INTRODUCTION

Annals of Emergency Medicine and Academic Life in Emergency Medicine (ALiEM) launched a global emergency medicine journal club in 2013 as a shared initiative to increase awareness of key emergency medicine literature, increase the speed of knowledge translation, and provide an educational resource to teach critical appraisal to emergency physicians while reporting Web analytics for the social media platforms used.1 Because of its increasing popularity, this collaboration now extends to the Annals Residents’ Perspective series. In this first installment, we feature the 2014 article by Phillips and Garmel2 “Does the Multiple Mini-Interview Address Stakeholder Needs? An Applicant’s Perspective” by Phillips and Garmel.

This dialogue included Twitter conversations, a live videocast with the authors and other experts, and detailed discussions on the ALiEM Web site’s comment section. This summary article serves the dual purpose of reporting the qualitative thematic analysis from a global online discussion and the Web analytics for our novel multimodal approach. Social media technologies provide a unique opportunity to engage with a diverse audience to detect existing and new emerging themes. Such technologies allow rapid hypothesis generation for future research and enable more accelerated knowledge translation. [Ann Emerg Med. 2014;64:320-325.]
MATERIALS AND METHODS

The Annals editors selected the Residents’ Perspectives article, and 4 facilitators were chosen for their expertise in graduate medical education and active presence on social media. Two are experienced bloggers on ALiEM (N.J., M.L.), and all have active Twitter accounts with greater than 100 (L.Y., @LainieYarris), greater than 400 (C.D., @PoppasPearls), greater than 1,100 (N.J., @NJoshi8), and greater than 6,400 (M.L., @M_Lin) followers at the discussion.

The discussion was hosted by ALiEM, which is a public, Wordpress-based, educational blog Web site created in 2009, with currently greater than 1 million page views annually, greater than 19,000 Facebook fans, greater than 500 Google+ followers, and greater than 500 e-mail subscribers. The primary Twitter account associated with the Web site is @M_Lin. The Web site hosts a broad range of topics relevant to academic and community emergency physicians, including clinical pearls, reviews of journal articles, faculty development discussions, and medical education topics.

The facilitators’ goal during the discussion was to encourage sharing and reflection on 4 discussion questions (Figure 1) in regard to current perspectives about multiple mini-interviews for emergency medicine residency applicant selection. On May 9, 2014, a live Google Hangout on Air videocast was used to host a panel discussion featuring the authors of the highlighted article, Andrew Phillips, MD, MEd, and Gus Garmel, MD, as well as William Soares, MD, who has an article on the topic accepted for publication in Academic Medicine (personal communication, William Soares MD, Bay State Medical Center, May 2014). This video was automatically uploaded in real time for public viewing to ALiEM’s YouTube account (ALiEM Interactive Videos).

The multiple mini-interview discussion was hosted on the ALiEM Web site, with comments moderated both on the blog Web site and Twitter, similar to the format of the November 2013 global emergency medicine journal club.1 Promotion for the discussion included notices on the ALiEM Web site, Facebook page, Google+ page, and the facilitators’ individual Twitter accounts. Ongoing promotion occurred throughout the next 14 days with tweets including the #ALiEMRP hashtag from the Annals’ and facilitators’ Twitter accounts. Written transcripts from Twitter, the blog Web site, and the videocast discussions were analyzed for broad emerging themes and subthemes by 1 author (N.J.). The other 3 authors (L.Y., C.D., M.L.) reviewed these themes and subthemes to ensure logical organization and comprehensiveness such that no key discussion points were excluded.

Web analytics were recorded for this 14-day discussion period. Google Analytics, the ALiEM Social Media Widget, YouTube Analytics, and Symplur were used to track metrics for viewership and engagement on the Web site, various social media platforms, YouTube, and Twitter, respectively. The number of comments and words per comment in the Web site discussion were also calculated, excluding the initial comments by the facilitators and all references.

