Educational Article

The outcomes that an interview-based medical school admission process has on academic performance, psychological health, personality traits, and emotional intelligence

Muhamad S.B. Yusoff, PhD

Department of Medical Education, School of Medical Sciences, Universiti Sains Malaysia, Kota Bharu, Kelantan, Malaysia

Received 13 July 2018; revised 11 September 2018; accepted 17 September 2018; Available online 15 October 2018

Abstract

Objectives: This study investigated the outcomes that an interview-based medical school admission process has on academic performance, psychological health, personality traits, and emotional intelligence.

Methods: A comparative cross-sectional study was conducted on the interviewed and non-interviewed cohorts. Their examination marks were obtained from the academic office, psychological health was measured by DASS-21, personality traits were measured by USMaP-15, and emotional intelligence was measured by USMEQ-17.

Results: The interviewed cohort performed significantly better in the clinical examination than the non-interviewed cohort. Conversely, the non-interviewed cohort performed significantly better in the theoretical examination. Depression, anxiety, and stress level between the two cohorts showed no difference. The interviewed cohort demonstrated more desirable personality traits, higher emotional intelligence, and social competence than the non-interviewed cohort.

Discussion: This study provides evidence to support the claim that the interview-based admission process has favourable outcomes on clinical performance, emotional intelligence, and personality traits. Several insights gained as a result of this study are discussed.

Keywords: Academic performance; Emotional intelligence; Interview-based admission; Personality traits; Psychological health

Corresponding address: Department of Medical Education, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.
E-mail: msaiful_bahri@usm.my

Peer review under responsibility of Taibah University.

1658-3612 © 2018 The Author. Production and hosting by Elsevier Ltd on behalf of Taibah University. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/). https://doi.org/10.1016/j.jtumed.2018.09.003
Introduction

Medical training differs from many other courses because the attainment of a medical degree indicates just the beginning of a career and graduates are expected to be lifelong learners to serve society with the highest quality of patient care. Therefore, medical teachers have to give more thought to the design of the medical school admission process to ensure they recruit the right talent for undergoing medical training — the kind of students recruited at the beginning determine the kind of doctors produced at the end. Therefore, the goal of medical school admission must be established to guide the selection of valid, reliable, and feasible tools to achieve the goal; otherwise, it will create more problems and defeat its purpose. The selection tools are divided into the cognitive-based tools, that look at previous academic performance such as the cumulative grade point average (CGPA), and the non-cognitive-based tools, that look at intangible attributes such as personality traits and emotional intelligence. The cognitive-based selection seems to be easy; however, in reality, a high CGPA does not necessarily result in good future doctors. Moreover its predictive values fade with progression in medical training. Therefore, further research is required to find the best evidence to support its validity.

Emotional intelligence refers to the ability to perceive, express, understand, motivate, control, and regulate emotion, and there is considerable proof that emotional intelligence influences success in a range of occupational settings. A systematic review reported that high emotional intelligence was positively linked to good doctor—patient relationships, interpersonal skills, empathy, teamwork and communication skills, stress management, organizational commitment, and clinical and examination performance such as clinical diagnostic and prognostic ability. These facts suggest the importance of emotional intelligence in a number of areas related to the competencies of future medical doctors. Despite the encouraging outcome, no articles have as of yet reported the outcomes that an interview-based selection recruited based on merely CGPA. Therefore, this study attempted to validate this finding at the last phase of medical training.

In 2009, the medical school (i.e. one of the public medical schools in Malaysia) recruited medical students based on three criteria: previous academic performance based on the cumulative grade point average (CGPA), psychometric testing by Malaysian University Selection Inventory (MUNSYI), and interview performance. Conversely, prior to 2009, the medical school recruited medical students solely based on previous academic performance — CGPA. The medical students underwent a five-year medical course based on the SPICES (i.e. student oriented, problem based, integrated, community oriented, electives, self-learning & systematic) curriculum model and was organized into the preclinical phase (i.e. year 1), the para-clinical phase (i.e. years 2 and 3), and the clinical phase (i.e. years 4 and 5). The preclinical phase provides foundational knowledge related to the normal human being and normal responses to injuries, the para-clinical is the transitional phase to clinical years whereby the basic sciences and clinical clerkship subjects are integrated, and the clinical phase emphasizes the acquisition of clinical skills in the workplace setting.

