Original Article

Gifts from orthodontists to general dentists

Ammar Al-Mahdi[a]; Allen R. Firestone[b]; Frank Beck[c]; Henry Fischbach[d]

ABSTRACT

Objectives: To determine how often general dentists receive gifts from orthodontists, the value and number of the gifts they receive, and how they perceive the motivation behind the gift.

Materials and Methods: This was a questionnaire-based study. A questionnaire was constructed and tested for validity and reliability**.** An electronic version of survey was sent via email to 1300 general dentists.

Results: The validity and reliability of the survey was confirmed. Two hundred fifty-four valid responses were received (20%). Eighty-five percent of responding general practitioners reported that they received gifts from an orthodontist. Almost 100% reported that they referred patients to orthodontists. About one-third of the responding general practitioners reported that their office provided orthodontic care. There were statistically significant correlations between the number of annual patient referrals the general practitioners reported making and the number and value of the gifts they received from the orthodontists. Female general practitioners reported receiving a higher number of gifts of greater total value than male practitioners. General practitioners who reported providing orthodontic treatment did not differ from those who did not in the number of referrals they made annually and the number and value of the gifts they received. Quality of care was the most common reason general practitioners reported for their referral to an orthodontist. Forty-four percent of the responders reported that they received discounted orthodontic treatment.

Conclusions: General practitioners refer patients to orthodontists and receive gifts from them. The number and value of the gifts reflects the number of referrals they make. (*Angle Orthod.* 2017;87:313–319)

KEY WORDS: Referral; Gifts; Orthodontic care

INTRODUCTION

In orthodontics, a successful practice requires a steady flow of new patients. All orthodontists depend on general dentists for referrals; two-thirds of new orthodontic patients are referred by general dentists, and the majority of orthodontists receive most of their referrals from five or six general dentists.[1]

A referral has been characterized as the "trusted recommendation that steers new clients in the direction of that business."[2] Orthodontists have recognized this major source of referrals with a variety of strategies, including, but not limited to, giving gifts. The number of orthodontists who give gifts to general dentists increased from 67.8% in 2005 to 75.3% in 2011.[3,4]

Gift exchange underlies the human tendency to engage in networks of obligation, and it is recognized that gift giving is part of the foundation of human interaction.[5] Gift-giving practices have been shown to establish some sort of psychological influence to give something in return. Data from studies in medicine have shown that physicians, even those who deny being influenced by gifts from pharmaceutical companies, shifted their prescribing practice in a manner that was neither evidence based nor cost effective.[6]

The practice of gift giving in the health care industry suggests that gift giving is primarily done to elicit more business.[7] In the pharmaceutical industry, 31% of a

[a] Resident, Division of Orthodontics, College of Dentistry, Ohio State University, Columbus, Ohio.

[b] Associate Professor, Division of Orthodontics, College of Dentistry, Ohio State University, Columbus, Ohio.

[c] Professor Emeritus, Division of Orthodontics, College of Dentistry, Ohio State University, Columbus, Ohio.

[d] Associate Professor, Division of General Practice and Materials Science, College of Dentistry, Ohio State University, Columbus, Ohio.

Corresponding author: Dr Allen R. Firestone, Division of Orthodontics, College of Dentistry, The Ohio State University, 305 W 12th Ave, Columbus, OH 43210
(e-mail: firestone.17@osu.edu)

Accepted: July 2016. Submitted: March 2016.
Published Online: September 21, 2016.

pharmaceutical company's budget is for marketing and administration, while 14% is spent on research.[8] Worldwide, pharmaceutical companies employ about 88,000 sales representatives, and they spend around $14 billion annually on physicians, that is, about $30,000 per physician.[8] While small, inexpensive gifts are viewed as acceptable, there is concern that gift giving in direct response to referrals and as a practice to encourage continuing or increasing referrals may approach an ethical breach.[9–11]

Although the relationship between gift-giving practices and clinical behavior is much better elucidated in medicine, orthodontists give gifts to dentists in hopes of increasing referrals.[3] Almost 74.5% of orthodontists send gifts to referring general dentists,[3] and, generally, these gifts are inexpensive, like cookies, cupcakes, or flowers. However, studies in medicine have demonstrated that physicians increase their rate of drug prescriptions after receiving inexpensive gifts or incentives from pharmaceutical companies.[6] The aim of this study is to determine how often general dentists receive gifts from orthodontists, the value and kind of gifts received, and how general dentists perceive the motivation behind the gift.