RESULTS

Summary of the Online Discussion

A debate surrounding the 4 blog questions covered not only the benefits and pitfalls of multiple mini-interviews but also a broader dialogue on the aim of the interview process from the perspective of both applicants and programs, on how the multiple mini-interview might affect resident perceptions of programs, and on the issues of feasibility, acceptability, and effectiveness of multiple mini-interview for emergency medicine residency selection. Four broad themes emerged during the discussions, which focused on (1) characteristics of the multiple mini-interview; (2) the format of the multiple mini-interview from the perspective of the emergency medicine residency program; (3) the format of the multiple mini-interview from the perspective of the applicant; and (4) aspects of the interview day. A full transcript of the blog Web site discussion is archived at http://academiclifeinem.com/multiple-mini-interviews-annals-em-resident-perspective-article/, and all tweets with the #ALiEMRP are archived on Symplur.com at http://alturl.com/7qohq.

MULTIPLE MINI-INTERVIEW CHARACTERISTICS

As described in the literature, the multiple mini-interview technique has unique benefits and aims to minimize the subjectivity and biases inherent in unstructured interviews. Laura Hopson (University of Michigan) succinctly summarized this on the Web site: “The MMI’s [multiple mini-interview’s] ultimate intent is to get at examples of behavior that could potentially be predictive of future behavior (either positive or detrimental).”
Robert Cloutier (Oregon Health & Science University) added the following (Figure 2):

#alimrp MMI allows programs to tailor to what they value in candidates and prevents candidates from 'rehearsed' interviews.

Figure 2.

Multiple Mini-Interview Format: From the Perspective of Emergency Medicine Residency Program

Needs of the program. Contributors to the discussion expressed that because the multiple mini-interview was originally developed for medical school admissions processes, it is problematic to assume that residency programs have similar needs in regard to the selection process. A recommendation emerged in all platforms that programs considering the multiple mini-interview first assess their current interview processes and applicant evaluations and then conduct a needs assessment to determine whether multiple mini-interviews would provide added value. “Is MMI a solution without a problem?” posed Christopher Doty, MD (University of Kentucky), during the videocast, suggesting that in his experience as a program director, noncognitive abilities are already adequately elicited with the current interview process. Others supported that sentiment, citing that longitudinal data about noncognitive qualities are already captured through the Medical School Performance Evaluations and Standardized Letters of Evaluation from emergency medicine rotations. Benjamin Lefkove’s (Emory University) tweets illustrate both other avenues to assess these qualities and factors that may be difficult to assess during the multiple mini-interview (Figures 3 and 4):

Figure 3.

One Web site commenter, Ran Ran (Oregon Health & Science University) described that although he personally enjoyed his experience with the multiple mini-interview as a medical school applicant, he was “probably the exception…. It is stressful…. Imagine the neurosis surrounding simple mock interviews. Then multiply by infinity because there are no predictable questions.” However, this drawback for applicants also emerged as a possible benefit for programs in that applicants

Feasibility. Several comments centered around the time and resources that are required to recruit and train multiple mini-interview facilitators, select and execute the multiple mini-interview stations, and assess applicant performance. Most prominent were concerns about faculty resources, as exemplified by a tweet by Teresa Chan (McMaster University, Canada) (Figure 5):

Figure 5.

Multiple Mini-Interview Format: From the Perspective of the Applicant

Applicant acceptability. William Soares (Baystate University) proposed in the videocast that the multiple mini-interview presents a unique benefit to the applicant: “The goal of MMI [is] to give all applicants a fair chance during the evaluation process—to level the playing field.” Responses about the drawbacks of the multiple mini-interview, in addition to the feasibility concerns, mainly centered on applicant acceptability as in this representative tweet by Felix Ankel (University of Minnesota) (Figure 6):

Figure 6.
who thrive in the uncertain and stressful environment of the multiple mini-interview may possess qualities that are important in emergency medicine. David Jones (Oregon Health & Science University) commented “While the applicants might feel some stress about being challenged, the applicants that we really want are going to be the ones that rise to the challenge.”

