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Social Media Responses to the *Annals of Emergency Medicine* Residents' Perspective Article on Multiple Mini-Interviews

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In May 2014, *Annals of Emergency Medicine* continued a successful collaboration with an academic Web site, Academic Life in Emergency Medicine (ALiEM) to host an online discussion session featuring the 2014 *Annals* Residents' Perspective article "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.]

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 Garmel[2] "Does the Multiple Mini-Interview Address Stakeholder Needs? An Applicant's Perspective."

Multiple mini-interviews, as described by Eva et al,[3] are multiple, short, structured interviews that are based on a question or scenario, which allows programs to assess a wide range of skills and attributes. Traditionally, unstructured individual interviews of medical school applicants were used to attempt to gather information about applicants' *noncognitive* abilities. These abilities are "soft skills" and include interpersonal and communication skills, integrity, and professionalism. The unstructured interview format, however, was noted to have variable interrater reliability because applicant scores may depend on interviewer personality, background, and expectations. Eva et al[3] suggested that the traditional format may not be able to provide an accurate portrayal of individual capabilities that could be generalized to other contexts because of context specificity theory. The multiple mini-interview was thus developed to allow programs to standardize the interview process and facilitate a more accurate assessment of the applicant's noncognitive attributes in a manner that was more likely to predict future performance in relevant contexts. This standardization has been shown to increase interrater reliability, improve the assessment of the applicant's communication and problem-solving skills, and possibly identify applicants with professionalism issues that might not be identified through traditional interviews.[3-5]

Although the multiple mini-interview technique has been gaining traction in undergraduate medical education admissions during the past decade, its application to the graduate medical education selection processes is a newer phenomenon.[6-8] Although residency selection committees also value objective, reliable assessments of noncognitive abilities, there are important differences in the role of the interview between medical school and residency selection processes, such as recruitment and determining personality fit. The featured Residents' Perspective article was inspired by the first author's personal experience participating in a multiple mini-interview as a resident applicant. Through this lens, Phillips and Garmel[2] review the background and application of the multiple mini-interview in medical school and residency admissions process and pose the following question: How well would the multiple mini-interview address all stakeholders' needs in the emergency medicine residency application process? ALiEM further explored this question, using social media platforms, including a Twitter conversation, Web site discussion, and live videocast with the authors and key experts. This article aims to organize and summarize the responses from the global education community and propose potential solutions and recommendations. Objective Web analytics will also be reported for the multiple digital platforms used.

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

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Blog Q1: Have you participated in a multiple mini-interview as a medical student or resident applicant? Describe your experience. How did the multiple mini-interview affect your rating of the program?

Blog Q2: Have you participated as an interviewer in a multiple mini-interview? Describe your experience as an interviewer. Do you believe you gleaned useful information from the exercise?

Blog Q3: How would you predict that the structured multiple mini-interview process would affect the applicants' ability to glean the information they want and need from the interview day process to determine where to rank programs on their rank order list?

Blog Q4: Are there intrinsic benefits to an unstructured interview format that are not found in the multiple mini-interview format?

Figure 1. Featured ALiEM blog questions.

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.[9]

MULTIPLE MINI-INTERVIEW CHARACTERISTICS

As described in the literature,[3-5] 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):
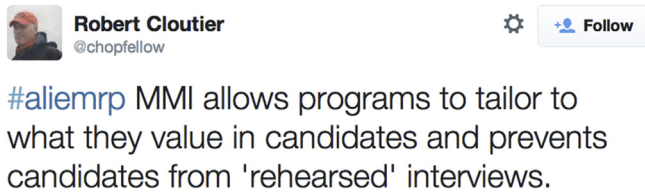
Robert Cloutier
@chopfellow

#aliemrp 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):

Ben Lefkove
@BLefkove

@njoshi8 @EMtogether @JoJoHaber interview primarily to sniff out if crazy. Hard to get much from such a forced, short interaction (2/2)

Figure 3.

Ben Lefkove
@BLefkove

@njoshi8 @EMtogether @JoJoHaber problem solving, smarts, & how u r on a shift r from app, letters, elective, etc. (1/2)
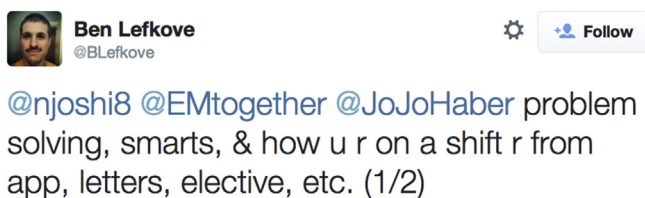
Figure 4.

Andrew Phillips (Stanford-Kaiser) also questioned the utility of the information elicited by multiple mini-interviews in a Web site comment: "MMI tests 'noncognitive' factors, [but] no one

has…been able to tie down exactly what *is* being measured. With so many different questions being asked…you're left asking: 'What did we just test?'" Furthermore, George Mejicano (Oregon Health & Science University) tweeted a prediction that competency-based medical education initiatives throughout the undergraduate medical education curriculum will eventually provide program directors with the information they need about noncognitive attributes.

