)</td>
<td>49 (11%)</td>
<td>75 (14%)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>119</td>
<td>410</td>
<td>529</td>
</tr>
</tbody>
</table>

DF=1, Chi-square value = 7.4254, p = .0064

The Chi-square analyses for radio, television, direct mail, and billboards did not reveal any significant difference between respondents with annual household incomes less than, or equal to, $50 000 and greater than $50 000. (p > .05; Tables 5A, 5B, 5C, 5F).

When the respondents were split into groups of College graduates vs. non-College graduates (Tables 6A-6F), the College graduate group had statistically significantly higher proportions of individuals who felt that practitioners with television and billboard advertisements were more likely to deliver a lower quality of care.

Table 6B Chi-square analysis for quality of care perception of practitioners advertising on television (College graduates vs. Non-College graduates)

<table>
<thead>
<tr>
<th>Television advertising</th>
<th>Non-College Graduate n(%)</th>
<th>College Graduate n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>184 (85%)</td>
<td>247 (76%)</td>
<td>431 (80%)</td>
</tr>
<tr>
<td>Less</td>
<td>32 (15%)</td>
<td>76 (24%)</td>
<td>108 (20%)</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>323</td>
<td>539</td>
</tr>
</tbody>
</table>

DF=1, Chi-square value = 6.1353, p = .0133
Table 6F Chi-square analysis for quality of care perception of practitioners advertising on billboards (College graduates vs. Non-College graduates)

**Billboard advertising**

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Non-College Graduate n(%)</th>
<th>College Graduate n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>178 (83%)</td>
<td>229 (71%)</td>
<td>407 (76%)</td>
</tr>
<tr>
<td>Less</td>
<td>36 (17%)</td>
<td>94 (29%)</td>
<td>130 (24%)</td>
</tr>
<tr>
<td>Total</td>
<td>214</td>
<td>323</td>
<td>537</td>
</tr>
</tbody>
</table>

DF = 1, Chi-square = 10.5787,  \( p = .011 \)

The College graduates were more likely to view television and billboard advertisements unfavorably. The Chi-square analyses for radio, newspaper, magazine, and direct mail did not reveal a statistically significant difference between the college graduates and non-graduates \( (p > .05; \) Tables 6A, 6C, 6D, 6E).

When the extremes of annual household income were compared, (less than, or equal to, $50,000 versus greater than $150,000), the only statistically significant difference in perception was seen for billboard advertising (Table 7F).

Table 7F Chi-square analysis for quality of care perception of practitioners advertising on billboards (Individuals with annual household income of less than, or equal to, $50,000 vs. greater than $150,000)

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Income \leq $50,000 n(%)</th>
<th>Income &gt;$150,000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>92 (79%)</td>
<td>35 (60%)</td>
<td>127 (73%)</td>
</tr>
<tr>
<td>Less</td>
<td>24 (21%)</td>
<td>23 (40%)</td>
<td>47 (27%)</td>
</tr>
<tr>
<td>Total</td>
<td>116</td>
<td>58</td>
<td>174</td>
</tr>
</tbody>
</table>

DF = 1, Chi-square value = 7.0544,  \( p = .0079 \)

The proportion of individuals in the high income category who felt billboard advertising reflected a lower quality of care (40%) was about twice that of the lower income category (21%). The Chi-square analyses between the high and low income categories for radio, television, newspaper, magazines, and direct mail did not reveal
statistically significant differences between perceptions in these groups (p > .05; Tables 7A, 7B, 7C, 7D, 7E).
CHAPTER 4

Discussion

The orthodontic practitioner who wishes to maximize income potential should be poised to adapt to the shifting nature of modern dentistry as well as to changes in consumer demographics and attitudes. Effective marketing strategies are almost as important as good clinical skills in ensuring a successful practice. This study evaluated the factors consumers considered most important in their selection of an orthodontic practitioner, the attitudes of these consumers toward media advertising by orthodontic practices, and the demographics of orthodontic consumers. The data presented in this report will provide orthodontic practitioners with information that may be useful for tailoring marketing strategies for the orthodontic office.

Demographics of Orthodontic Consumers

The results of this study suggest that up to 40% of orthodontic consumers do some “shopping” for an orthodontist. This is not surprising since the submissive patient prevalent in past times has given way to the more informed and proactive patient of modern times. These patients are very concerned about receiving optimal care. They are interested in knowing the treatment options and want to play an active role in treatment decisions.

