Check for updates

Original Article

Association of Medical School Gap Year Research and Degree Programs With Otolaryngology Interview and Match Outcomes

Annals of Otology, Rhinology & Laryngology
2024, Vol. 133(9) 783–791
© The Author(s) 2024
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/00034894241261821
journals.sagepub.com/home/aor
Sage

Trinithas Boyi, MA[1], William J. Benjamin, MPH[2], Nicholas R. Lenze, MD. MPH[3], Michael J. Brenner, MD[3], Angela P. Mihalic, MD[4], Robbi A. Kupfer, MD[3], Benjamin L. Judson, MD, MBA[1], and Yan H. Lee, MD[1]

Abstract

Objective: To investigate whether a gap year for either research or a master's degree is associated with interview offers or match outcomes among otolaryngology applicants.

Methods: Using the Texas Seeking Transparency in Application to Residency (Texas STAR) database, we conducted a cross-sectional analysis of otolaryngology applicants from 2018 to 2022. Applicants were stratified based on the presence and type of gap year during medical school. Applicant characteristics, signaling, research productivity, and application costs were analyzed, with primary outcomes including number of interview offers and match status.

Results: Among 564 otolaryngology applicant respondents to the Texas STAR survey, 160 (28%) reported a gap year, including 64 (40%) applicants participating in a research year, 65 (41%) completing a Master of Public Health or Science (MPH and MSc), and 31 (19%) completing a Master of Business Administration, Education, or other degree (MBA and MEd). Gap-year applicants who completed a research year or MPH/MSc degree received more interview offers ($P < .01$) than MBA, MEd applicants, or those without a gap year. Applicants with a research year had the most publications, oral presentations, abstracts, posters, and research experiences (all $P < .01$). When controlling for USMLE scores, clerkship honors, and applications submitted, applicants completing a research year or an MPH/MSc-degree received increased interview offers ($P < .01$). No significant differences were seen in expenditures or match rates.

Conclusions: Research and MPH/MSc gap years were associated with increased residency interview offers but not increased match success. Further longitudinal studies are needed to assess how yearlong experiences affect long-term career outcomes.

Keywords

otolaryngology, research year, graduate medical education, residency education, medical education, academic career, master's degree

Introduction

A growing number of medical students applying in competitive specialties take a gap year for research or to complete a master's degree program. Yet, few data are available to guide applicants or advisors in these decisions. Gap years have been touted to offer benefits ranging from enhanced research skills to higher emotional intelligence and relief from burnout.[1-10] However, the otolaryngology match is highly competitive, and applicants strive to improve their competitiveness.[11-16] Although metrics such as honors grades, United States Medical Licensing Exam (USMLE)

[1]Department of Surgery, Division of Otolaryngology—Head and Neck Surgery, Yale University School of Medicine, New Haven, CT, USA
[2]University of Michigan Medical School, Ann Arbor, MI, USA
[3]Department of Otolaryngology—Head and Neck Surgery, University of Michigan Medical School, Ann Arbor, MI, USA
[4]Department of Pediatrics, University of Texas Southwestern Medical Center, Dallas, TX, USA

Corresponding Author:
Yan H. Lee, MD, Department of Surgery, Division of Otolaryngology—Head and Neck Surgery, Yale University School of Medicine, 330 Cedar Street, New Haven, CT 06520, USA.
Email: yan.lee@yale.edu

scores, medical school ranking, Alpha Omega Alpha status, and Gold Humanism Honor Society influence match success,[17-19] the transition of USMLE Step 1 to pass/fail and the growing emphasis on holistic assessment has led to greater emphasis on specialized skills, research contributions, and applicant life experiences. Scholarly productivity has been shown to predict the likelihood of pursuing an academic career.[20] Still, there are compelling reasons to consider for not completing degree programs or pursuing a gap year.

When advising medical students regarding the possibility of a gap year, mentors require wisdom and data to offer tailored guidance, which is often context-sensitive. One study found that a research year conferred a 3-fold increased likelihood of matching for students at highly-ranked medical schools but no benefit at low-ranked institutions.[21] In surgical specialties, data on gap years is inconsistent,[22-25] and findings are sparse in otolaryngology—head and neck surgery. Understanding the expected outcomes of a gap year is useful when advising candidates with various strengths and weaknesses pertaining to scholarly activities (namely degrees and research experiences). Although data on gap years is limited, even less is available on different degree programs or pathways with match outcomes. Such information is invaluable whether a medical student is drawn to a clinically-focused or research-focused career path. Thus, understanding how gap years relate to residency application outcomes can promote better mentorship.