This study was an extension of previous studies conducted on the same cohort of medical students in the non-clinical phases. It was carried out at the clinical phase to compare academic performance, psychological health, personality traits, and emotional intelligence between two cohorts of final-year medical students who were selected by different admission processes. Hence, this study contributes additional evidence to support the validity of an interview-based medical school admission.

Materials and Methods

Study design

A comparative cross-sectional study was conducted on two cohorts of medical students at the end of medical training.
Educational setting

The 2013/2014 cohort was the last batch selected solely based on CGPA (the non-interviewed cohort), and the 2014/2015 cohort was the first batch selected based on CGPA and interview performance (the interviewed cohort). Both cohorts of students underwent similar medical curricula at the same institution, and the average CGPA for both cohorts was 3.97. In Malaysia, there are two distinct tracks to enter public medical schools such as Universiti Sains Malaysia: Matriculation and High School Certificate (HSC). Matriculation is a one-year pre-university program and the HSC is a two-year pre-university program with a different curriculum and assessment format — evidence has shown that the HSC students perform better academically than matriculation students during medical training.33

Description of the interview-based admission process

The medical school received a list of 600 suitable candidates from Malaysia Ministry of Higher Education based on the candidates’ performance in matriculation and HSC assessment. Each candidate was invited to attend a 30-min personal interview session with a pair of interviewers. Each candidate was asked a battery of questions that assessed specific attributes, including 1) interest, general knowledge, and expectations of applicants regarding their medical career; 2) personal attributes of the applicants in relation to their suitability in studying medicine at USM; 3) communication ability of the applicants in Malay and English languages; 4) and any traits that might hinder the applicants from completing medical studies or performing clinical functions.1 The top 200 candidates, who were ranked based on the interview score, were recommended as successful candidates for the medical program.

Study subjects

All medical students in the two cohorts were invited to take part in this study. Medical students who refused to take part, failed to return the consent form, or failed to return the questionnaires were excluded. Participation in this study was voluntary and would not have any consequences on the progress of participants’ medical training.

Research tools

The 17-item USM Emotional Quotient Inventory (USMEQ-17), 15-item USM Personality Inventory (USMaP-15), and 21-item Depression Anxiety Stress Scale (DASS-21) were used through guided self-administration immediately after the final examination. The academic performance (i.e. the clinical and theoretical components of the final year examination marks) of participants was obtained from the academic office.

The USMEQ-17 is a Malay-language inventory consisting of 13 items measuring emotional intelligence and 4 items measuring faking index. Each item is rated on a 5-point Likert scale: 0 (not like me) to 4 (totally like me). Its validity and reliability among medical student samples was well established as it demonstrated high internal consistency (Cronbach’s alpha was more than 0.7) and good construct validity.34,35 It measures global emotional intelligence, personal competence, and social competence.34–36 Global emotional intelligence is the ability to perceive, express, understand, motivate, control, and regulate emotion.34–36 Social competence is the ability to know and understand one’s own and other people’s internal states, preferences, resources, and intuitions, as well as their effects.34–36 Personal competence is the ability to control oneself in the face of disruptive emotions and impulsive feelings, the ability to facilitate and guide emotional tendencies to achieve and reach intended goals, and the ability to align and work with others in a group or organization towards common goals.34–36 The faking index was not included as a study outcome.