The respondents to this survey (N=655) were predominantly female (80%), married (81%), parents of patients (87%), and in their early 40’s (average age 42.8 years). This is the population subset which makes the most decisions in selection of an orthodontic provider. Thus, the greatest emphasis should be placed on attracting mothers of adolescents and pre-adolescents to the orthodontic practice. Based on survey
results from over 1000 consumer households, the AAO also determined that the target audience for orthodontic services were mothers with children aged 5-17 years old.\textsuperscript{16} According to the AAO, this target consumer is also internet savvy, has some college education, and an annual household income of over $50 000. The present survey reflects most of these findings. The majority of respondents were college graduates (58%), and 84\% had at least some college education. Seventy six percent had an annual household income of greater than $50 000, and 57\% had an annual household income of greater than $75 000.

Factors Influencing Selection of an Orthodontic Provider

Respondents most often cited dentist and patient referrals as how they learned of the orthodontic practices they visited (57\% and 50\% respectively). This indicates that consumers first and foremost value the opinion of a trusted party in their consideration of an orthodontic provider, and underscores the strength of word of mouth and dentist referrals. Signage attracted 6\% of respondents, and advertising sources (yellow pages, print, and internet) a maximum of 4\% of respondents. These reported percentages indicate that it may not be prudent to put finances and energy into media advertising. However, according to White\textsuperscript{15}, Orthodontic Management Service Organizations have achieved marked success advertising directly to the public via radio and television. In the present study, only one of the eight participating orthodontic offices used media advertising, therefore the majority of respondents might not be an accurate reflection of advertisement-susceptible consumers. Also, advertising campaigns must be implemented tactically to maximize their effectiveness. According to Ascher,\textsuperscript{19} without continuity, advertisements cannot be expected to be effective. It takes at least 6 or 7
exposures for an impression to form in the average person’s memory, so running a series of advertisements is recommended for maximal benefit.¹⁹

The caring attitude of the practitioner was listed as the top reason influencing respondents to select an orthodontist (53%). This was closely followed by the practitioner’s good reputation (49%). A study in 1999 by Walley et al.²⁰ on patient and parent preferences for orthodontic practices also concluded that the reputation of the practitioner (43%), along with the level of caring attitude the office projected (40%), were among the most influential factors leading to selection of an orthodontist. In the present study, the next most influential factors were a dentist’s referral (38%) and a convenient office location (38%). The disparity between the proportion of patients visiting a practice due to a dentist referral (59%) and the proportion selecting a practice for treatment due a dentist referral (38%) reflects that other factors, such as the compassion of the orthodontic practitioner, can be weighed more heavily in the selection decision than a good referral. Finally, the fee and payment plan seemed equally as influential in the selection decision and were each reported by 27% of respondents. This is different from the results found by Walley et al.²⁰ showing that the payment plan, but not the cost of treatment, was a critical element in the decision process.

Consumer Perceptions of Media Advertising on Orthodontist Quality of Care

Respondents of the present survey were asked how they felt different forms of media advertising reflected the “quality of care” an orthodontist was likely to deliver. The interpretation of the term “quality of care” was left up to the respondents. Although some respondents might have interpreted this term to indicate the quality of the orthodontic outcome, and others, the level of customer service, a negative perception of
any interpretation of quality of care implied that the consumer viewed the practice unfavorably and would be less likely to seek treatment there. The majority of respondents, (76% to 86% depending on the advertising modality), reported feeling that orthodontists that advertise through radio, television, newspapers, magazines, direct mail, and billboards offer a quality of care which is the same as, or better than, those that do not advertise in these ways. Thus, 14% to 24% of respondents felt that orthodontists that use media advertising offer a lower quality of care than those that do not. The present study did not assess consumer perceptions toward Yellow Pages or practice internet sites since these forms of advertising require an active search on the part of the consumer and are thus less intrusive, and assumedly less objectionable, marketing methods.

