

## **APPLICANT SELECTION PROCEDURES FOR U.S. ORTHODONTIC SPECIALTY PROGRAMS: A SURVEY OF PROGRAM DIRECTORS**

Maria Therese S. Galang, DDS, MS<sup>1</sup>

Judy Chia-Chun Yuan, DDS, MS<sup>2</sup>

Damian J. Lee, DDS<sup>2</sup>

Cortino Sukotjo, DDS, MMSc, PhD<sup>3</sup>

Assistant Professor, Department of Orthodontics, University of Illinois at Chicago,  
College of Dentistry, Chicago, IL<sup>1</sup>

Clinical Assistant Professor, Department of Restorative Dentistry, University of  
Illinois at Chicago, College of Dentistry, Chicago, IL<sup>2</sup>

Assistant Professor, Department of Restorative Dentistry, University of Illinois at  
Chicago, College of Dentistry, Chicago, IL<sup>3</sup>

### **Correspondence and reprint requests:**

Dr. Maria Therese S. Galang  
Department of Orthodontics (MC 841)  
University of Illinois at Chicago, College of Dentistry  
801 S. Paulina St., Room 131  
Chicago, IL 60612  
Telephone: (312)413-3022  
Email: [mgalang@uic.edu](mailto:mgalang@uic.edu)

## INTRODUCTION

At the 2010 American Dental Education Association (ADEA) Annual Session, the sections on orthodontics, graduate and post-graduate education sponsored a well-attended symposium on the future of post-graduate program admissions. The main issue was how to assess prospective applicants of advanced education programs in the light of pass-fail grading systems in a number of dental schools and pass-fail national dental board exam scoring. This brings about a tremendous concern, not only to the specialty program directors and faculty, but to the prospective applicants as well.

Acceptance in an orthodontic program is highly competitive. The latest American Dental Association (ADA) Survey of Advanced Dental Education (2009) estimated the number of applications to U.S. orthodontic programs as 10,373 for the academic year 2007-2008.<sup>1</sup> This enormous number reflects the fact that students often submit multiple applications to various programs. The statistical data gathered from the National Matching Services website<sup>2</sup> showed 481 match applicants in the 2007 application cycle, of which 251 students matched. The abovementioned ADA survey included non-match positions and reported that 353 applicants enrolled as first year residents that year. Applicant selection is an arduous task, where objective application materials, such as board scores, grade point averages, and subjective materials such as recommendation letters and interviews, have to be considered.

The graduate program applicant selection process has been studied in depth by other fields of medicine and some specialties of dentistry,<sup>3-5</sup> but there is

limited published literature in orthodontics, particularly in the United States. Bhalla and colleagues published a study on orthodontic program selection processes in Canada.<sup>6</sup> They interviewed program directors, faculty, and students and concluded that programs do not have a consensus as to selection processes, but all sought candidates who are intellectually capable and possess a certain set of skills and positive attributes. Another publication from the U.S. reported factors that influence applicant's ranking of institutions for National Matching Services, compared to the perceptions of program directors. Satisfied current residents was the top factor when ranking for applicants, which coincided with what the program directors perceived. The applicants' actual ranking of factors were roughly similar to the program directors' perception, although statistically different.<sup>7</sup> However, none of these studies discussed the essential question: "How is the orthodontic applicant, particularly in the U.S. programs, selected?"

The primary objective of the study was to evaluate the factors that influence the applicant selection in accredited graduate orthodontic programs in the United States from the perspectives of the program directors. The information gathered can also be served as a supplemental guide to prospective orthodontic program applicants regarding the graduate orthodontic application process, and to provide a basis for all programs to streamline the candidate selection process.

## MATERIALS AND METHODS

This study utilized a thirty-one-item questionnaire developed with slight modifications from that of Yuan et al. used for prosthodontic program directors.<sup>5</sup> The survey instrument was approved by the University of Illinois at Chicago Institutional Review Board (Protocol # 2009-1056). It was sent by mail on January 4, 2010, with a due date of February 15, 2010 to the program directors of all 64 accredited graduate orthodontic programs in the United States. The list of directors' names and addresses were obtained through the American Association of Orthodontists. The survey instrument was anonymous and the packet contained a pre-stamped envelope for the response. A reminder letter was mailed six weeks after the initial mailing in an attempt to increase the response rate.