The USMaP-15 is a self-administered inventory and has 15 items for measuring five factors of personality traits (i.e. openness, conscientiousness, extroversion, agreeableness, and neuroticism).30 Each item is rated on a 5-point Likert scale: 0 (very inaccurate) to 4 (very accurate). Its validity and reliability among medical student samples was well established, as Cronbach’s alpha values ranged from 0.63 to 0.83 and there was good construct validity,22,30,37,38 indicating an acceptable to high level of internal consistency and stability across time intervals and occasions.30

Depression, anxiety, and stress levels were measured by DASS-21 — a high score indicated poor psychological health.25,39–42 Its validity and reliability among student samples was well established.25,30,42 The subscales showed discriminative ability to distinguish between psychiatric and non-psychiatric patients.42 Each statement was rated using a 4-point Likert scale; 0 (did not apply to me at all) to 3 (applied to me very much). Based on the DASS manual for student samples,40–42 1) stress level is categorized as normal (0–14), mild (15–18), moderate (19–25), severe (26–33), and extremely severe (34 and above); 2) anxiety level is categorized as normal (0–7), mild (8–9), moderate (10–14), severe (15–19), and extremely severe (20 and above); and 3) depression level is categorized as normal (0–9), mild (10–13), moderate (14–20), severe (21–27), and extremely severe (28 and above). Any scores of moderate to extremely severe levels were considered as unfavourable stress, anxiety, and depression.

Data collection

The three questionnaires were administered to participants by an independent research assistant. The participants were asked to submit the questionnaire immediately after they completely responded to all items.

Data analysis

Data were entered into Statistical Package of Social Sciences (SPSS). An independent-t test was performed to test association of the different admission approaches with academic performance, emotional intelligence, and personality traits. Next, multiple linear regression analysis was performed to determine whether admission approach predicted outcomes when sex, race, and entry qualification were taken into account. Assumptions were checked prior to analysis.
and the results were tabulated accordingly. Any p-values less than 0.05 were considered significant.

**Results**

Demographic profiles are summarized in Table 1, which shows that more students in the interviewed cohort were from the matriculation stream than from the HSC stream compared to the non-interviewed cohort.

The interviewed cohort performed significantly better in clinical examinations, and conversely, the non-interviewed cohort performed significantly better in theoretical examinations (Table 2). For the overall examination performance (i.e. Phase 3 final mark), the interviewed cohort performed significantly better than the non-interviewed cohort. This result suggests that the interviewed cohort demonstrated better academic performance than the non-interviewed cohort.

Based on the DASS-21, the prevalence of psychological distress among the interviewed and non-interviewed cohorts was 21.2% and 22.3%, respectively (Table 3). The prevalence of anxiety among the interviewed and non-interviewed cohorts was 56.3% and 51%, respectively (Table 3). The prevalence of depression among the interviewed and non-interviewed cohorts was 17.8% and 15.3%, respectively (Table 3). On further analysis, the stress, anxiety, and depression levels between the two cohorts were not significantly different (Table 4).

The interviewed cohort consistently demonstrated higher levels of extraversion, conscientiousness, agreeableness, and openness and lower levels of neuroticism than the non-interviewed cohort (Table 5). This result suggests that the interviewed cohort showed more desirable personality traits.

Looking at global emotional intelligence levels, the interviewed cohort outperformed the non-interviewed cohort (Table 6). Likewise, in terms of social competence levels, the interviewed outperformed the non-interviewed cohort. However, for the personal competence levels, the cohorts showed no difference. These results provide evidence to support the positive outcomes that interview-based selection have on emotional intelligence.

Further analysis was performed for the significant results (Tables 2, 5 and 6) by using multiple linear regression. Analysis confirmed that the interview-based medical admission process remained the significant predictor of outcomes after controlling for sex, race, and entry qualification as confounding factors (Table 7). This analysis supported the primary effect that the interview-based admission process has on academic performance, emotional intelligence, and personality traits among medical students.

**Discussion**

This study provides evidence to support the positive outcomes that the interview-based selection process has on the clinical performance, emotional intelligence, and personality traits of medical students. Conversely, the results revealed that the interview-based selection process demonstrated unfavourable findings with regard to cognitive performance and showed no positive consequences for the psychological health of medical students. Insights gained from the findings are discussed in the following paragraphs.