MATERIALS AND METHODS

This research protocol was approved by the Ohio State University Behavioral and Social Sciences Institutional Review Board (protocol number: 2014B0394).

Validity is "the determination of whether a measurement instrument actually measures what it is purported to measure."[12] The development of the questionnaire began with a review of the literature to examine current knowledge about gift giving from orthodontists to general dentists. Literature searches were conducted on PubMed, Google Scholar, Medline, and other databases. Validity was addressed by creating preliminary questions from current knowledge and practices in this field.[13–18] An initial questionnaire was constructed and reviewed for content validity by general dentists who worked part-time at the College of Dentistry. They were asked to review the questionnaire, to assess if the questions were relevant, and to suggest improvements. Seven general dentists participated. All comments from the validity assessment were compiled and discussed, and modifications were made to the questionnaire where appropriate.

Reliability Study

The questionnaire was distributed at an Ohio Dental Association meeting with a brief announcement about the study at the beginning of the day. Attendees were asked to complete the questionnaire at the College of Dentistry Alumni Association booth. The subjects were informed that their participation was voluntary and that personal information (phone number) would be collected only if they wished to participate in a raffle to win a gift; there was no connection between the raffle ticket and the response letter. When participants returned the survey, they were given a second copy of the survey in a preaddressed, stamped envelope to be completed and mailed back 2 weeks later. The paired reliability surveys were numerically coded so they could to be matched together. In total, 175 surveys were completed and turned in onsite, and 75 second surveys were received in the mail. The 75 paired questionnaires were used for the reliability analysis.

The survey responses were entered into a spreadsheet (Microsoft Office Excel 2010, Redmond, Wash) by one researcher. The responses were analyzed for reliability by intraclass correlation coefficient (ICC), simple Kappa, and weighted Kappa where appropriate. Commercial statistical software was used for the analysis (SAS Institute Inc, Cary, NC, USA).

For this study, an ICC value above 0.75 indicated excellent reliability, an ICC between 0.4 and 0.74 indicated fair to good reliability, and an ICC below 0.4 indicated poor reliability.[12] Kappa values above 0.81 indicated almost perfect agreement, 0.61–0.8 indicated substantial agreement, 0.41–0.6 indicated moderate agreement, 0.21–0.4 indicated fair agreement, 0.01–0.2 indicated slight agreement, and less than 0 indicated less than chance agreement.[19]

Statewide Survey Distribution

The final step was to distribute the survey to general dentists in the state for data collection and analysis. The College of Dentistry Office of Alumni Affairs provided an e-mail list of members in the state. The questionnaire was converted to an electronic form (www.SurveyMonkey.com, Palo Alto, Calif) and a greeting e-mail was created with the survey link embedded. The e-mail was sent to approximately 1300 general dentists in the state. A second e-mail was sent 2 weeks later to remind subjects to complete the survey if they had not yet done so. Data collection was stopped 4 weeks after the original email. All participants implied consent when they elected to fill out the electronic questionnaire. There were 261 responses. Responses were exported into a spreadsheet (Microsoft Office Excel). Commercial statistical software was used for data analysis (SAS Institute Inc). Spearman's correlation coefficient and the Kruskal-Wallis test were used when appropriate for cross-tabulation of the variables.

Table 1. Intraclass Correlation Coefficient (ICC) of Questions With Continuous Variables

ICC Level	No. of Questions Out of 7
Poor (ICC $<$ 0.4)	0
Fair to good (ICC=0.41–0.74)	0
Excellent (ICC$>$ 0.75)	7 (100%)

RESULTS

For the reliability study, 75 surveys were returned by mail, which was a 43% response rate. Overall, the reliability for questions with continuous variables (Table 1) was excellent (ICC $>$ 0.75). The reliability of all but two of the questions with ordinal or nominal data (Table 2) showed moderate to almost perfect agreement (K $>$ 0.41).

No questions exhibited poor reliability; all were used in the statewide survey. There were 261 responses to the statewide survey, 7 were not included in the analysis because they were either from dental specialists or the respondent did not fill out the survey. The responses from the remaining 254 surveys (19.5%) were entered for analysis. The results are summarized and presented in the attached tables (Tables 3 through 8).