The survey questions were divided into six sections. Section A pertained to general information about the program. Section B inquired about the application materials required for submission. These questions addressed the importance (not requested, little importance, some importance, or very important) of the different application requirements and the sources of the recommendation letters. Section C contained questions about the interview process. These were ranked by the program directors as positive, negative or neutral. A mean score was assigned to each characteristic and these were subsequently ranked from most positive to most negative. Section D addressed the decision-making process of selecting the qualified applicants. Section E focused on a retrospective view of currently accepted applicants and selection criteria. Finally,

section F asked for brief demographic information on the corresponding program directors.

Upon obtaining completed surveys, the answers were tabulated on an electronic spreadsheet (Microsoft Excel 2003, Redmond, WA) and descriptive statistics were obtained utilizing the same software. Data were analyzed and compiled into mean, median, mode, standard deviation, and range. The results were tabulated and ranked appropriately when applicable.

## RESULTS

Out of the 64 surveys, 44 responses were received, achieving a 69% response rate. Few questions were unanswered and those responses were not included in the data analysis. Thus, not all responses for each question totaled 44 (Appendix I).

### *Orthodontic Program Information*

The majority of accredited orthodontic programs in the United States (93%, N=41) were from university-based programs. More than half of the responding programs (55%, N=24) received 101-200 applications in the most recent application cycle for admission in the Fall of 2010. The median and mean number of applicants accepted for the 2010-2011 academic year was 5, with a range of 1-15. Internationally-trained dentists were accepted in more than half of the programs (56%, N=24).

With regard to the percentage of applicants that met the basic requirements for consideration, there was no agreement among the program directors and the responses were similarly distributed, from 1-20% to 81-100% of applicants who met basic requirements. The majority of the responding program directors (83%, N=35) reported that 81-100% of their graduating students will remain in the United States for either private practice or academia. The sizes of the programs have remained steady for most institutions, according to their respective directors.

#### *Application Requirements*

The majority of the program directors (77%, N=34) reported utilizing the Postdoctoral Application Support Service (PASS) administered by the ADEA. Tables I and II illustrate the responses to survey questions 12 and 13 respectively. A mean score was assigned to each response choice and these scores were subsequently ranked according to perceived importance. According to the program directors, the top three factors in the application were: 1) interview ratings, 2) dental school class rank, and 3) letters of recommendation and dental school clinical grades (Tie). The least important factors or those that were not commonly requested were: 1) on-site oral presentations, 2) dexterity (wire-bending) skills, and 3) orthodontic externships. Regarding letters of recommendation, the most highly regarded source was the orthodontic department chair, followed by the orthodontic graduate program director, and the orthodontic predoctoral program director.

### *Interview Process*

All 44 program directors reported requiring an interview as part of the resident selection process. The final decision on inviting applicants for an interview was commonly a responsibility of a committee. The committee was composed of different individuals, including the program director, chair, faculty, etc. The average number of people invited for an interview was 29 (range 10-60). The duration of the interview process varied greatly but almost half of the programs had interviews that lasted 4-8 hours. Also, the majority of the programs (89%, N=39) included an informal event or evening social in the interview process. As with deciding whom to invite, the interviews were also conducted by combinations of different individuals including the program director, department chair, residents, faculty, staff, etc. Table III lists the different applicant characteristics noted during the interview. Maturity, verbal skills, and listening skills were the top three positive characteristics ranked in order of importance. The least favored characteristics were aggressiveness and nervousness.

### *Admission Decision Process*

Eighty percent (N=35) of the programs participated in the "Match" conducted by the National Matching Services. The final decision on the applicants admitted to the program was the responsibility of a selection committee in almost all institutions (98%, N=43). The selection committee was composed of a combination of administration, faculty, staff and residents but the

most prevalent combinations included the program director, department chair, full-time and part-time orthodontic faculty.