**Applicant needs.** An additional concern emerged that the multiple mini-interview might not meet applicant needs. During the videocast, Doty opined: “MMIs don’t serve the interests of the applicants…. [They] need to have some time during the interview process that is less structured.” This was echoed by the following tweet by Jonathan Cheah (Albert Einstein/Montefiore) (Figure 7):

![Jonathan Cheah](image1)

"#ALiEMRP I underwent MMI for IM in UK. +ve standardized across the country. -ve impersonal and cannot ask program specific questions"

**Figure 7.**

Jordana Haber (Maimonides) added concerns about the impersonal nature of the multiple mini-interview (Figure 8):

![Jordana Haber](image2)

"@njoshi8 @Emtogether goal of resident interview is to add a personal layer to the robust application - which seems compromised with MMI"

**Figure 8.**

**Evolution of applicant perceptions over time.** A number of comments related to the theme of evolution, with recognition that the benefits and perspectives of the multiple mini-interview format for emergency medicine residency selection may change over time. For example, Michelle Lin, MD (University of California, San Francisco), commented on how applicant perceptions about the multiple mini-interview may change if the format becomes more prevalent: “Should MMI’s become more mainstream, I would venture to guess that applicants would not rank programs less favorably merely because of the MMI. It’ll just become an accepted and expected part of an interview day which focuses on making the evaluation process more objective.”

**Interview Day Format**

Several individuals commented that, whether with the multiple mini-interview or traditional format, interviews are only one component of the interview day. A tour, lunch, and less structured time with the residents may help to balance any of the drawbacks during the one-on-one interviews. In addition, some commenters, such as Brent Thoma (University of Saskatchewan, Canada) proposed a “blended approach” with a combination of traditional and multiple mini-interview format interviews.

**Web Analytics**

The analytics data for the multiplatform discussion about multiple mini-interview, which occurred during May 7 to 20, 2014, are summarized in the Table.

**DISCUSSION**

This article presents the results of the first ALiEM-Annals collaboration using multimodal social media discussions to explore a timely, relevant question inspired by a Residents’ Perspective piece: Should the multiple mini-interview be applied to emergency medicine residency selection processes? In analyzing the themes that emerged from the audience, we found that some confirmed the existing literature and featured article, some offered opposing or novel opinions, and others generated new hypotheses for further study.

Our contributors’ comments were consistent with the literature in expressing the importance of an interview process that is fair, unbiased, equitable, and reliable, and elicits information about noncognitive qualities. Two overarching questions continually arose during our discussions. First, what are the limitations of the current interview processes for emergency medicine residency? Emergency medicine programs may not have the same unmet needs in the applicant selection process as medical schools, for which the multiple mini-interviews were originally designed. Second, what is the desired balance between meeting program and applicant needs for emergency medicine residency selection? These questions address the heart of the key dilemma facing emergency medicine residency programs: How can the interview day best predict which candidates will thrive in emergency medicine, accurately portray program strengths and personality, and ultimately result in optimal applicant-program matches for all stakeholders?

At the time of the Phillips and Garmel2 publication, there were no published descriptions of multiple mini-interview applications in emergency medicine residency selection, to our knowledge. Since then, Hopson et al6 published an evaluation of 71 new interns who completed an 8-station multiple mini-interview focused on emergency medicine topics. They found that although multiple mini-interview performance correlated with emergency medicine grades, it did not correlate with match desirability, and applicants preferred a traditional format over a blended format (traditional and multiple mini-interview questions), which they still found preferable to the multiple mini-interview format alone. Hopson shared her teams’ study insights in a Web site comment, concluding that her program will not be using multiple mini-interviews for residency applications, but will rather likely transition to “behavioral interviewing.” Soares and his research team have also studied multiple mini-interview in residency selection, finding that 3 multiple mini-interview themes contribute to applicants’