Overall, newspaper, magazines, and direct mail advertising were viewed more favorably than the other modes of advertising, (radio, television, and billboards). Eighty six percent of respondents felt that the quality of care delivered by practitioners that advertise using newspaper, magazine, or direct mail was the same as, or better than, that of practitioners that did not advertise in these ways. For radio advertising, 80% of respondents felt that the quality of care delivered by practitioners was the same as, or better than, that of non-advertising practitioners, and this proportion was 78% for television advertising. Billboard advertising was the least favorable mode of advertising; 75% of respondents felt that the quality of care delivered by practitioners advertising on billboards was the same as, or better than, that of non-advertising practitioners. These patterns were also maintained for the subgroups of respondents based on income or education levels. Elliot and Peck suggested that individuals are more likely to develop negative attitudes about advertisements in a medium they have
less control over. With newspaper, magazine, and direct mail advertisements, consumers can simply discard or flip the page to avoid an advertisement. However, broadcast media (radio and television) and billboard advertisements are more difficult to ignore and are more likely to be considered intrusive. This might explain why, in the present study, radio, television and billboard advertising were not perceived as favorably as newspaper, magazine, and direct mail advertisements.

The majority of the Chi-square analyses revealed no statistically significant difference in quality of care perception between different income groups and groups with different educational levels. However, when there were statistically significant differences, the groups with higher income and educational levels viewed television and billboard advertising less favorably and newspaper and magazine advertisements more favorably than the groups with lower income and educational levels.

The relatively high proportion of respondents with favorable perceptions of advertising orthodontists may be somewhat surprising to practitioners. However, other studies have shown that the general public has a substantially more positive view toward advertising than health care professionals. A study by Shapiro and Majewski revealed that consumer groups demonstrated a significantly higher approval of dental advertising messages than dentists. Eighty three percent (n=83) of consumer participants responded positively to the statement “I favor the use of advertising by dentists seeking to attract new patients”; only 20% (n=22) of dentists responded positively. Sixty nine percent of these consumers felt that advertising by dentists would allow consumers to make informed choices; 12% of dentists agreed. This study also found that lower income respondents were somewhat more receptive to dental services advertising. The authors
concluded that although a dentist may elicit disapproval from non-advertising professional colleagues, he or she will not lose the esteem of the majority of consumers. Even though Shapiro and Majewski’s study was conducted over 2 decades ago, results of the present study support their conclusion.

Surveys are subject to misinterpretation and false or inaccurate reporting which may weaken the validity of the results. Although the survey instrument in this study was carefully constructed and pre-tested, such problems cannot be totally eliminated. Also, despite the substantial number of surveys collected (N=655), the income and education sub-groups were at times relatively small and this could have resulted in misleading significant or insignificant statistical findings. A larger number of surveys would have strengthened the study and minimized analysis shortcomings. Continued research is needed in the area of marketing in orthodontics to ensure the highest return on marketing efforts. This is of particular importance since practitioner perceptions may be quite disparate from consumer perceptions. By strategically marketing orthodontic services, the number of patients seeking orthodontists’ treatment will be maximized, and orthodontists’ success and control over their specialty will be maintained.
CHAPTER 5

Conclusions

This study evaluated the attitudes of orthodontic consumers toward media advertising by orthodontic practices. Demographic data on orthodontic consumers was obtained, as well as factors influential in their selection of an orthodontist.

The results indicated that those making orthodontist selection decisions are predominantly female (80%), married (81%) and in their early 40’s (average age of 42.8y). Fifty eight percent are college graduates, and 75% have annual household incomes of greater than $50 000.

Dentist and patient referrals were cited most often as how consumers learned of the orthodontic practices they visited (57% and 50% respectively). However, a caring attitude and good practitioner reputation were reported as the top reasons influencing respondents to select an orthodontist (53% and 49% respectively).

The data suggested that 14% to 24% of respondents felt that orthodontists that advertise offer a lower quality of care than those that do not advertise. Newspaper, magazine, and direct mail advertisements were viewed more favorably than radio, television and billboard advertisements. Most analyses revealed no statistically significant differences in perception between different income groups and between groups with different education levels. However, when there were significant differences, the groups with higher income and education levels viewed television and billboard advertising less favorably and newspaper and magazine advertisements more favorably than the groups with lower income and education levels.
Orthodontists are not exempt from feeling the effects of changing demographics, attitudes, and values. The better prepared they are to recognize and adapt to changes, the greater the benefit to the public, the specialty, and the individual orthodontist.
Literature Cited


Accessed April 14 2006.