We analyzed otolaryngology residency applicant data to investigate whether the presence and type of gap year were associated with differential interview or match outcomes. The Texas Seeking Transparency in Applications to Residency (Texas STAR) database, which aggregates data from over 130 medical schools, has allowed for a wide range of studies of the residency application process. In this study, we leveraged this database to explore different types of gap years and applicant characteristics. We hypothesized that, after adjusting for honors, USMLE scores, and other measures of candidacy strengths, applicants who took a gap year for research or a master's degree program would receive more otolaryngology interview offers and have a higher rate of match success without differences in outcome by gap year type.

Materials and Methods

Data and Sample

Data were sourced from the Texas STAR survey, which contains self-reported, de-identified information from United States medical students for the 2018 to 2022 match years as previously described.[26,27] The Texas STAR survey was distributed to fourth-year allopathic and osteopathic medical students by medical school deans at their respective schools between match day and late April of each application cycle. Applicants were instructed to report data in the survey as it appeared on their applications. Survey results were used to build a publicly available dashboard for future applicants that reports specialty and program-specific data.

Survey respondents who applied to otolaryngology during the 2018 to 2022 match years were included in our study. We excluded applicants who completed an MD-PhD during medical school, given that the target study population was applicants pursuing a single gap year for research or a master's degree. Participation in the Texas STAR program was voluntary, with provisions for data use and deidentification explained to participants. Participation in the survey served as consent for data collection. This study was deemed exempt by the University of Michigan Institutional Review Board (HUM00217169).

Variables

Our primary classification was whether an applicant had a gap year, either a research year or master's degree completion. Applicants were then subclassified based on the type of degree. The Texas STAR survey asks applicants to report whether they completed an additional research year or degree during medical school. To reduce the risk of an underpowered analysis, we combined MPH and MSc as 1 group and MBA, MEd, and other degrees as a second group. Applicant-level variables included the USMLE Step 1 and Step 2 scores, clinical grades, honor society membership, research output, and volunteer and leadership experiences. USMLE scores were reported in 5-point intervals, and the median of each interval was used to report scores as a continuous variable (ie, 220-224 was inputted at 222).

The primary outcomes investigated were the mean number of interview offers received and whether the applicant matched into otolaryngology. Secondary outcomes involved research productivity, rate of interviews at signaled and non-signaled programs, and expenditures related to residency application. Research productivity was subclassified into publications and other academic work products (abstracts, posters, and oral presentations), and the number of scholarly contributions in each category was quantified. The interview rate was calculated as the number of interview offers received divided by the number of applications submitted, multiplied by 100. Cost data, including total expenditures, application fees, and interview costs, exists beginning in 2019. Respondents record away rotations costs separately in an "other costs" section.

Otolaryngology initiated preference signaling in 2020, allowing applicants to indicate ("signal") interest in a limited number of programs during the application process. To assess for associations with signaling, we calculated the rate of interviews using the following formula: at

signaled programs, the number of interviews offered at signaled programs was divided by the total number of preference signals submitted by the applicant, multiplied by 100; at non-signaled programs, the total number of interviews at non-signaled programs was divided by the total number of applications submitted to non-signaled programs, multiplied by 100.

Statistical Analysis

We used chi-square and Wilcoxon-rank sum testing to assess differences in applicant-level characteristics, application costs, interview offers, match rates, and signaling outcomes by research year or degree. To assess the association between research years or degree programs and the number of interview offers obtained, we performed ordinary least squares regression (OLS). We conducted an analysis of variance (ANOVA) test and a logistic regression analysis to assess the association between research years or degree programs with applicant match outcomes. We also applied 2 multivariable OLS and logistic regression models to assess whether research year or degree type was associated with interview or match outcomes. The first multivariable model was adjusted for USMLE scores, clinical grades, and the number of applications submitted. The second multivariable model adjusted for USMLE scores, clinical grades, number of applications submitted, number of publications, and the number of other scholarly work products (abstracts, posters, and presentations) to assess the effect of research years and degrees after controlling for research productivity. This analysis was undertaken to better understand whether non-productivity-related aspects of research years (technical skills, mentoring, and connections with a program where the experience was completed) were associated with improved interview and Match outcomes. Statistical analyses were performed with a significance criterion of $P < .05$ with 2-tailed testing. SAS v9.4 (Cary, NC) was used for analyses, and GraphPad Prism v10 was used for figure generation.

Results

Applicant Characteristics

The sample included 564 otolaryngology applicants who applied to otolaryngology during the 2018 to 2022 match year and met inclusion criteria (ie, MD and PhD students excluded). Overall, 160 (28%) reported a yearlong research or degree experience, including 64 (40%) taking a research year, 65 (41%) completing a Master of Public Health or Science (MPH and MSc), and 31 (19%) completing a Master of Business Administration, Education, or other (MBA and MEd).There was no significant change in the percentage of applicants completing a research year or degree from 2018 to 2022 (Figure 1; 30.0% vs 32.9%, $P = .32$, respectively). No significant differences were seen among the gap year groups in analyses of rates of Gold Humanism Honor Society (GHHS) membership status, leadership experience, volunteer experiences, couples matching, or Step 1 or 2 scores (Table 1). No significant differences were identified in clinical grade-related metrics (clerkship honors, self-reported class quartile rank, and induction into Alpha Omega Alpha honors) when comparing those taking research years to those who had not. Additionally, there were no significant trends or differences were noted regarding the different cohorts' application costs, interview costs, and other fees (Supplemental Table 1).