So far, there has been limited research comparing the academic performance of interview-based and non-interview-based cohorts, and therefore this study helps close the gap. The interviewed cohort performed better in the clinical examination but unexpectedly demonstrated lower performance in the theoretical examination than the non-interviewed cohort. One possible reason is that the non-interviewed cohort had more students with an HSC background (22.3%) than the interviewed cohort (8.6%), as it has been consistently reported that medical students with HSC backgrounds have perform better academically than those with matriculation backgrounds. Having said that, the interviewed cohort performed better in the clinical component, thus providing evidence to support the validity of interview-based admission in terms of clinical performance. To shed some light on the matter, performance is affected by multiple factors that include an ability to apply knowledge, clinical skills, non-clinical skills, attitudes, environmental state, emotional state, physical state, and personality traits. Thus, high clinical performance indicates that students are able to deal with these factors effectively. However, further research is required to verify whether other interviewed cohorts demonstrate similar patterns of academic performance.

The interviewed cohort showed higher global emotional intelligence and social competence than the non-interviewed cohort; however, both cohorts had a similar level of personal competence. This result suggests that interview-based

| Table 1: Demographic profiles of two final-year medical student cohorts at the end of medical training. |
|---------------------------------|-----------------|-----------------|
| **Variable** | **Frequency (%)** | **Non-interviewed (2013) (N = 157)** | **Interviewed (2014), (N = 151)** |
| **Sex** | | | |
| Male | 60 | 60 (38.2) | 48 (31.8) |
| Female | 97 | 97 (61.8) | 102 (67.5) |
| **Race** | | | |
| Malay | 80 | 80 (51.0) | 75 (49.7) |
| Chinese | 60 | 60 (38.2) | 54 (35.8) |
| Indian | 17 | 17 (10.8) | 18 (11.9) |
| Others | 0 | 0 | 4 (2.6) |
| **Entry qualification** | | | |
| Matriculation | 111 | 111 (70.7) | 123 (81.5) |
| HSC | 35 | 35 (22.3) | 13 (8.6) |
| Others | 6 | 6 (3.8) | 13 (8.6) |

N = total respondents SD = Standard Deviation HSC = High School Certificate.
selection is capable of recruiting medical students who are better at handling interpersonal relationships. In the medical context, higher emotional intelligence has been reported to positively contribute to several important outcomes that include 1) doctor—patient relationship, 2) increased empathy, 3) increased teamwork and communication skills, 4) increased academic performance, particularly on clinical diagnostic and prognostic abilities, and 5) increased stress management and organizational commitment abilities—these facts clearly show the important roles of emotional intelligence in the competency of tomorrow's doctors. Based on these facts, the author believes that the interviewed cohort will become better doctors, though this postulation should be verified with a longitudinal study.

Table 2: Phase 3 examination marks of two final-year medical student cohorts.

| Assessment          | Cohort          | Mean  | SD   | MD   | 95% CI of MD Lower | 95% CI of MD Upper | t-Statistic (df) | p-value  |
|---------------------|-----------------|-------|------|------|---------------------|---------------------|------------------|----------|
| Clinical component  | Non-interviewed | 56.15 | 5.68 | −6.79| −8.06              | −5.52              | −10.52 (306)     | <0.001   |
|                     | Interviewed     | 62.93 | 5.65 |      |                     |                     |                  |          |
| Theoretical component | Non-interviewed | 61.47 | 5.08 | 3.87 | 2.57               | 5.17               | 5.87 (306)       | <0.001   |
|                     | Interviewed     | 57.60 | 6.43 |      |                     |                     |                  |          |
| Phase 3 final mark  | Non-interviewed | 59.23 | 4.35 | −1.58| −2.61              | −0.55              | −3.03 (306)      | 0.003    |
|                     | Interviewed     | 60.81 | 4.81 |      |                     |                     |                  |          |

Independent-t test was performed, p-value less than 0.05 was considered to be a significant difference; Non-interviewed cohort = 157, Interviewed cohort = 151. MD = Mean Difference; Clinical component = Long Case, Short Case and Objective Structured Clinical Examination; Theoretical component = Multiple True False and Modified Essay Question; Non-interviewed cohort = 157, Interviewed cohort = 151.

