



What Are We REALLY Looking for in a Letter of Recommendation?

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OBJECTIVES: The letter of recommendation (LOR) is an important component of a residency application. There is great subjectivity in the interpretation of a letter writer's narrative and many residencies have moved toward standardized LORs (sLOR). We aimed to scrutinize the importance afforded to specific content and applicant attributes in an LOR in hopes of *decoding* this time-honored process.

DESIGN: A 35-question survey comprised of nonidentifying general questions, and participant evaluation of applicant characteristics and LOR phrases were administered (cross-sectional design). Evaluations were scored both objectively on a 10-point Likert scale and subjectively using a relative ranking.

SETTING: Academic, tertiary care center with a large general surgery residency program (Mayo Clinic, Rochester, MN).

PARTICIPANTS: Surgery attendings and general surgery residents ($n = 122$).

RESULTS: Seventy-two attendings and 50 general surgery residents completed the survey. Faculty ranked strong work ethic/hard working (median rank = 1) and inquisitive/hungry learner (median rank = 3) as the top 2 attributes. "We will plan to recruit this candidate" (median rank = 1.5) and "I give my highest recommendation" (median rank = 2) were the top 2 phrases. Residents valued strong work ethic and collaborative/team player as the top 2 applicant attributes. Seventy-three percent of attendings and 82% of residents agreed that LOR allows the applicant pool to be divided into upper and lower halves. Only 17% of faculty and 18% of residents agreed

that an LOR allowed candidate stratification into quartiles.

CONCLUSIONS: Elaborating the most favorable applicant characteristics and highly regarded content in an LOR will help truly exceptional candidates obtain letters that make them stand out in the eyes of their evaluators. Since LORs are mostly considered to be able to stratify only upper and lower halves of the applicant pool, it is imperative to move toward LORs which portray superior applicant qualities, and can provide more objective evaluation of a candidate. (J Surg Ed 76:e118–e124. © 2019 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: letters of recommendation, residency, general surgery, attendings, applicants, survey

COMPETENCIES: Practice-Based Learning and Improvement, Systems-Based Practice, Interpersonal and Communication Skills, Professionalism

INTRODUCTION

The letter of recommendation (LOR) constitutes an important component of a residency application. The data from the National Resident Matching Program (NRMP) Program Director Survey in 2018 showed that the LOR had an average importance rating of 4.2 on a 5-point Likert scale in inviting an applicant to interview.¹ While letters can provide information about an applicant's strengths and weaknesses, there is subjectivity in the interpretation of a letter writer's narrative. A study conducted at the University of North Carolina in 2000 showed less than optimal interobserver reliability on assessing an LOR.²

Many residencies such as dermatology, plastic surgery, and emergency medicine have moved toward

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standardized LOR (SLOR) as they are considered to be more efficient to read and have a more consistent inter-rater interpretation.³ A national survey of program directors of surgical residencies in Canada concluded that “work ethic, interpersonal skills and teamwork” are attributed the highest regard in an LOR.⁴ Yet there is little evidence as to what makes a letter valuable to the evaluating faculty.⁴

This study aims to scrutinize the importance afforded to specific content and applicant attributes in an LOR in hopes of *decoding* this time-honored process. Such information will help letter writers since emphasis on particular characteristics and usage of strong phrases may greatly benefit the candidate in question, and provide evaluators and applicants a consensus of what is highly valued in an LOR.

METHODOLOGY

This is a descriptive, cross-sectional study based on a survey administered to 162 attendings across all surgical specialties in a single academic institution. The survey was also sent to 70 general surgery residents within our program. The study was reviewed and approved by the institutional review board of our institution.

The questionnaire consisted of 35 questions divided into 4 sections: the first section comprised nonidentifying general questions about the participant. The second and third sections evaluate the characteristics of the applicant and the phrase/letter content, respectively. The final section was a short summary as to the importance of an LOR in stratifying applicants. The second and third sections were scored both objectively on a 10-point Likert scale (highest score = 10) and subjectively using a relative rank scoring (highest rank = 1).

The questionnaire was based on an existing form from the Medical College of Wisconsin and a national survey of surgery program directors in Canada with revisions from an expert faculty panel at our institution.^{4,5}

The final version of the survey was administered to faculty in the following specialties: general surgery, trauma surgery & critical care, endocrine surgery, colorectal surgery, plastic surgery, urology, hepatobiliary surgery, thoracic surgery, pediatric surgery, cardiac surgery, orthopedic surgery, neurosurgery, vascular surgery, head and neck surgery, and obstetrics & gynecology. The questionnaire was also administered to all general surgery residents (post-graduate year 1 to year 5) to obtain their perspective on what they look for and desire in an LOR.