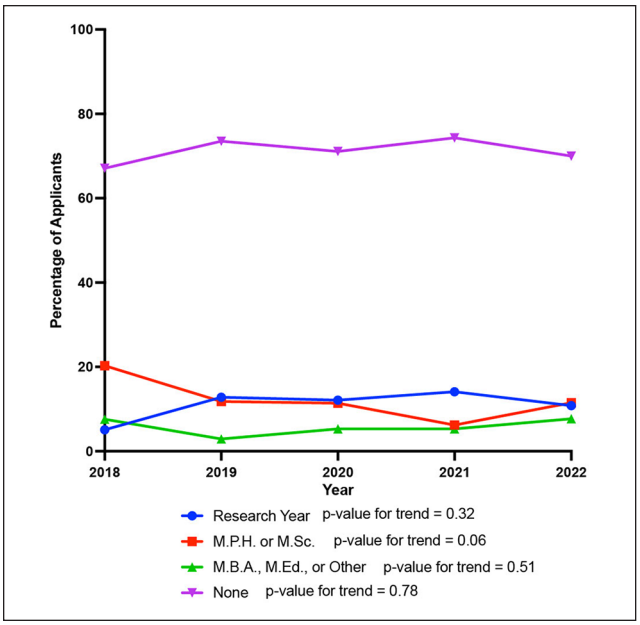

Figure 1. Trends in research year participation among otolaryngology applicants between 2018 and 2022. (Blue, Research Year applicants; Red, MPH or MSc applicants; Green, MBA, MEd, or Other degree-obtaining applicants; Purple, applicants who completed neither a research year or master's degree program). *P*-values referenced in the legend are from the Cochrane-Armitage test for trend.

The number of journal publications was higher in applicants who reported a research year than in any of the other groups (mean ± SD publications: 7.2 ± 3.2 for research year vs 5.3 ± 3.7 for MPH/MSc applicants; 4.0 ± 3.3 for MBA/MEd/Other applicants; and 4.1 ± 3.0, $P < .01$ for applicants with no gap year). Applicants who reported a research year also exceeded other groups on other measures of research productivity. The aggregated number of abstracts, posters, and oral presentations was 9.4 for research year applicants vs 7.8 for MPH/MSc applicants; 6.9 for MBA/MEd/other applicants; and 7.2 for no gap year applicants ($P < .01$, Table 1). Similar patterns were observed for the number of research experiences (mean ± SD:

Table 1. Applicant-Reported Characteristics for Individuals Who Completed a Research Year, Master's Degree, or Neither.

Variable[a]	Research year (N = 64)	MPH or MSc (N = 65)	MBA, Med, or other (N = 31)	None (N = 404)	*P*-value[a]
AOA—No. (%)					.5085
No	36 (56.3)	30 (46.2)	16 (51.6)	195 (48.3)	
Yes	23 (35.9)	29 (44.6)	10 (32.3)	178 (44.1)	
No chapter	5 (7.8)	6 (9.2)	5 (16.1)	31 (7.7)	
GHHS—No. (%)					.2584
No	52 (81.3)	48 (73.9)	22 (71.0)	315 (78.0)	
Yes	7 (10.9)	12 (18.5)	4 (12.9)	68 (16.8)	
No chapter	5 (7.8)	5 (7.7)	5 (16.1)	21 (5.2)	
Honors in specialty[b]—No. (%)	46 (97.9)	50 (90.9)	23 (92.0)	317 (96.7)	.1056
Number of clerkship honors	3.7 (2.2)	4.4 (2.2)	3.6 (2.8)	4.3 (2.4)	.0789
Self-reported Cumulative quartile[c]—No. (%)	N = 44	N = 43	N = 49	N = 318	.0684
First	27 (61.4)	27 (67.4)	33 (67.4)	222 (69.8)	
Second	14 (31.8)	10 (20.4)	10 (20.4)	73 (23.0)	
Third	3 (6.8)	4 (8.2)	4 (8.2)	18 (5.7)	
Fourth	0 (0.0)	2 (4.1)	2 (4.0)	5 (1.5)	
Step 1—mean (SD)	247.7 (13.2)	248.2 (11.9)	242.6 (17.1)	249.1 (10.6)	.2921
Step 2—mean (SD)	256.9 (10.3)	255.3 (11.3)	251.5 (13.7)	255.8 (9.3)	.2611
Couples match[d]—No. (%)	7 (11.7)	7 (14.3)	2 (8.0)	42 (12.0)	.9179
Abstracts, posters, and presentations—mean (SD)	9.4 (2.7)	7.8 (3.0)	6.9 (3.4)	7.2 (3.6)	**<.0001**
Publications—mean (SD)	7.2 (3.2)	5.3 (3.7)	4.0 (3.3)	4.1 (3.0)	**<.0001**
Research experiences—mean (SD)	7.5 (2.8)	6.9 (2.7)	5.6 (3.4)	6.2 (2.6)	**.0031**
Volunteer experiences—mean (SD)	6.5 (3.1)	8.1 (2.9)	7.5 (2.9)	7.5 (2.7)	**.0155**
Leadership positions—mean (SD)	4.8 (2.7)	5.2 (2.9)	5.4 (3.1)	4.9 (2.8)	.6183