The majority of dentists reported that they received gifts annually, but a substantial number also reported that they received gifts quarterly and/or for special events. It is noteworthy that five dentists (1.9%) reported that they received gifts per referral (Table 6). There was a statistically significant positive correlation ($P < .05$) between gifts from orthodontists to general dentists (frequency and value) and the rate of general dentists' referrals to orthodontists (Table 9).

There was a statistically significant correlation ($P <$ .05) between sex of the referring dentist and the annual number and value of the gifts. Female dentists received significantly more and higher value gifts than male dentists. There was no statistically significant difference between male and female dentists in number of referrals (Table 10).

The survey responses to the question about the value of gifts they receive from orthodontists included values up to $20,500. Those values were from dentists who received free or discounted orthodontic care for themselves, their families, and/or their staff. We assumed an average value of $5000 for orthodontic care, and based on their responses, we divided respondents into two groups, one group that received orthodontic care and reported receiving gifts valued $\geq$$5000 (n = 22), and the other group that reported receiving gifts valued $<$$5000. There were no statistically significant differences ($P > .05$) between the two groups in the number of patients they referred to orthodontists. While the mean annual value of the gifts received, $860 (Table 4), is surprisingly high, it included the value of the free or discounted orthodontic treatment. If those dentists are removed from the analysis, the mean annual value of the gifts that the dentists reported receiving is $320.

Dentists who provide orthodontic care were compared with those who do not, and there was no statistically significant difference between the two groups ($P > .05$) in the number of their referrals to orthodontists or in the value and number of the gifts they received from orthodontists.

Dentists reported that, in their opinion, the top two factors affecting the number and value of the gifts they received from orthodontists were the number of referrals they made (63.1%) and their personal relationship with the orthodontist (57.9%). They also reported that, in their opinion, the motivation behind the gifts was primarily as a thank you for referrals (86.6%) and to encourage more referrals (75.0%).

Table 2. Kappa Values of Questions With Nominal or Ordinal Variables

Kappa Level	No. of Questions Out of 45 (%)
Less than chance agreement ($<$ 0)	0
Slight agreement (0.01–0.20)	0
Fair agreement (0.21–0.40)	2 (4.44)
Moderate agreement (0.41–0.60)	12 (26.66)
Substantial agreement (0.61–0.80)	13 (28.88)
Almost perfect agreement ($>$ 0.81)	18 (40)

Table 3. Participant Sex and Practice Location

Question	Variable	Number of Responses	Percent	Lower 95% CI%[a]	Upper 95% CI%[a]
3	Sex				
	Female	65	25.6	20.3	31.4
	Male	189	74.4	68.6	79.7
6	Practice location[b]				
	Rural	51	19.9	15.2	25.4
	Suburban	168	65.6	59.5	71.4
	Urban	37	14.5	10.4	19.4

[a] Distribution-free confidence level.
[b] Two participants had two offices in different areas.

DISCUSSION

In this study a valid and reliable questionnaire was developed and distributed to a large number of general dentists in the state to examine the number, frequency, and value of the gifts general dentists received from orthodontists and the dentists' perception of the motivation for these gifts.

Two limitations of this study are that it was limited to general dentists who were members of the Ohio State University Alumni Association and the low response

Table 4. Gifting and Referral Practices: Part I

Question	Variable	Percent	Lower 95% CI%[a]	Upper 95% CI%
Do you receive gifts from orthodontist(s)?				
	Yes	85.4	80.3	89.5
	No	14.6	10.5	19.7
Do you refer to orthodontist(s)?				
	Yes	99.5	97.4	100
	No	0.5	0	2.6
Does your office provide orthodontics?				
	Yes	36	29.7	42.9
	No	64	57.1	70.3

[a] CI indicates confidence level.

rate. The response rate of 20% to the electronic survey is lower than the response rates for similar mailed paper surveys. This is in agreement with previously published literature indicating that mailed paper surveys have a higher response rate.[18,20,21] The sex distribution of the respondents was very similar to that of a study from the Netherlands.[18]

Of general dentists responding to this survey, 83% reported that quality of care and patient satisfaction were the most important reason in choosing an orthodontist to whom they refer. See Tables 8A through C. Similar to the results of the present study, other investigators have reported that quality of orthodontics was the most important factor in why dentists choose an orthodontist, and discounted orthodontic care to the referring dentist, family, and staff, as well as inexpensive treatment fees in general, were ranked as the least important reasons in making the referral decision.[18,20,22,23]