Data were analyzed by descriptive statistics using JMP software (version 14, SAS, Cary, NC). Comparisons between the resident and attending groups were made

by the Mann-Whitney-Wilcoxon test for the relative rankings and for the absolute Likert scores. Medians were used as a measure of central tendency due to skewed distributions. A p value of less than 0.05 was considered statistically significant.

RESULTS

A total of 72 attendings and 50 general surgery residents completed the survey. Our survey response rate was 44% among attendings and 83% among residents. **Table 1** summarizes the specialty distribution of faculty respondents.

The 72 attendings had a wide range of experience with writing LOR: 31% ($n = 22$) had written less than 10 letters, 58% ($n = 42$) had written between 10 and 100 letters and 11% ($n = 8$) had written more than 100 letters for residency applicants.

Our survey included a question where we asked staff surgeons to tell us 4 *descriptors* they would like to see in an LOR. The top 4 free-text descriptors offered by our faculty were “hard-working, team player, will want to hire, and honesty/integrity.”

Among applicant *attributes*, strong work ethic/hard working (median rank = 1, median Likert score = 10) and inquisitive/hungry learner (median rank = 3, median Likert score = 9) were considered the top 2 attributes by faculty. Indeed, strong work ethic/hard working was ranked first out of 13 attributes by 37 (51%) faculty members. The ranking and scoring of applicant attributes are summarized in **Table 2**.

Among letter phrases and content, “We will plan to recruit this candidate” (median rank = 1.5, median Likert score = 10) and “I give my highest recommendation” (median rank = 2, median Likert score = 10) were rated the top 2 phrases. Thirty-five of 72 attendings (49%) rated the former phrase as their first choice among

TABLE 1. Specialty Distribution of Faculty Respondents

Specialty	N (%)
General surgery*	42 (58)
Orthopedics	5 (7)
Neurosurgery	3 (4)
OB/GYN	5 (7)
ENT	4 (6)
Vascular surgery	5 (7)
Plastic surgery	2 (3)
Urology	6 (8)

*Includes general surgery ($n = 5$), hepatobiliary surgery ($n = 2$), endocrine surgery ($n = 2$), colorectal surgery ($n = 9$), pediatric surgery ($n = 2$), trauma/critical care surgery ($n = 4$), transplant surgery ($n = 4$), breast surgical oncology ($n = 4$), cardiothoracic surgery ($n = 10$).

TABLE 2. Applicant Attributes

Applicants Characteristics	Median Rank (IQR) (Highest Rank = 1, Lowest = 13)		Difference of Medians p Value	Median Likert Score (IQR) (Highest Score = 10, Lowest = 1)		Difference of Likert Scores p Value
	Attendings*	Residents		Attendings	Residents	
Strong work ethic/hard working	1 (1-4)	2 (1-4.3)	0.27	10 (9-10)	10 (9-10)	0.72
Inquisitive/hungry learner	3 (2-8)	5 (3-7.3)	0.23	9 (8-10)	9 (7.5-10)	0.51
Collaborative/team player	4 (3-8)	4 (2-6)	0.06	9 (7-10)	10 (8-10)	0.16
Detail-oriented/meticulous	5 (4-9)	7 (4.8-10)	0.15	8 (7-9)	8 (6-9)	0.24
Self-initiative	6 (3-9)	6 (3-9)	0.84	8 (7-9.5)	8 (7-10)	0.53
Open to criticism/resilient	6 (4-9)	8 (4-10)	0.38	9 (7-10)	9 (7-10)	0.65
Intelligent/bright	7 (4-10)	8 (3.8-11.3)	0.18	8 (7-9)	7 (5-9)	0.05
Methodical/organized	8 (5-10)	8 (6-10)	0.81	8 (7-9)	7 (6-8)	0.11
Professional	8 (6-10)	7.5 (4.8-10)	0.58	8 (6-9)	8 (6-10)	0.49
Clear communicator	9 (6-10)	9 (7-10.3)	0.42	7 (6-8)	8 (6-9)	0.21
Kind/caring	9 (6-11)	6 (4-10)	0.01	7 (6-9)	8 (6-10)	0.60
Leader	9 (6-12)	8 (5.8-10)	0.23	7 (5-8.8)	7 (6-9)	0.56
Talented speaker/presenter	13 (12-13)	12 (11-13)	0.25	5 (3-7)	5 (4-6)	0.92

IQR, interquartile range.