[a]P-values calculated with Wilcoxon-Rank Sum test for continuous variables and chi square or Fisher's exact test for categorical variables. Bold indicates $P < .05$.
[b]109 missing honors in specialty.
[c]110 missing cumulative quartile, of the 454 applicants with a self-reported cumulative quartile, the N is shown.
[d]79 missing couples match.

7.5 ± 2.8 for research year applicants vs 6.9 ± 2.7 for MPH/MSc applicants; 5.6 ± 3.4 for MBA/MEd/other applicants; and 6.2 ± 2.6 for non-gap year applicants, $P < .01$, Table 1).

Interview and Otolaryngology Residency Match Outcomes

The number of interview offers ($P < .01$) and interview rate ($P = .02$) differed significantly among applicants who completed a research year, obtained an MPH/MSc, obtained an MBA/MEd/Other degree, or did not complete a gap year (Figure 2A, Table 2). Similarly, there were significant differences in interview rate at signaled programs ($P < .01$), interview rate at non-signaled programs ($P = .04$), total interviews at signaled programs ($P = .03$), and total interviews at non-signaled programs ($P < .01$) with MPH/MSc and research year applicants having higher averages in each metric (Table 2). Univariate OLS regression assessing the impact of research years or degrees on total interview offers demonstrated that obtaining an MPH/MSc was positively correlated with the number of interview offers ($\beta = 6.2$, 95% CI: 3.6-8.7, $P < .01$) when compared to applicants who completed neither a research year nor a degree (Supplemental Table 2).

Research years ($\beta = 2.6$, 95% CI: 0.3-4.9, $P = .03$) and MPH/MSc ($\beta = 6.3$, 95% CI: 4.0-8.6, $P < .01$) were positively correlated with the total number of interview offers received compared to applicants who completed neither a research year nor a degree when adjusted for USMLE scores, clinical clerkship performance, and the number of applications submitted (Table 3). Only MPH/MSc participation remained a significant factor after controlling for the number of publications and APs (Table 3; $\beta = 5.9$, 95% CI: 3.7-8.2, $P < .01$). Match rates among our applicant cohorts were significantly different using an unadjusted ANOVA test (Figure 2B, $P < .01$). Univariate logistic regression models assessing the type of gap year experience showed significantly decreased odds of matching among MBA/MEd/Other degree applicants when compared to applicants who did not complete a research year or a degree (Supplemental Table 2, $\beta = .4$, 95% CI: 0.2-0.9, $P = .04$). This relationship in match rates was no longer significant