Table 3: Frequency and percentage of stress, anxiety, and depression among two final-year medical student cohorts at the end of medical training by severity level.

| Psychological variable | Severity level | Frequency (%) | Non-interviewed Cohort | Interviewed Cohort |
|------------------------|----------------|---------------|-------------------------|--------------------|
| Stress                 | Normal         | 96 (61.1)     | 122 (77.7)              | 102 (67.5)         |
|                        | Mild           | 26 (16.6)     | 17 (11.3)               | 17 (11.3)          |
|                        | Moderate       | 19 (12.1)     | 35 (22.3)               | 15 (9.9)           |
|                        | Severe         | 14 (8.9)      | 12 (7.9)                | 12 (7.9)           |
|                        | Extremely severe| 2 (1.3)      | 5 (3.3)                 | 5 (3.3)            |
| Anxiety                | Normal         | 65 (41.4)     | 77 (49.0)               | 54 (35.8)          |
|                        | Mild           | 12 (7.6)      | 12 (7.9)                | 12 (7.9)           |
|                        | Moderate       | 37 (23.6)     | 80 (51.0)               | 37 (24.5)          |
|                        | Severe         | 18 (11.5)     | 19 (12.6)               | 19 (12.6)          |
|                        | Extremely severe| 25 (15.9)   | 29 (19.2)               | 29 (19.2)          |
| Depression             | Normal         | 112 (71.3)    | 133 (84.7)              | 110 (72.8)         |
|                        | Mild           | 21 (13.4)     | 14 (9.3)                | 14 (9.3)           |
|                        | Moderate       | 14 (8.9)      | 24 (15.3)               | 21 (13.9)          |
|                        | Severe         | 7 (4.5)       | 2 (1.3)                 | 2 (1.3)            |
|                        | Extremely severe| 3 (1.9)     | 4 (2.6)                 | 4 (2.6)            |

Non-interviewed cohort = 157, Interviewed cohort = 151.

Table 4: Mean stress, anxiety, and depression scores among two final-year medical student cohorts at the end of medical training.

| Psychological variable | Cohort               | Mean  | SD   | MD   | 95% CI of MD Lower | 95% CI of MD Upper | t-Statistic (df) | p-value  |
|------------------------|----------------------|-------|------|------|---------------------|---------------------|------------------|----------|
| Stress                 | Non-interviewed      | 13.23 | 8.40 | 1.06 | −0.99              | 3.11               | 1.02 (306)       | 0.309    |
|                        | Interviewed         | 12.17 | 9.90 |      |                     |                     |                  |          |
| Anxiety                | Non-interviewed      | 10.90 | 8.72 | −0.82| −2.84              | 1.21               | −0.79 (306)      | 0.428    |
|                        | Interviewed         | 11.72 | 9.35 |      |                     |                     |                  |          |
| Depression             | Non-interviewed      | 6.84  | 7.20 | 0.40 | −1.26              | 2.07               | 0.48 (306)       | 0.633    |
|                        | Interviewed         | 6.43  | 7.64 |      |                     |                     |                  |          |

Independent-t test was performed, p-value less than 0.05 was considered to be a significant difference. SD = standard deviation; MD = Mean Difference; Non-interviewed cohort = 157, Interviewed cohort = 151.
The interviewed cohort demonstrated higher levels of desirable personality traits such as extraversion, conscientiousness, agreeableness, and openness and lower levels of neuroticism than the non-interviewed cohort. This finding is consistent with a previous study conducted on the same cohorts at an earlier phase of medical training. In the medical context, the desirable personality traits were associated with a deeper approach to work, less vulnerability to developing mental illnesses, greater career success, a deeper learning context, the desirable personality traits were associated with psychological resilience was developed and fortified gradually through the rigor of medical training, which might not be due to the interview-based selection. Therefore, if medical schools are seeking candidates with high resilience, perhaps they need to consider other interview methods such as multiple mini interviews.