21. Elliot MT, Speck PS. Consumer Perceptions of Advertising Clutter and its Impact

Number of offices visited by respondents when seeking orthodontic treatment (N=655)
Ways in which respondents became aware of the orthodontic practices they visited in their search for an orthodontist (N=655)*

(*These percentages when combined are more than 100% because respondents were asked to select any option which applied, and some respondents selected multiple options.)
Most influential factors in selection of an orthodontic provider (N=655)*

(*These percentages when combined are more than 100% because respondents were asked to select the top three factors.)
Chi-square analyses of quality of care perception of advertising practitioners between individuals with annual household income of less than, or equal to, $50 000 and greater than or equal to, $50 000

Table 5A
Radio

<table>
<thead>
<tr>
<th>Respondent Choice</th>
<th>Income ≤$50 000 n(%)</th>
<th>Income &gt; $50 000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>94 (80%)</td>
<td>309 (79%)</td>
<td>403 (79%)</td>
</tr>
<tr>
<td>Less</td>
<td>24 (20%)</td>
<td>83 (21%)</td>
<td>107 (21%)</td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
<td>392</td>
<td>510</td>
</tr>
</tbody>
</table>

DF = 1  Chi-square value = 0.0381  Prob. = .8452

Table 5B
Television

<table>
<thead>
<tr>
<th>Respondent Choice</th>
<th>Income ≤$50 000 n(%)</th>
<th>Income &gt; $50 000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>96 (82%)</td>
<td>322 (80%)</td>
<td>418 (80%)</td>
</tr>
<tr>
<td>Less</td>
<td>21 (18%)</td>
<td>80 (20%)</td>
<td>101 (20%)</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>402</td>
<td>519</td>
</tr>
</tbody>
</table>

DF = 1  Chi-square value = 0.2235  Prob. = .6388

Table 5C
Newspaper

<table>
<thead>
<tr>
<th>Respondent Choice</th>
<th>Income ≤$50 000 n(%)</th>
<th>Income &gt; $50 000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>93 (79%)</td>
<td>359 (89%)</td>
<td>452 (86%)</td>
</tr>
<tr>
<td>Less</td>
<td>25 (21%)</td>
<td>46 (11%)</td>
<td>71 (14%)</td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
<td>405</td>
<td>523</td>
</tr>
</tbody>
</table>

DF = 1  Chi-square value = 7.5233  Prob. = .0061  Significant

Table 5D
Magazine

<table>
<thead>
<tr>
<th>Respondent Choice</th>
<th>Income ≤$50 000 n(%)</th>
<th>Income &gt; $50 000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>93 (78%)</td>
<td>361 (89%)</td>
<td>454 (86%)</td>
</tr>
<tr>
<td>Less</td>
<td>26 (22%)</td>
<td>49 (11%)</td>
<td>75 (14%)</td>
</tr>
<tr>
<td>Total</td>
<td>119</td>
<td>410</td>
<td>529</td>
</tr>
</tbody>
</table>

DF = 1  Chi-square value = 7.4254  Prob. = .0064  Significant
### Table 5E
**Direct mail**

<table>
<thead>
<tr>
<th>Respondent Choice</th>
<th>Income ≤$50 000 n(%)</th>
<th>Income &gt; $50 000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>95 (82%)</td>
<td>349 (87%)</td>
<td>444 (86%)</td>
</tr>
<tr>
<td>Less</td>
<td>21 (18%)</td>
<td>51 (13%)</td>
<td>72 (14%)</td>
</tr>
<tr>
<td>Total</td>
<td>116</td>
<td>400</td>
<td>516</td>
</tr>
</tbody>
</table>

DF = 1  
Chi-square value = 2.1464  
Prob. = .1429

### Table 5F
**Billboard**

<table>
<thead>
<tr>
<th>Respondent Choice</th>
<th>Income ≤$50 000 n(%)</th>
<th>Income &gt; $50 000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>92 (79%)</td>
<td>302 (76%)</td>
<td>394 (76%)</td>
</tr>
<tr>
<td>Less</td>
<td>24 (21%)</td>
<td>98 (24%)</td>
<td>122 (24%)</td>
</tr>
<tr>
<td>Total</td>
<td>116</td>
<td>400</td>
<td>516</td>
</tr>
</tbody>
</table>

DF = 1  
Chi-square value = 0.7232  
Prob. = .3951
### Tables 6A-6F

Chi-square analyses of quality of care perception of advertising practitioners between Non-College graduates and College graduates