An interesting finding of the study was that 36% of the responding general dentists reported providing orthodontic treatment in their offices (Table 4). This is in agreement with the results of a nationwide survey that reported that 38% of general practitioners perform orthodontic procedures. [21] However, Wolsky and McNamara reported that 76% of general dentists in Michigan provide orthodontic services[24.] The current study and others have reported that the number of referrals to orthodontists in the area was not affected by whether or not the referring dentist provided orthodontic services.[22,24]

The current study also found that the sex of the general dentist and the number of patient referrals might affect gift giving practices by orthodontists (Tables 9 and 10). However, the association between number of referrals and the number and value of gifts from the orthodontist does not imply causation. Nevertheless, 2% of the responding dentists did note that gifts were received per referral (Table 6).

In general, dentists responded most frequently that they viewed the gifts as a thank you for the referral, though they were conscious that gifts were also given to encourage further referrals. They also perceived that the number and value of the gifts they received reflected the number of referrals that they made (Table 5).

Some of these responses raise disquieting notes. Certainly, giving gifts per referrals raises some ethical questions. The American Dental Association and many state dental boards expressly forbid “fee-splitting.” A gift for each referral is certainly problematic in this regard. Another issue is the high number of general dentists, 44%, who reported that orthodontists provided free or reduced-cost treatment for themselves and/or their families and staff. This is a gift of significant value and might be viewed with some concern as this exceeds what is commonly viewed as an acceptable or appropriate value for a thank you gift.

Table 5. Gifting and Referral Practices: Part II

Question	Variable	Percent	Lower 95% CI%[a]	Upper 95% CI%
Who receives the gift in the office?				
	Dentist	51.9	45	58.7
	Entire office	88.4	83.4	92.4
	Front desk	2.8	1	5.9
	Hygienist	2.3	0.8	5.3
Which orthodontic practice(s) send you gift(s)?				
	Most practices in the community	6.5	3.6	10.7
	Practices close to my office	18.6	13.6	24.5
	Only practices we refer patients to	85.6	80.2	90
In your opinion, which factor(s) influence the value of the gifts your practice receives from orthodontist(s)? (Check all that apply)				
	Personal relationship	57.9	51	64.6
	Your practice is close to the orthodontist practice	22	16.6	28.1
	Number of referrals	63.1	56.2	69.6
In your opinion, what motivates an orthodontist(s) to send gifts to your office? (Check all what apply)				
	To encourage you to start referrals	25	19.4	31.3
	To encourage more referrals	75	68.7	80.6
	Thanks for referral	86.6	81.3	90.8

[a] CI indicates confidence level.

Table 6. Gifting and Referral Practices: Part III

Variables	Percent	Lower 95% CI%	Upper 95% CI%
What type of gifts do you receive?			
Meals at restaurants	32.6	26.3	39.3
Holiday open house receptions/events	31.8	25.6	38.5
Gift cards	33.5	27.2	40.2
Tickets e.g. sporting event, movie, etc	23.7	18.2	30
Educational items, for example, seminars, continuing education	22.3	16.9	28.5
Discounted orthodontic treatment to you, your family, and your staff	43.7	37	50.6
Jewelry.	2.3	0.8	5.3
Electronics, for example, iPad, iPod	0.5	0	2.6
Vacations.	0.9	0.1	3.3
Cookies, bagels, flowers, pens, etc.	90.2	85.4	93.9
How often do you receive gifts? (Check all that apply)			
Annually, for example, holidays	78.1	72	83.5
Quarterly	26	20.3	32.5
Monthly	5.1	2.6	9
Per patient referred	1.9	0.2	4.7
Special events, for example, birthday, anniversary	22.8	17.4	29

Finally, the perception by dentists that the gifts are not just a thank you but also an incentive to encourage more referrals does not reflect well on the specialty. That this perception is supported by the correlation between the number of referrals the individual general practitioners made and the number and value of the gifts that they reported receiving gives credence to general dentists' perception.