*Attributes have been arranged in decreasing order of importance from the attendings' perspective.

14 phrases/letter content while 48 attendings (67%) ranked the latter phrase among their top 2 choices. [Table 3](#) summarizes the letter content/phrases evaluated.

Resident perspectives of key applicant attributes and letter content mirrored that of attendings with minor differences. The phrase "Documented steady

improvement" was ranked higher by residents (median rank 11 by residents vs 12 by faculty) with a higher median score on a 10-point Likert scale (5 by residents vs 4 by attendings). Despite the statistical significance, these values were very close indicating that both groups of evaluators offered similar

TABLE 3. Letter Content/Phrases

Phrase	Median Rank (IQR) (Highest Rank = 1, Lowest = 14)		Difference of Medians p Value	Median Likert Score (IQR) (Highest Score = 10, Lowest = 1)		Difference of Likert Scores p Value
	Attendings*	Residents		Attendings	Residents	
We will plan to recruit this candidate	1.5 (1-3)	2 (1-4.3)	0.42	10 (9-10)	10 (9-10)	0.84
I give my highest recommendation	2 (1-3)	2.5 (2-4)	0.02	10 (9-10)	9 (8-10)	0.12
Outstanding performer	4 (3-5)	4.5 (3-7.3)	0.25	8 (7.5-9)	9 (7-10)	0.30
Recommend without reservation	4.5 (3-7)	5.5 (3.8-9)	0.13	8 (7-9)	8 (6-9)	0.58
I would highly recommend	6 (4-7)	6 (5-8.3)	0.26	8 (7-8)	8 (6-10)	0.58
Exceeds expectations	6 (4-9)	6 (3-7)	0.06	7 (6-9)	8 (6.5-10)	0.10
Will be an asset to your program	7 (5-8)	5.5 (3.8-7.3)	0.05	7 (6-9)	8 (7-10)	0.003
Statement predicting applicant success	8 (5-11)	7 (5.8-10)	0.18	6 (5-8)	7 (5-8)	0.40
Letter writer knows applicant personally	8 (4.8-11)	8.5 (5-12)	0.54	6 (3-8)	7 (5-8.5)	0.44
Performed well	10 (9-12)	11 (9-12)	0.46	5 (3-6)	5 (3-6)	0.45
I recommend	11 (9-13)	11 (9.8-13)	0.48	5 (2-6)	5 (2.5-6)	0.74
Positive description of suturing technique	11 (8-12.3)	11 (8-13)	0.54	5 (2-6)	5 (3-8)	0.30
Documented steady improvement	12 (11-13)	11 (8-12)	0.0009	4 (2-6)	5 (3-7)	0.03
Fulfilled the rotation requirements	13 (12-14)	13 (12-14)	0.98	2 (1-4)	3 (1-5)	0.43

IQR, interquartile range.

*Phrases have been arranged in decreasing order of importance from the attendings' perspective.

TABLE 4. Does the LOR Allow Applicant Stratification as a:

		Yes, N (%)	Often, N (%)	Rarely, N (%)	No, N (%)
Stellar candidate	Attendings	11 (16)	42 (60)	15 (21)	2 (3)
	Residents	9 (18)	23 (47)	14 (29)	3 (6)
Weaker candidate	Attendings	14 (20)	20 (29)	32 (46)	4 (6)
	Residents	11 (22)	15 (31)	20 (41)	3 (6)

Fifty-one attendings (73%) and 41 residents (82%) agreed that the LOR allows the applicant pool to be divided into upper and lower halves. Only 17% ($n = 12$) of faculty and 18% of residents ($n = 9$) agreed that an LOR allows candidate stratification into quartiles.

suggestions about the usefulness of this phrase in an LOR. The top 2 attributes of an applicant by resident evaluators were “Strong work ethic/hard working” (median rank = 2, median Likert score = 10) and ‘Collaborative/Team Player’ (median rank = 4, median Likert score = 10). The letter content/phrases attributed the highest rank were similar to those among attendings (“We will plan to recruit this candidate” [median rank = 1.5, median Likert score = 10] and “I give my highest recommendation [median rank = 2.5, median Likert score = 9]).

In our last section, participants were asked as to whether they thought that the LOR helped evaluators in determining which applicants are stellar and which applicants were weak. These results are tabulated in [Table 4](#).