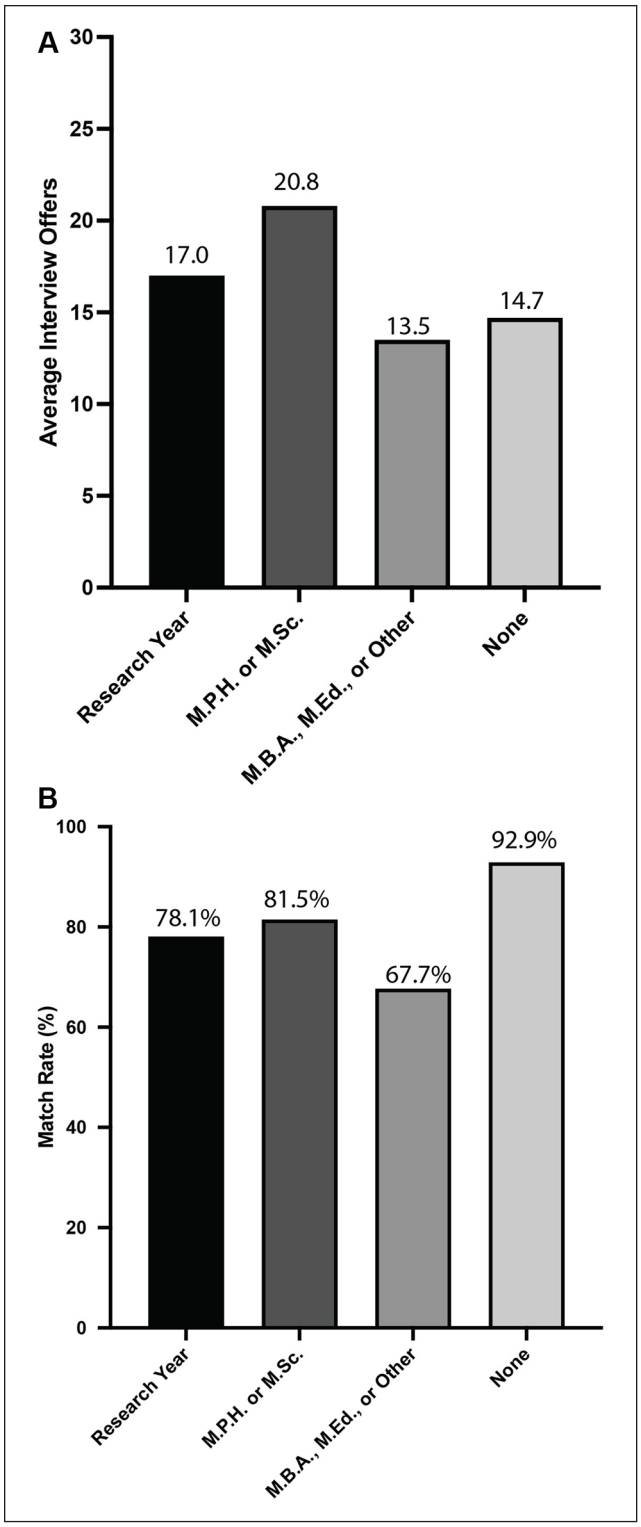

Figure 2. Average interviews (A) and match rates (B) across different gap year experience types among otolaryngology applicants. (A, Chi-squared test, $P < .01$; B, 1-way ANOVA, $P < .01$).

when controlling for the number of publications and APs, applications submitted, USMLE scores, and clinical grades. Multivariable logistic regression models yielded no significant associations between the type of gap year experience and odds of matching compared to applicants who completed neither a research year nor a degree (Supplemental Table 3).

Discussion

The role of research or degree program gap years in preparing medical students for residency training in otolaryngology remains ill-defined. Our study affords insights into typical outcomes of these yearlong experiences. The most robust findings from this work are intuitive: applicants who opt for a dedicated research year show higher research productivity across various metrics (publications, other scholarly work products, and research experiences) than those pursuing degrees or not taking a gap year. However, the absolute differences were relatively small, with research year students averaging 2 presentations and 3 publications more than their counterparts who did not complete a research year experience.

Although the Texas STAR database has been leveraged to study several aspects of the otolaryngology residency application and match process,[18,28-30] this study is the first to specifically look at associations of gap years with interview and match outcomes, comparing the overall effects of a gap year and more granular outcomes of different groups of master's programs. Contrary to Thangamathesvaran et al,[31] we observed no differences in board scores based on type or presence of gap year. However, gap year applicants who took a research year or completed an MPH/MSc received significantly more interviews than applicants who did not pursue a gap year after controlling for factors associated with application success, as identified by Lenze et al.[18] Consistent with prior work,[21-23] we did not find an association between gap year and odds of matching in our adjusted model. Although the decision to complete a gap year or advanced degree is often self-selecting, a non-significant difference in Match rates among gap-year-completing applicants and non-gap-year-completing applicants could plausibly be viewed as an improvement compared to an applicant's starting position before completing a gap year.

MPH/MSc applicants received the highest average number of interview offers and had the highest average interview percentage, demonstrated using a multivariable OLS regression model that controlled for factors traditionally associated with match success.[18] Further, we found that MPH/MSc completing applicants received significantly more interview offers than students who did not complete a gap year experience in multivariable models, adjusting for

Table 2. Descriptive Statistics of Applicant-Reported Interview Outcomes.

Variable	Research year (N = 64)	MPH or MSc (N = 65)	MBA, MEd, or Other (N = 31)	None (N = 404)	*P*-value
Programs applied to—mean (SD)	77.7 (27.8)	69.5 (26.0)	72.2 (35.6)	69.5 (30.0)	.1118
Interview Rate[a]—mean (SD)	28.8 (25.2)	37.4 (26.0)	28.8 (28.1)	29.6 (26.7)	**.0196**
Interview rate at signaled programs[b,c]	68.2 (33.0)	74.3 (29.3)	69.1 (36.3)	55.0 (27.7)	**.0045**
Interview rate at non-signaled programs[c,d]—mean (SD)	23.2 (25.0)	38.0 (30.9)	26.0 (29.8)	21.3 (26.3)	**.0433**
Total interviews offers from signaled programs[c]—mean (SD)	2.7 (1.6)	3.0 (1.3)	2.1 (1.3)	2.2 (1.2)	**.0294**
Total interviews offers from non-signaled programs[c]—mean (SD)	12.9 (8.0)	20.0 (11.8)	9.9 (6.8)	9.4 (5.7)	**.0006**

[a]Calcuated as the number of interview offers/total number of applications submitted × 100. Bold indicates *P* <.05.
[b]Calculated as number of interview offers from signaled programs/total signals submitted × 100.
[c]351 applicants missing signaling data, preference signaling wasn't used in the 2018 and 2019 cycles.
[d]Calculated as number of interview offers from non-signaled programs/total applications submitted to non-signaled programs × 100.