#### Table 6A
**Radio advertising**

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Non-College Graduate n(%)</th>
<th>College Graduate n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>176 (82%)</td>
<td>239 (76%)</td>
<td>415 (78%)</td>
</tr>
<tr>
<td>Less</td>
<td>39 (18%)</td>
<td>76 (24%)</td>
<td>115 (22%)</td>
</tr>
<tr>
<td>Total</td>
<td>215</td>
<td>315</td>
<td>530</td>
</tr>
</tbody>
</table>

DF=1, Chi-square value = 2.6963, Prob. = .1006

#### Table 6B
**Television advertising**

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Non-College Graduate n(%)</th>
<th>College Graduate n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>184 (85%)</td>
<td>247 (77%)</td>
<td>431 (80%)</td>
</tr>
<tr>
<td>Less</td>
<td>32 (15%)</td>
<td>76 (23%)</td>
<td>108 (20%)</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>323</td>
<td>539</td>
</tr>
</tbody>
</table>

DF=1, Chi-square value = 6.1353, Prob. = .0133 Significant

#### Table 6C
**Newspaper advertising**

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Non-College Graduate n(%)</th>
<th>College Graduate n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>193 (87%)</td>
<td>277 (86%)</td>
<td>470 (86%)</td>
</tr>
<tr>
<td>Less</td>
<td>28 (13%)</td>
<td>46 (14%)</td>
<td>74 (14%)</td>
</tr>
<tr>
<td>Total</td>
<td>221</td>
<td>323</td>
<td>54</td>
</tr>
</tbody>
</table>

DF = 1, Chi-square value = 0.2758, Prob. = .5994

#### Table 6D
**Magazine advertising**

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Non-College Graduate n(%)</th>
<th>College Graduate n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>192 (86%)</td>
<td>280 (85%)</td>
<td>472 (86%)</td>
</tr>
<tr>
<td>Less</td>
<td>30 (14%)</td>
<td>48 (15%)</td>
<td>78 (14%)</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>328</td>
<td>550</td>
</tr>
</tbody>
</table>

DF=1, Chi-square value = 0.1366, Prob. = .7117
Table 6E  
**Direct mail advertising**

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Non-College Graduate</th>
<th>College Graduate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n(%)</td>
<td>n(%)</td>
<td>n(%)</td>
</tr>
<tr>
<td>Better or Same</td>
<td>191 (89%)</td>
<td>269 (84%)</td>
<td>460 (86%)</td>
</tr>
<tr>
<td>Less</td>
<td>24 (11%)</td>
<td>52 (16%)</td>
<td>76 (14%)</td>
</tr>
<tr>
<td>Total</td>
<td>215</td>
<td>321</td>
<td>536</td>
</tr>
</tbody>
</table>

DF = 1,  
Chi-square value = 2.6842,  
Prob = .1014

Table 6F  
**Billboard advertising**

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Non-College Graduate</th>
<th>College Graduate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n(%)</td>
<td>n(%)</td>
<td>n(%)</td>
</tr>
<tr>
<td>Better or Same</td>
<td>178 (83%)</td>
<td>229 (71%)</td>
<td>407 (76)</td>
</tr>
<tr>
<td>Less</td>
<td>36 (17%)</td>
<td>94 (29%)</td>
<td>130 (24%)</td>
</tr>
<tr>
<td>Total</td>
<td>214</td>
<td>323</td>
<td>537</td>
</tr>
</tbody>
</table>

DF = 1,  
Chi-square = 10.5787,  
Prob. = .011, Significant
**Tables 7A-7F**

Chi-square analyses of quality of care perception of advertising practitioners between individuals with annual household income of less than, or equal to, $50,000 and greater than $150,000

**Table 7A**
**Radio advertising**

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Income ≤$50,000 n(%)</th>
<th>Income &gt;$150,000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>94 (79.7)</td>
<td>39 (72.2%)</td>
<td>133 (77%)</td>
</tr>
<tr>
<td>Less</td>
<td>24 (20.3%)</td>
<td>15 (27.8%)</td>
<td>39 (23%)</td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
<td>54</td>
<td>172</td>
</tr>
</tbody>
</table>