DISCUSSION

This study reveals several key attributes and phrases that faculty and residents find impressive in an LOR. Both our faculty and resident evaluators concur that “Strong work ethic/hard-working” is the attribute of highest regard to the character of a residency applicant. Additionally, resident evaluators look favorably at applicants whose letters emphasize teamwork as a quality. A letter that explicitly states that the letter writer would want the candidate for their own residency program is the phrase which readers are looking for as a descriptor of a stellar candidate. LORs can rank candidates in upper and lower halves but may not be useful in further distinguishing a superior applicant.

Few studies have attempted to decode an LOR. Marwan et al. in their national survey of program directors of surgical residencies in Canada found that the characteristics “Work Ethic,” “Ability to work effectively in a team,” and “Motivation and Commitment to the specialty” were considered very important by the majority of their respondents.⁴ Our results reiterate the description of work ethic and teamwork as highly regarded traits in an LOR. Greenburg et al. reported that a computerized measure of letter content identified discrepancies

between letters written for highly ranked candidates compared with those ranked “at the bottom.” Their scoring of letters by faculty evaluators revealed that letters receiving the best combined scores were on average twice as long and had 3 times as many personal references to the applicant as letters rated poor. Additionally, references to an applicant’s fund of knowledge, motivation, work habits, and willingness to put in long hours were viewed positively in the LOR.⁶ The study by DeZee et al. reported 72% of their survey participants greatly desire a depth of understanding of an applicant by the letter writer to be absolutely essential.⁷

Our faculty and resident perspectives that LORs may not be able to adequately stratify applicants is consistent with similar studies.^{8,9} JB Fortune in his paper on content and value of LORs in the resident candidate evaluation process concluded that LORs were useful only for evaluation of 24% of candidates, and direct performance comparison of candidates to their colleagues was made only in 17% of letters. He noted that the single descriptor adjective used in the letter placed 70% of applicants in the “outstanding” or “excellent” category attesting to the high levels of flattery that went into an LOR.⁹

There is considerable weightage afforded to an LOR in selecting a residency applicant. The NRMP Program Director Survey in 2018 reported that 88% of residency programs cited LOR as an important factor in selecting an applicant to interview (mean importance rating of 4.2 out of 5). Likewise, 79% of programs said that LOR was important in ranking an applicant (mean importance rating of 4).¹ The nonstandard and variable nature of LORs results in high levels of subjectivity in evaluation. One of the major issues with LORs is the use of modifiers. Morgenstern et al. in their article in 2003 concluded that there is a significant inflation of terminology. They describe an “unofficial hierarchy” of superlative terms—“One of the best” being superlative to “Outstanding” which trumps “Excellent.” “One of the best” by itself was further categorized as “One of the best ever,” “One of the best students in recent history” and “One of the best students this year” in descending level of praise.¹⁰ This is exemplified in our study where “I give my highest recommendation,” “I would highly

recommend,” and “Recommend without reservation” though being similar terminology are given different levels of importance (Table 3).

Stohl et al. in their study evaluated LORs using the 6 Accreditation Council for Graduate Medical Education Core Competencies—Practice-Based Learning and Improvement, Patient Care and Procedural Skills, Systems-Based Practice, Medical Knowledge, Interpersonal and Communication Skills, and Professionalism. They reported a statistically significant relationship between candidates ranked in the highest quartile for residency positions and their respective LORs which referenced these attributes. Differences in the referencing of these core competencies between residents ranked in the highest vs lowest quartiles were statistically significant.¹¹

Many residencies have moved to a SLOR. Girzadas et al. in their article comparing SLORs with narrative LOR found a higher interrater reliability (0.97 vs 0.78) and a greatly reduced time to interpret an SLOR compared to an narrative LOR (16 seconds vs 90 seconds).¹²

SLORs are not without drawbacks—they portray heavy inflation of student performance. More than 95% of students were ranked in the top third compared to their peers in a multi-institutional study evaluating LOR to 3 emergency medicine programs. The authors found that 67% of the SLORs had 1 or more questions left unanswered and 13% of SLORs had been customized and changed from the standard template which worked against the intention of standardization.¹³ Similarly, Kominsky et al. in their analysis of 496 SLORs to an otolaryngology program found a clustering of applicants in the top 2 deciles with small standard deviations resulting in a tight distribution. They suggested that the SLOR played more of an “advocacy role rather than a true evaluation.” They concluded that the SLOR requires significant modification should it continue to be used as part of the residency application process.¹⁴ Despite these pressing issues, a validated survey completed by 150 program directors of emergency medicine residency concluded that the SLOR was the most important tool for determining which candidate should be interviewed for residency training.¹⁵