Table 3. Multivariable Linear Regression Model of Gap Year Experience Predicting Total Interview Offers.

Multivariable linear regression model of research year experience predicting total interview offers adjusting for USMLE scores, clerkship honors, and number of applications submitted		
Research year type	β (95% CI)	*P*-value[a]
None	Reference	
Research year	**2.6 (0.3, 4.9)**	**.0280**
MPH or MSc	**6.3 (4.0, 8.6)**	**<.0001**
MBA, MEd, or other	1.1 (-2.1, 4.3)	.4938
Multivariable linear regression model of research year experience predicting total interview offers adjusting for USMLE scores, clerkship honors, number of applications submitted, and number of abstracts, posters, and presentations		
Research year type	β (95% CI)	*P*-value
None	Reference	
Research year	0.8 (−1.6, 3.2)	.5076
MPH or MSc	**5.9 (3.7, 8.2)**	**<.0001**
MBA, MEd, or other	1.0 (−2.1, 4.2)	.5253

[a]Bold indicates *P* <.05.

research productivity. This finding suggests that factors inherent to an MPH/MSc outside of productivity may factor into interview success. This result may be related to professional and technical skill development afforded by an MPH/MSc program, such as coursework and experience aimed at scientific writing, causal inference and study design, laboratory coursework, and statistical skills, the latter of which has been reported as a barrier to research participation by residents.[32] Additionally, many master's programs require a thesis or capstone, which is led by the students themselves with the close mentorship and tutelage of a professional in the field. The thesis experience and skills gained through the degree may improve MPH/MSc candidates' applications during the Match process and yield higher interview offers.

Preference signaling has been an important innovation to the Otolaryngology Match since its introduction by the Otolaryngology Program Director's Organization in 2020. Given the importance of preference signaling for otolaryngology applicants, we sought to assess whether gap year experiences are correlated with signaling outcomes. We found that signaling outcomes differed by type of gap year experience: MPH/MSc and research year applicants had higher average interview rates at signaled programs than applicants who completed MBA/MEd/other degrees or did not participate in a gap year. This finding may be due to improved competitiveness of MPH/MSc and research year candidates, possibly through increased research productivity, as more publications and abstracts have previously been associated with applicants receiving additional interview offers from signaled programs[26,28,33]

Improved signal yield may also be explained through connections and mentorship. Applicants who complete a gap year experience would have a visible geographic connection to the program where the experience occurred, which has been associated with improved signaling outcomes among otolaryngology applicants.[26] Applicants with gap year experiences may also form closer mentorship

relationships with otolaryngologists, thereby affording them improved letters of recommendation, which may explain improved signaling and interview outcomes. Although there are several potential mechanisms through which gap years might influence signaling outcomes may be influenced by gap years, causal inferences cannot be drawn from the data in Texas STAR.

This study has limitations relating to retrospective analysis, confounders, and uncertain generalizability. Our study population includes 564 applicants, which is only 34% of the total M.D. and D.O. applicants who applied during the 2018 to 2022 application cycles. The number of applicant publications, APs, and USMLE scores reported in Texas STAR are similar to those reported in the NRMP's Charting the Outcomes of the Match,[34-36] except that our data includes a disproportionately high number of applicants elected to AOA (Supplemental Tables 4–6). Another limitation is that we cannot differentiate which degrees fall into the "other category" in Texas STAR, which precludes granular analysis of this group. Medical education and the application process are protean, and experience captured since the Texas STAR system's inception may not reflect outcomes before or after. Our study period included major changes that may confound our results, including the COVID-19 pandemic and the subsequent loss of away rotations and transition to virtual interviewing. The introduction of preference signaling has been another major change in the application process. Our study period also included 3 years of signaling data (2020-2022); however, the number of signals afforded to applicants changed each year. The recent 2023 to 2024 match cycle featured a high-signal approach. Thus, the generalizability of our signaling results should be viewed with caution. Further study into the impact of gap year experiences on interview and match outcomes in a high-signaling environment is warranted.