Despite the positive outcomes, several limitations of this study should be considered for future research. First, the sample was confined to one medical school and, therefore, any efforts to generalize the findings to other educational contexts should be done with caution. Second, several potential confounders such as previous academic performance and history of psychiatric illness, which might compromise the accuracy of the finding, were not controlled for. Third, baseline measurements of personality, emotional intelligence, and psychological health prior to the medical training was not taken to control for the homogeneity of its sample was confined to one medical school and, therefore, any efforts to generalize the findings to other educational contexts should be done with caution. Second, several potential confounders such as previous academic performance and history of psychiatric illness, which might compromise the accuracy of the finding, were not controlled for. Third, baseline measurements of personality, emotional intelligence, and psychological health prior to the medical training was not taken to control for the homogeneity of its

The table below shows the mean score of personality traits among two final-year medical student cohorts at the end of medical training.

| Personality | Cohort       | Mean | SD  | MD  | 95% CI of MD | t-Statistic (df) | p-Value |
|-------------|--------------|------|-----|-----|--------------|------------------|---------|
| Extraversion| Non-interviewed | 8.89 | 2.06| −0.73| −1.21 −0.25| −3.01 (299)      | 0.003   |
|             | Interviewed  | 9.62 | 2.17|       |              |                  |         |
| Conscientiousness| Non-interviewed | 8.42 | 1.98| −0.87| −1.34 −0.40| −3.65 (299)      | <0.001  |
|             | Interviewed  | 9.29 | 2.15|       |              |                  |         |
| Agreeableness| Non-interviewed | 8.85 | 1.85| −0.81| −1.28 −0.34| −3.44 (299)      | 0.001   |
|             | Interviewed  | 9.66 | 2.24|       |              |                  |         |
| Neuroticism | Non-interviewed | 3.52 | 2.17|       |              |                  |         |
|             | Interviewed  | 2.67 | 2.28| 0.85 | 0.35 1.35 | 3.32 (299)      | 0.001   |
| Openness    | Non-interviewed | 9.11 | 2.02| −0.81| −1.26 −0.37| −3.58 (299)      | <0.001  |
|             | Interviewed  | 9.93 | 1.92|       |              |                  |         |

Independent-t test was performed, p-value less than 0.05 was considered to be a significant difference.

SD = standard deviation; MD = Mean Difference; Non-interviewed cohort = 151, Interviewed cohort = 150.
level between the two cohorts. Fourth, the opportunity to meet candidates in person and the ability to assess interpersonal and communication skills will favour a group of students who are more extroverted, confident, and able to communicate well. However, the study found that at the end of the medical training, there was no difference between the interviewed and the non-interviewed cohorts in terms of depression, anxiety, and stress level. Hence, it is recommended that qualitative study should be carried out in the future to determine some of the reasons behind the trends that were discovered in the study. Fifth, the data were only measured once at the end of medical training, and thus the pattern regarding the outcomes was not visible longitudinally. For those reasons, future research should consider these limitations to verify the present finding. Apart from that, this study provided valuable evidence to support the positive outcomes of an interview-based medical school admission system. Finally, this study demonstrated that using multiple criteria for selecting prospective medical students is a way forward to chart the future direction of medical school admission.

### Conclusion

This study provides evidence to support the positive outcomes that an interview-based medical school admission process has on the clinical performance, emotional intelligence, and personality traits of medical students. However, this study showed unfavourable data on cognitive performance and revealed no consequences on the psychological health of medical students.

### Conflict of interest

The author has no conflict of interest to declare.

### Ethical approval

Ethical approval was obtained from the Human Ethics Committee of Universiti Sains Malaysia prior to the study (USMKK/PPP/JEPeM[212.4][2.5]).
Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jtumed.2018.09.003.