One of the interesting findings in our study was that a personal knowledge of the applicant by the author of an LOR was not valued as highly as would be expected. This seems to contrast the existing literature where the nature of contact between a letter writer and the applicant is often considered to affect a reader’s impression of the candidate.⁴ JB Fortune in his article found that 17% of evaluated LORs demonstrated no evidence of a clinical relationship between the author and the student—this was especially so for letters from surgical department chairs.⁹ Our results may be attributed at

least in part, to a possible difference between a “personal” and “professional” knowledge of an applicant and due to differences in the experience of our attending and resident evaluators.

Residents work closely with medical students during clinical rotations. Oftentimes, it is the residents who can evaluate medical students accurately due to the amount of time they spend with them. Consequently, attendings often seek resident input in writing an LOR for a candidate. While studies have evaluated faculty understanding of what goes into an LOR, the data on resident perception of this critical component of the residency application are scant. We found that some minor differences between attending and resident perspectives in applicant attributes and letter content as documented in Tables 2 and 3. At our institution, senior residents (years 3 and above) are frequently part of the interview process. They receive access to the complete application package and are actively involved in evaluating LORs of residency applicants. Scores attributed by residents and faculty to applicant LORs are considered for the ranking process.

The relative and absolute importance afforded to applicant attributes from this study can assist faculty in writing a strong LOR in support of an applicant. As our data show, specific phrases with similar meanings are rated higher than others and incorporation of this content into an LOR would stand competitive applicants in higher stead. The shortcomings of both SLORs and NLORs can be overcome, at least in part, by moving toward an SLOR with a word-limit restricted narrative component that allows letter writers to provide their highest level of support to residency applicants.

There are several limitations to our study. This was a survey-based single institutional experience. Attributes and letter content chosen for evaluation were adapted from existing questionnaires and based on expert opinion of program faculty in our institution. Thus, the terminology we studied while representative of most common phrases/characteristics is by no means, an all-inclusive or exhaustive list. Dozens of our attendings are actively involved in the interview/selection process—but this cadre varies from year to year. We did not analyze the exact percentage nor consistency of faculty and resident respondents who have been in such role in the recent years. Similarly, our study was geared toward LOR written for general surgery residency applicants and may not be applicable across all specialties. Resident input on what they find impressive in an LOR was obtained only from general surgery residents as they are ones who are actively involved in reviewing applications and interviewing applicants for a general surgery residency program.

There is much potential for further understanding and characterization of LOR. It may only be a matter of time

before general surgery moves toward SLORs. Future studies can evaluate and contrast the effectiveness and ability of SLORs to determine the best candidates for this specialty. It would also be of value to determine the correlation between residency performance and the LOR. Recent literature has focused on gender differences in writing LOR.¹⁶⁻¹⁹ Studying differences in rating an LOR based on evaluator gender, differences in the perspectives of attendings, and residents who are part of a residency selection committee compared with those who are not and a further characterization of the magnitudes of concordance between attending and resident groups would be of interest in future studies.

In summary, LORs are an important component of a residency application. The applicant characteristics and LOR terminology we have elaborated will assist letter writers in writing strong LORs for their students. Program faculty who evaluate LORs for residency applicants will find it useful to have a consensus as to what LOR content is highly regarded by many surgeons. Finally, our findings may influence students in channelizing their efforts to best impress faculty during their clinical rotations. Despite these suggestions, LOR may only be able to differentiate the residency applicant pool into upper and lower halves. It seems imperative to us to minimize “grade/recommendation inflation” and move the LOR toward greater objectivity to further advance its inherent value student, letter writer, and program director.