#### *Retrospective View of Admissions*

Eighty-four percent (N=36) of the program directors reported being very satisfied with their current selection process. However, only one-third (36%, N=16) reported that they would select all their current and former residents from the past five years again. According to half of the respondents, the applicants have remained the same over the past five years, in terms of credentials and quantity.

#### *Program Director Demographics*

The mean age of the program directors was 56 years with a range of 38-73. The majority of them (82%, N=36) were male. In terms of duration in their position as program director, a mean of 8 years was reported, with a range of 0.4 to 30 years. Only one program director was not board certified.

## DISCUSSION

The number of orthodontic program applicants has increased steadily since 2003. In contrast, the number of enrolled first year graduate students has remained constant since then.<sup>1</sup> Orthodontic programs, with the overwhelming amount of applicants each year, can benefit from having a systematic and

efficient method of selecting the candidates that best fit their respective programs.

As with studies across the medical fields, this study found that the interview process was the most important consideration when selecting an applicant.<sup>9-12</sup> It was also the only application requirement common in 100% of the respondent programs. Being invited for interviews is the first stage of the applicant screening process and those who are invited for multiple interviews can be interpreted as being a highly competitive candidate.<sup>8</sup>

As this study exhibited, the interview procedure itself varies from institution to institution in terms of duration, involvement of various departmental personnel, and number of applicants invited. The Commission on Dental Accreditation (CODA) Standards for the orthodontic specialty specifies that a faculty committee decision is required for selection of students unless the program is federally run (Standard 5-1).<sup>13</sup> The most common reported combination of interviewers consisted of: program director, department chair, current residents, full and part time faculty, which follows the abovementioned CODA standard. This heterogeneity of interviewers is important, as there had been evidence suggesting that faculty members may have bias in selecting residents of their same personality type.<sup>14</sup> The majority of the programs conduct an evening social as part of the interview, possibly in an attempt to gauge the applicant's behavior in an informal setting. Although interviews are held of highest importance in any residency selection process, it is not without criticism. Some academicians believe that structured interviews are more reliable and have more face validity

than those that are unstructured.<sup>15, 16</sup> Others believe that blind interviews increase interview reliability and validity.<sup>16, 17</sup> The survey used in this current study did not include detailed information on the type of interview conducted, thus precluding any further interpretation of data on this matter.

The current dilemma facing orthodontic programs, as well as other specialty programs, is the failure to objectively assess applicants' class rank in the light of differences in dental school curricula and grading systems. A previous study identified that applicants who have an available class rank are ranked higher in the residency selection process than those whose schools did not issue class rankings.<sup>18</sup> This is a concern and may be seen as a disadvantage to those applicants matriculating from schools which do not issue numeric or letter grades. More than half of the programs accept foreign-trained dental graduates; this poses yet another issue in objective assessment as dental standards of foreign institutions may be different.<sup>19</sup> The conversion of the National Dental Board Examination to a pass-fail format<sup>20</sup> may also increase the difficulty in applicant evaluation as this leaves no other objective measure of the applicant's cognitive abilities.

In 2010, the ADEA initiated the Future of Advanced Dental Education Admissions (FADEA) project. The main goal of this endeavor is to address the difficulties in screening postdoctoral education applicants. In recent ADEA-FADEA meetings (2010), other objective methods of applicant assessment have been suggested such as requiring Graduate Record Examination (GRE) scores, adapting the USMLE Part I, or constructing a new graduate level standardized

entrance examination applicable to all dental specialty programs parallel to those in the medical field.<sup>21</sup> Interestingly, a retrospective study conducted in a surgical residency found a higher positive correlation between the more non-objective criteria such as interview ratings and recommendation letters, and resident performance during the program. Conversely, the medical school grades and board scores had negative correlation with resident clinical performance.<sup>22</sup> However, the grades and board scores proved valuable predictors of standardized licensure exam scores.<sup>23</sup> As orthodontics is a rigorous clinical specialty, these findings may suggest a need for modification of the current orthodontic resident selection practices. More studies are needed to validate this supposition.