To allow sufficient analytic power, we grouped MPH and MSc applicants based on a thematic focus on science and clinical data. MBA and MEd were grouped based on an emphasis on organizations and teaching, although these pairings were necessarily imperfect. Those who selected completion of a degree and research year were included in their respective group and excluded from the research year group. Different groupings or analytic strategies may have yielded different outcomes. The sample size was also insufficient to allow for analyses related to sociodemographic attributes, precluding exploration as to equitable distribution of gap years.

There are also several limitations inherent to using a survey-based self-reported database. The Texas STAR survey collects information on degree completion and not duration. It is possible that some research years or degree programs were embedded within medical school curriculums. There is also potential for selection bias since students who did not match may be less likely to complete the survey or, conversely, be more likely to have a gap year. Recall bias may also exist since students complete the Texas STAR survey 6 months after submitting their ERAS applications. We also lack data on where applicants completed medical school, which has been shown to influence match outcomes among research-year applicants in otolaryngology.[28] Students may be more or less likely to complete a research year or pursue a program, depending on their medical school. Lastly, this study only assessed short-term outcomes of interviews and match status. Long-term outcomes emphasizing longitudinal career trajectories, grant funding, and leadership are needed.

Conclusions

As otolaryngology applicants and their advisors contemplate gap year experiences, there is a growing need to understand how such investment of time and resources might affect career prospects and professional contributions. This study is the first to examine the association of medical school gap year research or master's degree program with otolaryngology interviews and match outcomes in otolaryngology applicants. Gap year experiences were associated with more interview offers, particularly for individuals who participated in a research year or MPH/MSc degree, albeit without difference in match rates. The decision to pursue a gap year remains important for applicants seeking to apply for an otolaryngology residency. Further study is needed to better understand the implications gap years have on match outcomes, particularly in the setting of pass-fail USMLE Step 1 scores and the introduction of the high-signaling environment.

Acknowledgments

None.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

Trinithas Boyi https://orcid.org/0000-0003-3336-5893
Michael J. Brenner https://orcid.org/0000-0003-4926-0957
Yan H. Lee https://orcid.org/0000-0003-4980-9663

Supplemental Material

Supplemental material for this article is available online.

