UNC ESHELMAN SCHOOL OF PHARMACY

Center for Innovative Pharmacy Education and Research

Validity Evidence for a Virtual Multiple Mini-Interview

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KEY POINTS

- Findings suggest that our virtual multiple mini-interview (vMMI) was able to distinguish between the attributes it was designed to assess, providing support for content specificity.
- For most attributes, candidate performance was similar regardless of setting, providing support for the use of virtual interviewing as an alternative to in-person interviewing.
- The vMMI demonstrated strong psychometric properties, suggesting it is a viable alternative to in-person multiple mini-interviews (MMIs).

INTRODUCTION

- Numerous studies indicate that multiple mini-interviews (MMIs) are a valid and reliable method for assessing social and behavioral skills of prospective health profession students while reducing bias.[1-6]
- Numerous health professions schools have transitioned to virtual admissions interviews in recent years.
- While some research suggests that virtual multiple mini-interviews (vMMIs) are feasible, acceptable, and more affordable, there is a paucity of research concerning the validity of this approach.
- **Objective:** To examine the validity and reliability of vMMIs and explore differences in performance between vMMIs and in-person MMIs.

METHODS

- Archival data were collected for two years of in-person MMIs (2018-19 and 2019-20) and two years of vMMIs (2020-21 and 2021-22).
- An exploratory factor analysis (principal components analysis) with varimax rotation and Kaiser rule (i.e. retaining factors with eigenvalue >1.0) was used to explore the construct validity of the 2020-21 vMMI data.
- Pearson correlation was used to examine correlations between vMMI stations and Cronbach alpha was used to determine the internal consistency of each station.
- Independent t-tests were used to examine differences between in-person MMI and vMMI groups.
- Cohen's d was used to determine effect sizes, which reflect the magnitude of the differences between groups and serve as measures of practical significance (e.g., D>.8 is a large effect size).
- Group comparisons and effect sizes were calculated based on the average station score (e.g., average of the three rubric ratings).

RESULTS

Candidates

1,026 Candidates Total Included

438 (42.69%) Completed In-person MMI

588 (57.31%) Completed vMMI

TABLE 1 Factor Analysis Loadings for vMMI

Factor	1	2	3	4	5	6	7
Station	Station 7	Station 3	Station 4	Station 5	Station 1	Station 6	Station 2
	Why UNC	Integrity	Adaptability	Empathy	Teamwork-Giving	Critical Thinking	Teamwork-Receiving
Construct	0.93	0.92	0.92	0.92	0.93	0.91	0.89
Communication	0.90	0.92	0.91	0.89	0.91	0.86	0.88
Overall Performance	0.95	0.96	0.96	0.96	0.94	0.94	0.95
% Variance Accounted For	28.78	15.17	11.11	9.93	9.34	8.79	8.04

- Only one year of vMMI data was used for the factor analysis since one station was dropped for the 2021-2022 vMMI.
- Each vMMI station formed a single factor with loads ranging from 0.86 to 0.96.
- The stations accounted for 91.16% of the total variance.

TABLE 2 Intercorrelations and Reliabilities of vMMI Stations

Station	1	2	3	4	5	6	7
Teamwork-Giving	(0.94)	0.17	-0.01	-0.03	0.16	0.05	0.14
Teamwork-Receiving		(0.93)	0.03	0.14	0.13	0.09	0.20
Integrity			(0.95)	0.14	0.09	0.29	0.12
Adaptability				(0.95)	0.12	0.16	0.18
Empathy					(0.95)	0.24	0.16
Critical Thinking						(0.94)	0.27
Why UNC							(0.96)

- Cronbach alpha shown in parentheses.
- Weak to negligible intercorrelations between stations (r_p<.30) and high internal consistency within each station (α>0.90, range 0.93 to 0.96) were found.

TABLE 3 MMI and vMMI Station Scores

Station	MMI (n=438) Mean (SD)	vMMI (n=588) Mean (SD)	P-value	Cohen's D
Teamwork - Giving	5.42 (2.30)	6.26 (1.48)	<.01	.44
Teamwork - Receiving	5.61 (2.45)	6.62 (1.43)*	<.01	.47
Integrity	6.16 (1.50)	6.60 (1.58)	<.01	.28
Adaptability	6.46 (1.33)	6.62 (1.65)	.10	.10
Empathy	6.41 (1.67)	6.56 (1.93)	.18	.08
Critical Thinking	6.35 (1.50)	6.52 (1.55)	.09	.10
Why UNC	6.56 (1.53)	6.68 (1.65)	.20	.07

* Teamwork-receiving station not used in 2021-22 vMMI; n=286.

- Medium effect sizes found for teamwork-giving (D=.44) and teamwork-receiving (D=.47). Small effect size was found for integrity (D=.28).
- No differences were found for other stations and the remaining effect sizes were small.

Limitations

- Data from one institution.
- Study did not examine the variability in vMMI scores associated with interviewer bias and other construct-irrelevant variance.
- The association between vMMI scores for this cohort and their academic performance in the program remains unclear.
- Future research will evaluate the relationship between vMMI scores and performance in the curriculum.

CONCLUSION

- Findings suggest that our vMMI was able to distinguish between the attributes it was designed to assess, providing support for content specificity.
- Initial evidence suggests that the vMMI is a valid and reliable alternative to in-person MMIs.
- Additional research is needed to examine sources of potential differences in rating patterns between different interview modalities and formats.

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