The most encouraging part of this small but disturbing area is that by far the most frequent reason general dentists reported when choosing an orthodontist to whom they refer their patients is the quality of the care the orthodontist provides. However, even here one should be aware that studies of physicians' behavior have indicated that even as they professed not to be influenced by even low-value gifts that they received, their prescribing behavior changed in favor of the gift giver.[6]

The authors are of the opinion, based on their personal experience, that the discussion of professional ethics in orthodontic graduate programs does not include gift giving to general practitioners. That question was not addressed in our study and, if we are wrong, we are grateful for the opportunity to apologize. If the topic is addressed at all, it is probably within the context of a course on practice management and as part of practice building. We suggest that, in an admittedly very busy curriculum, the results of this study indicate that the ethics of gift giving to general practitioners might be a topic that belongs in the discussion of professional ethics, if it is not already there.

CONCLUSIONS

- The majority of general dentists referred to and received gifts from orthodontists.
- The number and value of these gifts seemed to be influenced by the number of referrals from the general dentist to the orthodontists.
- Dentists viewed the gifts they receive as a thank you for referrals and as an incentive to encourage more referrals.

Table 7. Gifting and Referral Practices: Part IV

Question	Variable	Mean	SD	Range	Lower 95% CI%[a]	Upper 95% CI%
	Age (years)	50.5.	13.2	25-80	48.9	52.1
	Years in practice (Yrs.)	23.7	13.5	1-52	22.1	25.4
	Years in the practice location	16.5	12	0.2-52	15	18
	How many orthodontists does your practice refer to?	3.6	1.7	1-10	3.3	3.8
	How many patients does your practice refer for orthodontic treatment annually?	96.6	158.7	1-1500	74.9	118.3
	How many gifts does your office receive from orthodontist(s) a year?	6.4	17.5	0-250	4	8.8
	Value of the most expensive gift ($)	862.2	2689.9	0-16200	499.7	1224.6
	Annual total value of all the gifts ($)	860.6	2678.7	0-20500	495.3	1225.9

[a] CI indicates confidence level.

Table 8. Rank of Reasons Why the General Dentists Refer to an Orthodontist

Question	Option	Rank	Responses	Percentage	Lower 95% CI%[a]	Upper 95% CI%
A	High-quality orthodontic outcome and patient's satisfaction	1[b]	170	83	78	88
		2	23	11	7	16
		3	8	4	2	8
		4	3	2	0.3	4
B	Orthodontist is close to your office	1	7	7	3	14
		2[b]	41	41	31	51
		3[b]	41	41	31	51
		4	7	7	3	14
		5	4	4	2	10
C	Orthodontist is close to patient's school or home	1	24	16	11	23
		2[b]	68	45	37	53
		3	46	31	23	39
		4	10	7	7	12
		5	3	2	0.4	6
D)	You consult with them on orthodontic cases that you treat	1	1	2	0.1	12
		2[a]	12	27	15	43
		3	4	9	5	22
		4	6	14	3	27
		5	8	18	8	33
		6	3	7	1	19
		7	9	21	10	35
E)	They provide discounted orthodontic treatment for you or your staff	2	2	5	1	17
		3	6	15	6	30
		4	1	3	0.1	13
		5	7	18	7	37
		6	11	28	15	44
		7[a]	12	30	16	47
F)	Inexpensive orthodontic treatment fees	1	1	2	0.1	12
		2	3	7	2	19
		3	9	21	10	36
		4	1	2	0.1	12
		5	7	16	7	31
		6[a]	15	35	21	51
		7	6	14	5	28
G)	Good communication with your practice about patients	1	13	7	4	12
		2	61	35	28	42
		3[a]	93	53	45	60
		4	4	2	1	6
		5	3	2	0.4	5
		6	2	1	0.1	4
		7	1	1	0	3

[a] CI indicates confidence level.
[b] Rank of the highest percentage of participants for the choice as reason for referral.

- The dentists reported that they base their referral practice on the quality of care the orthodontists provide and the location of the orthodontists relative to the patients or the dentist's office.

Table 9. Correlation Between Referrals and Gifts

Variable	Mean	SD	Median	Minimum	Maximum
Referrals	86.3	124.3	45	1	1000
Gifts	6.2	18.2	4	0	250
Value ($)	321.8	373.1	212.5	0	2500
	Referrals	Gifts	Value		
Spearman correlation coefficients	0.27	0.39			
P value	.0002	<.0001			

Table 10. Correlation Between Sex and Number of Gifts, Value of Gifts, and Number of Referrals

Sex	N	Variable	Mean	*P* Value
Female	58	Referrals	109.2	.09
		Number of gifts	10.2	.03*
		Value of gifts	388.0	.02*
Male	174	Referrals	78.3	
		Number of gifts	4.6	
		Value of gifts	296.5	

*Statistically significant $P < 0.05$.