References

1. Choudhry HS, Patel AM, Tailor P, et al. Impact of gap years following medical school graduation on resident research productivity in ophthalmology. *J Acad Ophthalmol*. 2023;15(02):e178-e183. doi:10.1055/s-0043-1774400
2. Shahid R, Adams W. Emotional intelligence level higher in residents who took a gap year before medical school. *Adv Med Educ Pract*. 2020;11:559-562.
3. Costello CM, Harvey JA, Besch-Stokes JG, et al. The role research gap years play in a successful dermatology match. *Int J Dermatol*. 2022;61(2):226-230. doi:10.1111/ijd.15964
4. Gida JK, Klair AK, Malhi GS. A response to the views of emotional intelligence being higher in residents who took a gap year before medical school. *Adv Med Educ Pract*. 2020;11:647-648.
5. Clark SC, Brown SM, Mulcahey MK. Gap year research fellowship opportunities for medical students interested in orthopaedic surgery. *J Am Acad Orthop Surg Glob Res Rev*. 2021;5(12):e21.00153.
6. Rashid H, Kibble JD. Understanding reasons for electing gap years between undergraduate education and medical school and the impact of gap years on the student experience of medical education. *Adv Physiol Educ*. 2021;45(4):886-894.
7. Wright-Chisem J, Cohn MR, Yang J, Osei D, Kogan M. Do medical students who participate in a research gap year produce more research during residency? *J Am Acad Orthop Surg Glob Res Rev*. 2021;5(5):e21.00061.
8. Guang SA, Eltorai AEM, Durand WM, Daniels AH. Medical student burnout: Impact of the gap year in burnout prevention. *Work*. 2020;66(3):611-616.
9. Egol KA, Shields CN, Errico T, et al. A focused gap year program in orthopaedic research: An 18-year experience. *J Am Acad Orthop Surg*. 2020;28(14):e620-e625.
10. Sidiqi B, Gillespie EF, Wang C, Dawson M, Wu AJ. Mind the gap: an analysis of "gap year" prevalence, productivity, and perspectives among radiation oncology residency applicants. *Int J Radiat Oncol Biol Phys*. 2019;104(2):456-462.
11. NMRP. Results and Data - 2018 Main Residency Match. 2018. https://www.nrmp.org/match-data-analytics/archives/
12. NMRP. Results and Data - 2019 Main Residency Match. 2019. https://www.nrmp.org/match-data-analytics/archives/
13. NMRP. Results and Data - 2020 Main Residency Match. 2020. https://www.nrmp.org/match-data-analytics/archives/
14. NMRP. Results and Data - 2021 Main Residency Match. 2021. https://www.nrmp.org/match-data-analytics/archives/
15. NMRP. Results and Data - 2022 Main Residency Match. NMRP. 2022. https://www.nrmp.org/match-data-analytics/residency-data-reports/
16. Fuller C, Byrd JK, Groves M. Outcomes of reapplication to otolaryngology residency: a prospective cohort study. *Ear Nose Throat J*. 2018;97(9):324-328.
17. Hauser LJ, Gebhard GM, Blumhagen R, Carlson NE, Cabrera-Muffly C. Applicant characteristics associated with successful matching into otolaryngology. *Laryngoscope*. 2017;127(5):1052-1057. doi:10.1002/lary.26236
18. Lenze NR, Mihalic AP, DeMason CE, et al. Predictors of otolaryngology applicant success using the Texas STAR database. *Laryngoscope Investig Otolaryngol*. 2021;6(2):188-194. doi:10.1002/lio2.549
19. Salehi PP, Heiser A, Salehi P, et al. Otolaryngology applicant characteristics and trends: comparing OTO-HNS with peer specialties. *Ann Otol Rhinol Laryngol*. 2021;130(8):929-940. doi:10.1177/0003489420987408
20. Johnson AL, Corcoran A, Ferrell M, et al. Scholarly research productivity among otolaryngology residency graduates and its relationship to future academic achievement. *Ann Otol Rhinol Laryngol*. 2021;130(11):1276-1284. doi:10.1177/00034894211004368
21. Dorismond C, Shah RN, Ebert CS Jr, Buckmire RA. Impact of medical student research fellowships on otolaryngology match outcomes. *Laryngoscope*. 2021;131(9):E2506-E2512. doi:10.1002/lary.29521
22. Costello CM, Harvey JA, Besch-Stokes JG, et al. The role research gap years play in a successful dermatology match. *Int J Dermatol*. 2022;61(2):226-230. doi:10.1111/ijd.15964
23. Cotter EJ, Polce EM, Lee E, et al. Incidence of research gap years in orthopaedic residency applicants: the new standard? *J Am Acad Orthop Surg Glob Res Rev*. 2021;5(11):e21.00247.
24. Mehta K, Sinno S, Thanik V, Weichman K, Janis JE, Patel A. Matching into integrated plastic surgery: the value of research fellowships. *Plast Reconstr Surg*. 2019;143(2):640-645. doi:10.1097/prs.0000000000005212
25. Warren CJ, Wisener J, Chang C, et al. PubMed-indexed research productivity of students matching at top urology programs: 2017-2020. *Urology*. 2020;144:52-58. doi:10.1016/j.urology.2020.06.049
26. Standiford TC, David Chang CW, Thorne MC, Malekzadeh S, Pletcher SD. Impact of preference signaling on residency interview distribution among otolaryngology-head and neck surgery applicants. *J Surg Educ*. 2023;80(2):170-176. doi:10.1016/j.jsurg.2022.09.023
27. Texas STAR (Seeking Transparency in Application to Residency). UT Southwestern Medical Center. Accessed February 3, 2023. https://www.utsouthwestern.edu/education/medical-school/about-the-school/student-affairs/texas-star.html
28. Benjamin WJ, Lenze NR, Yalamanchi P, et al. Impact of applicant and program factors on preference signaling outcomes in otolaryngology. *Laryngoscope Investig Otolaryngol*. 2023;8(2):401-408. doi:10.1002/lio2.1025
29. Lenze NR, Benjamin WJ, Bohm LA, et al. Association of virtual away rotations with residency applicant outcomes in otolaryngology. *OTO Open*. 2023;7(3):e78. doi:10.1002/oto2.78
30. Benjamin WJ, Lenze NR, Mihalic AP, et al. Does geographic region of away rotations predict otolaryngology match outcomes? *Otolaryngol Head Neck Surg*. 2024;170:92-98.

31. Thangamathesvaran L, M. Patel N, Siddiqui SH, et al. The otolaryngology match: a bibliometric analysis of 222 first-year residents. *Laryngoscope*. 2019;129(7):1561-1566. doi:10.1002/lary.27460
32. Mansi A, Karam WN, Chaaban MR. Attitudes of residents and program directors towards research in otolaryngology residency. *Ann Otol Rhinol Laryngol*. 2018;128(1):28-35. doi:10.1177/0003489418804565
33. Chang CWD, Thorne MC, Malekzadeh S, Pletcher SD. Two-year interview and match outcomes of otolaryngology preference signaling. *Otolaryngol Head Neck Surg*. 2023;168(3):377-383. doi10.1177/01945998221121312
34. NMRP. Charting the Outcomes in the Match: Senior Students of U.S. M.D. Schools. 2018. https://www.nrmp.org/match-data-analytics/archives/
35. NMRP. Charting the Outcomes in the Match: Senior Students of U.S. M.D. Schools. 2020. https://www.nrmp.org/match-data-analytics/archives/
36. NMRP. Charting the Outcomes in the Match: Senior Students of U.S. M.D. Schools. 2022. https://www.nrmp.org/match-data-analytics/residency-data-reports/