REFERENCES

1. National Resident Matching Program. Results of the 2018 NRMP program director survey specialties matching service. <https://mk0nrmpcikgb8jxyd19h.kinstacdn.com/wp-content/uploads/2018/07/NRMP-2018-Program-Director-Survey-for-WWW.pdf>
2. Dirschl DR, Adams GL. Reliability in evaluating letters of recommendation. *Acad Med.* 2000;75:1029. <https://doi.org/10.1097/00001888-200010000-00022>.
3. Wang RF, Zhang M, Kaffenberger JA. Does the dermatology standardized letter of recommendation alter applicants chances of matching into residency. *J Am Acad Dermatol.* 2017;77. <https://doi.org/10.1016/j.jaad.2017.05.058>.
4. Marwan Y, Waly F, Algarni N, Addar A, Saran N, Snell L. The role of letters of recommendation in the selection process of surgical residents in Canada: a national survey of program directors. *J Surg Educ.* 2017;74:762-767. <https://doi.org/10.1016/j.jsurg.2017.01.006>.
5. Saudek K, Saudek D, Treat R, Bartz P, Weigert R, Weisgerber M. Dear program director: deciphering letters of recommendation. *J Grad Med Educ.* 2018;10:261-266. <https://doi.org/10.4300/jgme-D-17-00712.1>.
6. Greenburg A, Doyle J, McClure D. Letters of recommendation for surgical Residencies: what they say and what they mean. *J Surg Res.* 1994;56:192-198. <https://doi.org/10.1006/jsre.1994.1031>.
7. Dezee KJ, Thomas MR, Mintz M, Durning SJ. Letters of recommendation: rating, writing, and reading by clerkship directors of internal medicine. *Teach Learn Med.* 2009;21:153-158. <https://doi.org/10.1080/10401330902791347>.
8. Shultz K, Mahabir RC, Song J, Verheyden CN. Evaluation of the current perspectives on letters of recommendation for residency applicants among plastic surgery program directors. *Plast Surg Int.* 2012;2012:1-5. <https://doi.org/10.1155/2012/728981>.
9. Fortune JB. The content and value of letters of recommendation in the resident candidate evaluative process. *Curr Surg.* 2002;59:79-83. [https://doi.org/10.1016/s0149-7944\(01\)00538-4](https://doi.org/10.1016/s0149-7944(01)00538-4).
10. Morgenstern BZ, Zalneraitis E, Slavin S. Improving the letter of recommendation for pediatric residency applicants: an idea whose time has come. *J Pediatr.* 2003;143:143-144. [https://doi.org/10.1067/s0022-3476\(03\)00255-5](https://doi.org/10.1067/s0022-3476(03)00255-5).
11. Stohl HE, Hueppchen NA, Bienstock JL. The utility of letters of recommendation in predicting resident Success: can the ACGME competencies help. *J Grad Med Educ.* 2011;3:387-390. <https://doi.org/10.4300/jgme-D-11-00010.1>.
12. Girzadas DV, Harwood RC, Dearie J, Garrett S. A comparison of standardized and narrative letters of recommendation. *Acad Emerg Med.* 1998;5:1101-1104. <https://doi.org/10.1111/j.1553-2712.1998.tb02670.x>.
13. Love J, Ronan S, Deiorio N, et al. Characterization of the CORd standardized letter of recommendation in 2011 to 2012. *Ann Emerg Med.* 2013;62. <https://doi.org/10.1016/j.annemergmed.2013.06.030>.
14. Kominsky AH, Bryson PC, Benninger MS, Tierney WS. Variability of ratings in the otolaryngology standardized letter of recommendation. *Otolaryngol Head Neck Surg.* 2016;154:287-293. <https://doi.org/10.1177/0194599815623525>.

15. Love JN, Smith J, Weizberg M, et al. Council of emergency medicine residency directors standardized letter of recommendation: the program directors perspective. *Acad Emerg Med*. 2014;21:680-687. <https://doi.org/10.1111/acem.12384>.
16. French JC, Zolin SJ, Lampert E, et al. Gender and letters of recommendation: a linguistic comparison of the impact of gender on general surgery residency applicants. *J Surg Educ*. 2018. <https://doi.org/10.1016/j.jsurg.2018.12.007>.
17. Turrentine FE, Dreisbach CN, Ivany ARS, Hanks JB, Schroen AT. Influence of gender on surgical residency applicants recommendation letters. *J Am Coll Surg*. 2019;228. <https://doi.org/10.1016/j.jamcollsurg.2018.12.020>.
18. Hoffman A, Grant W, McCormick M, Jezewski E, Matemavi P, Langnas A. Gendered differences in letters of recommendation for transplant surgery fellowship applicants. *J Surg Educ*. 2019;76:427-432. <https://doi.org/10.1016/j.jsurg.2018.08.021>.
19. Filippou PL, Mahajan SL, Wallen EM, Tan H-J, Pruthi R, Smith AB. Gender bias in letters of recommendation for urology residency applicants. *J Am Coll Surg*. 2017;225. <https://doi.org/10.1016/j.jamcollsurg.2017.07.161>.

SUPPLEMENTARY INFORMATION

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