---

**Table.**

<table>
<thead>
<tr>
<th>Applicant Scenarios</th>
<th>Number of Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Mini-Interviews</td>
<td>126</td>
</tr>
<tr>
<td>Traditional Interviews</td>
<td>44</td>
</tr>
<tr>
<td>Blended Format</td>
<td>28</td>
</tr>
</tbody>
</table>

---

**Figure 1.**

Examples of applicant comments on the multiple mini-interview in residency selection, 2014. The analytics data for the multiplatform discussion about multiple mini-interview, which occurred during May 7 to 20, 2014, are summarized in the Table.
3) did not have meaningful connection with interviewer. 

He commented on the Web site that his study identified 3 themes expressed by the applicants: “1) new and stressful; 2) perception that one could not represent themselves accurately; and 3) did not have meaningful connection with interviewer.”

The degree of stakeholder engagement in our online discussion, as well as the work of Phillips, Garmel, Hopson, and Soares, suggests that emergency medicine educators perceive that the traditional application and interview process does not fully meet their needs. However, this problem is not unique to medicine. In his Web site comment, Nitin Chopra (United States) shared that the technology sector also struggles with the fundamental problem of finding and selecting the best talent. Furthermore, research from psychology and education suggests that program directors are wise to consider the applicant acceptability of the interview format, particularly in regard to the emotions that the process elicits in participants. Emerging research suggests that emotions affect cognition and performance, focus on the overall process as equitable as we can.

Social Media: A New Frontier in Scholarly Discussions

Group discussions about journal articles have traditionally occurred in small classrooms or large conference halls. Rarely do topic experts have the opportunity or availability to participate in a forum alongside learners, clinicians, and educators. The advent of social media technologies, such as blogs, podcasts, microblogs (eg, Twitter), and videos (eg, YouTube), has provided a new opportunity. These conversations can now take place on an online platform. In our global discussion of the Annals article on the multiple mini-interview technique, we incorporated 3 different online platforms—a blog, Twitter, and a live video interview using Google Hangout on Air—to reach our global, digitally interconnected audience. No longer is the discussion bound by geography, schedule availability, travel time, time zones, or financial constraints. Our discussion was held during 14 days in an asynchronous fashion, and anyone with Internet access could freely participate.

On the blog Web site alone, the Web page was viewed by a large global audience more than 1,284 times in 353 cities in 41 countries. Through Twitter, tweets generated 221,946 “impressions,” which is defined as the number of potential views of #ALiEMRP tweets that appear in users’ Twitter streams, as calculated by number of tweets per participant and multiplying it by the number of followers of that participant. Twitter, along with the faciliated discussions, which were very successful in reach and engagement. The video was viewed only 128 times during the 14-day period, and often these were not complete viewings, as demonstrated by an average viewing time of 7 minutes 8 seconds out of 22 minutes 36 seconds. This may have been due to the faster bandwidth needed to view the video, the passive nature of the experience whereby participants cannot interact with the panelists, the short attention span of the viewer, or the viewer’s dislike of the facilitated discussion style. Future hosted video discussions will attempt to incorporate shorter segments and a more engaging style.

The robust, real-time analytic tools for social media platforms demonstrate that our multimodal approach to host scholarly discussions is a powerful, effective, and novel way to elicit, synthesize, and present stakeholder reflections on medical topics. Discussions no longer need to be held in classrooms. In fact,
because the discussion was hosted on a blog Web site, anyone can access the archived discussion anytime, even after the 14-day discussion period, because all content is indexed through Google.