Another proposal in the ADEA-FADEA 2010 meetings was the development of a structured letter of evaluation. As letters of recommendation ranked at the top of the program directors list, this may be a worthy endeavor. In 2011, the ADEA-FADEA project has been instrumental in initiating changes in the PASS process starting in the upcoming 2011-2012 application cycle, specifically in the addition of the Educational Testing Service® Personality Potential Index (PPI).<sup>24</sup> The PPI has been extensively studied as a reliable source of objective information regarding graduate school applicants' non-cognitive skills.<sup>25</sup> In view of this additional information, letters of evaluation will be optional, however individual programs still have the option of requiring them. The PPI may play a pivotal role in restructuring applicant evaluation as it brings about information on 6 personality aspects that deans and faculty across different fields

find important in ensuring successful performance in graduate school: 1) knowledge and creativity, 2) communication skills, 3) teamwork, 4) resilience, 5) planning and organization, and 6) ethics and integrity.

Factors that were not commonly requested from applicants included on-site oral presentations, dexterity or wire-bending exercises, and orthodontic externships. Dexterity exercises may warrant further utilization as they proved to be very useful predictors of clinical skills and performance.<sup>26, 27</sup> These hands-on exercises may play a pivotal role in screening prospective orthodontic applicants given the fact that currently available objective measures are insufficient.

Some factors were ranked low by the program directors. One of them was teaching potential. With the current status of orthodontic faculty shortage,<sup>28</sup> this may be an untapped potential resource for future junior academicians. Research experience was also given a low ranking. CODA mandates completion of a research project as one of the educational requirements of orthodontic specialty programs (Standard 6-1),<sup>13</sup> thus an applicant's research experience should not be undervalued. Research is the key to advancement of any profession and a resident with previous research accomplishments may prove to be an asset to the program.

In all, the results of this survey revealed that orthodontic program directors seem to be searching for aspiring students who are mature, with good speaking as well as listening skills. This reflects with results from a recent survey conducted by the ADEA-FADEA project to all advanced education program directors.<sup>29</sup> Orthodontic program directors reported the following top three

qualities they sought from applicants: integrity, interpersonal communication skills, and maturity. Orthodontics is a specialty which places great importance on patient compliance thus communication skills are essential for orthodontic practitioners. A recent study found that cumulative GPA and orthodontic work experience were factors that had the most correlation to receiving more invitations for interview.<sup>8</sup> These factors, combined with the factors ranked highly in our study, show that programs seek applicants who are well-rounded individuals, excellent in academics as well as other skills that may not be easily measured objectively.

This study is not without its limitations. Caution must be exercised in interpreting the rankings as some factors have very similar mean scores, thus the hierarchy may not be as significant. Also, based on the response rate, the results of this study may not represent views of all program directors, although upon comparing the characteristics of our respondents to the actual program statistics<sup>30</sup>, we found that 43 out of 58 university programs responded, which is a significant majority. As this study identified various key personnel involved in the residency selection process, it may be wise to assess current practices from other perspectives. Also, since it has been suggested that non-cognitive factors are as important as cognitive factors in assessing applicant quality,<sup>31</sup> more detailed questions concerning interview structure should be considered for future studies.

## CONCLUSION

Accredited orthodontic programs in the United States have varied ways of assessing applicants for admission. The only common factor was the use of interviews. If screening procedures are made more uniform, by combining both objective and subjective measures of assessment, then there may be a possibility of overcoming the current challenges identified in this study. Proper applicant evaluation is relevant for maintaining the caliber of residents admitted to accredited orthodontic programs. Addressing current concerns on the graduate admissions may ensure a higher quality of orthodontists in the future.

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## TABLE LEGENDS

Table I: Factors considered in the orthodontic applicant selection process, ranked in order of importance.

Table II: Sources of applicant recommendation letters, ranked in order of importance.

Table III: Applicant character traits, ranked in order of favorability.

## APPENDIX LEGEND

Appendix I: Survey Instrument and Results (except for Questions 12, 13, and 20 – results in Tables)