DF=1, Chi-square value=1.1692 Prob.=.2796

**Table 7B**
**Television**

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Income ≤$50,000 n(%)</th>
<th>Income &gt;$150,000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>96 (82%)</td>
<td>41 (72%)</td>
<td>137 (79%)</td>
</tr>
<tr>
<td>Less</td>
<td>21 (18%)</td>
<td>16 (28%)</td>
<td>37 (21%)</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>57</td>
<td>174</td>
</tr>
</tbody>
</table>

DF=1, Chi-square value=2.3452 Prob.=.1257

**Table 7C**
**Newspaper**

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Income ≤$50,000 n(%)</th>
<th>Income &gt;$150,000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>93 (79%)</td>
<td>48 (83%)</td>
<td>141 (80%)</td>
</tr>
<tr>
<td>Less</td>
<td>25 (21%)</td>
<td>10 (17%)</td>
<td>35 (20%)</td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
<td>58</td>
<td>176</td>
</tr>
</tbody>
</table>

DF=1, Chi-square value=0.3799 Prob.=.5377

**Table 7D**
**Magazine**

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Income ≤$50,000 n(%)</th>
<th>Income &gt;$150,000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>93 (78%)</td>
<td>48 (81%)</td>
<td>141 (79%)</td>
</tr>
<tr>
<td>Less</td>
<td>26 (22%)</td>
<td>11 (19%)</td>
<td>37 (21%)</td>
</tr>
<tr>
<td>Total</td>
<td>119</td>
<td>59</td>
<td>178</td>
</tr>
</tbody>
</table>

DF=1, Chi-square value=0.2460 Prob.=.6199
Table 7E
Direct mail

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Income ≤$50 000 n(%)</th>
<th>Income &gt;$150 000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>95 (82%)</td>
<td>47 (82%)</td>
<td>142 (82%)</td>
</tr>
<tr>
<td>Less</td>
<td>21 (18%)</td>
<td>10 (18%)</td>
<td>31 (18%)</td>
</tr>
<tr>
<td>Total</td>
<td>116</td>
<td>57</td>
<td>173</td>
</tr>
</tbody>
</table>

DF=1, Chi-square value= 0.0081 Prob.= .9821

Table 7F
Billboard

<table>
<thead>
<tr>
<th>Respondent choice</th>
<th>Income ≤$50 000 n(%)</th>
<th>Income &gt;$150 000 n(%)</th>
<th>Total n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better or Same</td>
<td>92 (79%)</td>
<td>35 (60%)</td>
<td>127 (73%)</td>
</tr>
<tr>
<td>Less</td>
<td>24 (21%)</td>
<td>23 (40%)</td>
<td>47 (27%)</td>
</tr>
<tr>
<td>Total</td>
<td>116</td>
<td>58</td>
<td>174</td>
</tr>
</tbody>
</table>

DF=1, Chi-square value=7.0544 Prob.= .0079 Significant
Request for participation in research project:

To fulfill the Master’s component of the Virginia Commonwealth University Orthodontic Residency Program, I am conducting a research project looking at consumer perceptions of mass media advertising on orthodontic office quality of care.

Attached is an anonymous questionnaire which allows me to include your views so better informed decisions can be made when tailoring marketing strategies for orthodontic offices. The questionnaire has 20 questions and usually takes no longer than 10 minutes to complete. Your participation is voluntary and no identifying information (e.g. name, date of birth, social security number) is required.

Your orthodontic provider and staff will not have access to your questionnaire. When you have completed the questionnaire, simply fold it and seal it in the envelope provided and place it in the labeled, secure, drop box where it will be picked up by a VCU research participant.

Each participant should not complete this questionnaire more than once, however, it is okay for adults from the same household to fill out separate surveys.

Thank you for your time and participation.

Daenya Edwards, DMD
VCU Orthodontic Resident
Survey

1. How many orthodontic practices did you visit in your search for an orthodontist? ______

2. How did you learn about the orthodontic practice(s) that you visited in your search for an orthodontist? (select all that apply)
   - A. Referral from general dentist or pediatric dentist
   - B. Referral from friend or family
   - C. Referral from orthodontic office staff
   - D. Visibility of office
   - E. Yellow pages
   - F. Internet site
   - G. Radio
   - H. TV
   - I. Print advertisement (Newspaper, Magazine)
   - J. Mail-out
   - K. Other