LIMITATIONS

Our results were generated by posing a series of questions about multiple mini-interview applications in residency selection to stakeholders through social media platforms. In regard to the qualitative thematic analysis of the multiplatform discussions, our findings are at risk for selection bias in that individuals who engage in social media discussions may differ from the broader stakeholder populations. It is thus unclear whether all stakeholders were represented in this discussion because it was voluntary and required use of social media platforms for communication. Also, the views of a vocal minority may have been overrepresented because of the challenges of drawing out quiet participants to build consensus in a public, online discussion. Finally, we did not design the discussion to reach saturation, and there may be relevant themes that did not emerge with this format.

In regard to Web analytics, Twitter analytic data depend on participants adding the hashtag #ALiEMRP to their tweet. Individuals who omitted it were not included in the Sprymul analytics, and thus the number of Twitter participants may be underrepresented in our results. Despite this likely underestimation, there were still 140 tweets by 36 individuals, with a very broad reach (Twitter impression of 221,946).

CONCLUSION

The themes that emerged in our multimodal online discussion showed a mixed perception of multiple mini-interviews in the interview process within the social media community. A possible solution was discussed to approach the interview process as a blended or hybrid combination of traditional interview format with the multiple mini-interview. This could address the needs of all the stakeholders and perhaps lead to more successful applicant-to-program pairings.

From an educational innovation perspective, this multimodal approach provided a novel venue for asynchronous, scholarly discussions about a controversial topic published in the literature. It was able to attract 712 unique readers from 41 countries, using social media modalities that included a medical education blog, Twitter, and live videoconferencing. Our social media–based approach showed the power of online engagement with multiple experts and a diverse audience to detect emerging themes that confirmed existing literature, as well as new themes. This method allows rapid hypothesis generation for future research and enables more accelerated knowledge translation.

The authors acknowledge the ALiEM blog discussion participants (Nitin Chopra, Christopher Doty, Laura Hopson, David Jones, Nikita Joshi, Andrew Phillips, Ran Ran, William Soares, Daniel Stein, Brent Thoma, Charlotte Wills, and Lalena Yarris); the #ALiEMRP Twitter participants and the number of their followers (@Billboaresii [33], @Brent_Thoma [1,932], @brettsweeneyEM [8], @Camerasupfox [308], @Chopfellow [26], @Chsu1012 [95], @DocAmyEWalsh [307], @Edpdxs [29], @Elicercohen [411], @EMaagetown [578], @EMLifehnote [3,634], @EMtogether [612], @FelixAnkel [486], @Fengerje [57], @GeorgeMejicano [39], @Jtecheah [213], @jofohaber [755], @JournalofGME [246], @K_ScoutMD [244], @LainiYarris [154], @M_Lin [6,813], @MDaware [4,657], @NathanCleveland [103], @NJoshi8 [1,222], @Petradmd [1,640], @PopposPearls [445], @Revalidation [159], @Runde_mc [131], @Sarntini83 [106], @TChanMD [1,417], @Tmjfox [1,814], @Umanamed [1,642], @UPennEM [783], @Varnshneyd [119], @Warczyk [13]; and the Google Hangout Videocast participants: Christopher Doty, Gus Carmel, Nikita Joshi, Michelle Lin, Andrew Phillips, William Soares, and Lalena Yarris.

Supervising editors: Robert L. Wears, MD, PhD; Michael L. Callaham, MD

Author affiliations: From the Department of Surgery, Division of Emergency Medicine, Stanford University (Joshi); the MedEdLIFE Research Collaborative, San Francisco, CA (Joshi, Lin); the Department of Emergency Medicine, University of Kentucky–Chandler Medical Center, Lexington, KY (Doty); the Department of Emergency Medicine, University of California, San Francisco, CA (Lin); and the Department of Emergency Medicine, Oregon Health and Science University, Portland, OR (Yarris).

Funding and support: By Annals policy, all authors are required to disclose any and all commercial, financial, and other relationships in any way related to the subject of this article as per ICMJE conflict of interest guidelines (see www.icmje.org). The authors have stated that no such relationships exist.

REFERENCES