- Based on general dentists' reports, providing orthodontic care by general dentists doesn't seem to affect the number of patients they refer to orthodontists.

REFERENCES

1. Mayerson M. Kubisch RGW. Building relationships with general dentists. *J Clin Orthop*. 1996;30: 99–105.
2. Orsini M. Obtaining referrals in the face of regulation. *Home Health Care Manage Pract*. 2009;21:286–290.
3. Keim RG, Gottlieb EL, Nelson AH, Vogels DS. 2013 JCO Orthodontic Practice Study part 1: trends. *J Clin Orthod*. 2013;47:661–671.
4. Keim RG, Gottlieb EL, Nelson AH, Vogels DS. 2011 JCO Orthodontic Practice Study part 1: trends. *J Clin Orthod*. 2011;45:535–544.
5. Katz D, Caplan AL, Merz JF. All gifts large and small: toward an understanding of the ethics of pharmaceutical industry gift-giving. *Am J Bioeth*. 2010;10(10):11–17. doi:10.1080/15265161.2010.519226.
6. Orlowski JP, Wateska L. The effects of pharmaceutical firm enticements on physician prescribing patterns. There's no such thing as a free lunch. *Chest*. 1992;102:270–273.
7. Zuger A. Fever pitch: getting doctors to prescribe is big business. *New York Times*. 1999 Jan 11; Sect: A:1 (col.4).
8. Angell M. The truth about the drug companies. New York, NY: Random House. 2004, ISBN 0-375-50846-5.
9. Antoon JW. Is it unethical to offer incentives for patient referrals? *JAMA*. 2007;138(3):393–394.
10. Davies G, Whelan S, Foley A, Walsh M. Gifts and gifting. *Int J Manage Rev*. 2010;12: 413–434. doi:10.1111/j.1468-2370.2009.00271.x.
11. Bricker M. Industrial marketing and medical ethics. *N Engl J Med*. 1989;320:1690–1692. doi: 10.1056/NEJM198906223202511.
12. St Louis BL, Firestone AR, Johnston W, Shanker S, Vig KWL. Prospective patients rate practice factors: development of a questionnaire. *Am J Orthod Dentofacial Orthop*. 2011;139:235–241. doi:10.1016/j.ajodo.2009.06.028.
13. Church-Clark B. Getting and keeping dentist referrers. *J Clin Orthop*.1991;25:633–638.
14. Guymon G, Buschang PH, Brown TJ. Criteria used by general dentists to choose an orthodontist. *J Clin Orthod*. 1999;33:87–93.
15. Fry R. External marketing with class and style to general dentists. *Semin Orthod*. 2011;17:304–308.
16. Jameson C. The dental computer: a powerful marketing tool. *Dent Econ*. 1992;82:83–89.
17. Schulte JD. Questions about giving gifts or incentives for referrals. *J Mich Dent Assoc*. 2011;93:16–17.
18. de Bondt B, Aartman IH, Zentner A. Referral patterns of Dutch general dental practitioners to orthodontic specialists. *Euro J Orthod*. 2010;32:548–554. Doi: http://doi.org/10.1093/ejo/cjp148.
19. Viera AJ, Garrett JM. Understanding interobserver agreement: the kappa statistic. *Fam Med*. 2005;37:360–363. doi:10.1109/TKDE.2008.66.
20. Hall JF, Sohn W, McNamara JA Jr. Why do dentists refer to specific orthodontists? *Angle Orthod*. 2009;79:5–11. Doi: http://doi.org/10.2319/011108-15.1.
21. Leece Pam, Pam, Sprague S, Swiontkowski MF, et al. Internet versus mailed questionnaires: a controlled comparison (2). *J Med Internet Res*. 2004;6(4):e39.
22. Foley P. *Survey of Orthodontic Treatment Performed by Dental Practitioners Who Are Not Specialists in Orthodontics* [master's thesis]. St Louis, Mo: St. Louis University; 1988.
23. Guymon G, Buschang PH, Brown TJ. 1999 Criteria used by general dentists to choose an orthodontist. *J Clin Orthod*. 1999;33:87–93.
24. Wolsky SL, McNamara JA Jr. Orthodontic services provided by general dentists. *Am J Orthod Dent Orthop*. 1996;110:211–217.