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):

TChan
@TChanMD

@M_Lin @EMtogether @njoshi8 @MayoClinicEM @JoJoHaber Would require your faculty members to show up in spades for the interviews #ALIEMRP

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):
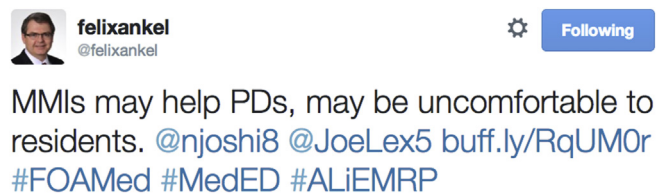
felixankel
@felixankel

MMIs may help PDs, may be uncomfortable to residents. @njoshi8 @JoeLex5 buff.ly/RqUM0r #FOAMed #MedED #ALiEMRP

Figure 6.

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

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 @jtlcheah ⚙ +👤 Follow

#ALiEMRP I underwent MMI for IM in UK. +ve standardized across the country. -ve impersonal and cannot ask program specific questions
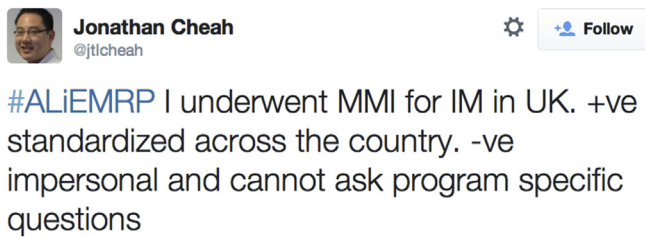
Figure 7.

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

Jordana Haber @JoJoHaber ⚙ Following

@njoshi8 @EMtogether goal of resident interview is to add a personal layer to the robust application - which seems compromised with MMI
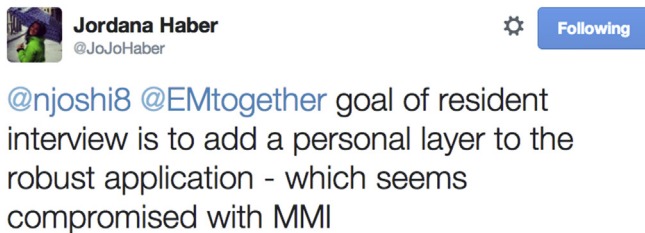
Figure 8.

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 Garmel[2] publication, there were no published descriptions of multiple mini-interview applications in emergency medicine residency selection, to our knowledge. Since then, Hopson et al[6] 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 "behavioural 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. Aggregate analytic data from discussions about multiple mini-interviews for the first 14 days of the event.

Social Media Analytic Aggregator	Metric	Metric Definition	Count
Google Analytics	Page views	Number of times the Web page containing the post was viewed	1,284
	Users	Number of times individuals from different Internet provider addresses viewed the site (previously termed "unique visitors" by Google)	712
	Number of cities	Number of unique jurisdictions by city as registered by Google Analytics	353
	Number of countries	Number of unique jurisdictions by country as registered by Google Analytics	41
	Average time on page	Average amount of time spent by a viewer on the page	3 min 11 s
ALiEM blog	Number of tweets from page	Number of unique 140-character notifications sent directly from the blog post by Twitter to raise awareness of the post	72
	Number of Facebook likes	Number of times viewers "liked" the post through Facebook	6
	Number of Google+ shares	Number of times viewers shared the post through Google+	3
	Number of site comments	Comments made directly on the Web site in the blog comments section	21
	Average word count per blog comment (excluding citations)		141
Symplur Analytics for Twitter hashtag #ALiEMRP[9]	Number of tweets	Number of tweets containing the hashtag #ALiEMRP	140
	Number of Twitter participants	Number of unique Twitter participants using the hashtag #ALiEMRP	36
	Twitter impressions	How many impressions or potential views of #ALiEMRP tweets appear in users' Twitter streams, as calculated by number of tweets per participant and multiplying it by the number of followers of that participant has	221,946
YouTube Analytics	Length of videocast	Total duration of recorded Google Hangout videoconference session	22 min 36 s
	Number of views	Number of times the YouTube video was viewed	128
	Average duration of viewing	Average length of time the YouTube video was played in a single viewing	7 min 8 s

preference of traditional interviews over multiple mini-interview. 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 meets 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 situation versus details, and memory, all of which may directly affect applicants' perceptions of programs after the interview day.[10] Yet perhaps the most persuasive call for further exploration of ways to improve the interview process was posed in a Web site comment by Charlotte Wills (Alameda County Medical Center): "[W]e do owe it to our students and future residents to make this 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. The YouTube analytics for the Google Hangout video broadcast demonstrated only moderate success, unlike the blog and Twitter 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 Symplur 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.

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