3. Please select the top three factors which influenced your decision in selecting an orthodontist?
   - A. Referred by another health care provider
   - B. Reputation with other patients
   - C. Orthodontist personal, caring attitude toward patients
   - D. Convenient location of office
   - E. Atmosphere in the office (surroundings and office staff)
   - F. Affordable fees
   - G. Accepts public aid
   - H. Payment plan that met my needs
   - I. Orthodontists membership in community organizations
   - J. Office uses the latest techniques
   - K. Other

For questions 4-9, please circle your choice

4. In your opinion, do health care providers that advertise on the radio deliver the same / better / lesser quality of care as providers that do not advertise in this way?
   - Do you think this would hold true for orthodontic providers? Yes / No
   - If No, explain: __________________________
5. In your opinion, do health care providers that advertise on television deliver the same / better / lesser quality of care as providers that do not advertise in this way?

Do you think this would hold true for orthodontic providers? Yes / No
If No, explain: ________________________________

6. In your opinion, do health care providers that advertise in newspapers deliver the same / better / lesser quality of care as providers that do not advertise in this way?

Do you think this would hold true for orthodontic providers? Yes / No
If No, explain: ________________________________

7. In your opinion, do health care providers that advertise in magazines deliver the same / better / lesser quality of care as providers that do not advertise in this way?

Do you think this would hold true for orthodontic providers? Yes / No
If No, explain: ________________________________

8. In your opinion, do health care providers that advertise using mass mail-outs deliver the same / better / lesser quality of care as providers that do not advertise in this way?

Do you think this would hold true for orthodontic providers? Yes / No
If No, explain: ________________________________

9. In your opinion, do health care providers that advertise on billboards deliver the same / better / lesser quality of care as providers that do not advertise in this way?

Do you think this would hold true for orthodontic providers? Yes / No
If No, explain: ________________________________

10. Number of children who have had orthodontic treatment completed in the past:_____

11. Number of children currently undergoing orthodontic treatment:_____

12. Number of children who have had orthodontic treatment completed in the past:_____

13. Number of children currently undergoing orthodontic treatment:_____

14. Number of children who have had orthodontic treatment completed in the past:_____

15. Number of children currently undergoing orthodontic treatment:_____

16. Number of children who have had orthodontic treatment completed in the past:_____

17. Number of children currently undergoing orthodontic treatment:_____

18. Number of children who have had orthodontic treatment completed in the past:_____

19. Number of children currently undergoing orthodontic treatment:_____

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131. Number of children currently undergoing orthodontic treatment:_____

132. Number of children who have had orthodontic treatment completed in the past:_____

133. Number of children currently undergoing orthodontic treatment:_____

134. Number of children who have had orthodontic treatment completed in the past:_____

135. Number of children currently undergoing orthodontic treatment:_____
12. Number of *untreated* children expected to need orthodontic treatment: ______

13. Are you a: ☐ patient of this practice / ☐ parent or guardian of a patient / ☐ both

14. Your Age: _____

15. Your Gender: ☐ M / ☐ F

16. Marital Status: ☐ Never married
   ☐ Married
   ☐ Separated
   ☐ Divorced
   ☐ Widowed

17. Which of the following best describes your highest level of education?

   ☐ Some high school
   ☐ High School Graduate
   ☐ Some College
   ☐ College Graduate
   ☐ Post Graduate

18. Annual Household Income *(2004 pre-tax)*:

   ☐ Less than $25 000
   ☐ $25 001-$50 000
   ☐ $50 001-$75 000
   ☐ $75 001-$100 000
   ☐ $100 001-$125 000
   ☐ $125 001-$150 000
   ☐ $150 001-$175 000
   ☐ $175 001-$200 000
   ☐ More than $200 000

19. Number of people in household: ______

20. Did you receive any assistance from Medicaid for payment of orthodontic fees? ☐ Y / ☐ N

    *Thank you for your participation in this survey***

If you have any comments or questions, contact Dr. Daenya Edwards at edwardsdt@vcu.edu
Dr. Daenya Tahiese Edwards was born in Kingston, Jamaica on August 13, 1977. She migrated to Toronto Canada in 1988, and received a Bachelor of Science in Biology and Psychology at McMaster University in Hamilton, Ontario in 2000. She earned her Doctor of Dental Surgery degree in 2004 from the University of Connecticut School of Dental Medicine, and then completed her post-graduate residency in Orthodontics at Virginia Commonwealth University in August of 2006.