References

1. Yusoff MSB, et al. Medical student selection process and its pre-admission scores association with the new students’ academic performance in Universiti Sains Malaysia. Int Med J 2011; 18(4): 329–333.
2. Downie R, Charlton B. The making of a doctor: medical education in theory and practice. BMJ 1993; 306(5): 1352.
3. Tutton P, Price M. Selection of medical students. Br Med J 2002; 324: 1170–1171.
4. Norman GR. The morality of medical school admission. Adv Health Sci Educ 2004; 9: 79–82.
5. Goldberg LR. A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In: Mervielde I, et al., editors. Personality psychology in Europe. Tilburg, Netherland: Tilburg University Press; 1999. pp. 7–28.
6. Goldberg LR. What are the best ways to describe an individual’s personality? Dialogue 2008; 23(9): 35–39.
7. McRae RR, Costa PT. Validation of the five-factor model of personality traits between interview and non-interview admission method. BMC Med 2004; 2(9).
8. De Raad B, Schouwenburg HC. Personality in learning and education: a review. Eur J Pers 1996; 10: 303–336.
9. Bidjerano T, Dai DY. The relationship between the big-five model of personality and self-regulated learning strategies. Learn Indiv Differ 2007; 17(1): 69–81.
10. Barrick MR, Mount MK, Strauss JP. Conscientiousness and performance of sales representatives: test for the mediating effect of goal setting. J Appl Psychol 1993; 78: 715–722.
11. McManus IC, Keeling A, Paice E. Stress, burnout and doctors’ attitudes to work are determined by personality and learning style: a twelve year longitudinal study of UK medical undergraduates. BMC Med 2004; 2(9).
12. Arifin WN, Yusoff MSB, Naing NN. Confirmatory factor analysis (CFA) of USM Emotional Quotient Inventory (USMEQ-i) among medical degree program applicants in Universiti Sains Malaysia (USM). Educ Med J 2012; 4(2): e26–e44.
13. Abreu AM, Abdul Rahim AF, Yusoff MSB. Emotional intelligence of USM medical students. Education in Medicine Journal 2015; 7(4): e26–e38.
14. Yusoff MSB. Stability of the USM-P-i in measuring the big five personality traits. Int Med J 2013; 20(1): 1–3.
15. Nur Farliza S, et al. A confirmatory factor analysis of USM Personality Inventory (USMaP-i) among medical students in Universiti Sains Malaysia. Educ Med J 2016; 8(1): 55–65.
16. Crawford JR, Henry JD. The Depression Anxiety Stress Scales (DASS): normative data and latent structure in a large non-clinical sample. Br J Psychol Soc 2003; 42: 111–131.
17. Henry JD, Crawford JR. The short-form version of the Depression Anxiety Stress Scales (DASS-21): construct validity and normative data in a large non-clinical sample. Br J Clin Psychol 2005; 44: 227–239.
18. Lovibond SH, Lovibond PF. Manual for the depression anxiety stress scales. 2nd ed. Sydney: Psychology Foundation; 1995.
42. McDowell I. *Measuring health: a guide to rating scales and questionnaires*. 3rd ed. New York: Oxford University Press; 2006.

43. Donnon T, Paolucci EO, Violato C. The predictive validity of the MCAT for medical school performance and medical board licensing examinations: a meta-analysis of the published research. *Acad Med* 2007; 82(1): 100–106.

44. Khan K, Ramachandran S. Conceptual framework for performance assessment: competency, competence and performance in the context of assessments in healthcare — deciphering the terminology. *Med Teach* 2012; 34(11): 920–928.

45. Ferguson E, James D, Madeley L. Factors associated with success in medical school: systematic review of literature. *Br Med J* 2002; 324: 952–957.

46. Vermetten YJ, Lodewijks HG, Vermunt JD. The role of personality traits and goal orientations in strategy use. *Contemp Educ Psychol* 2001; 26: 149–170.

47. Reiter HI, et al. Multiple mini-interviews predict clerkship and licensing examination performance. *Med Educ* 2007; 41(4): 378–384.

48. Eva KW, et al. The ability of the multiple mini-interview to predict preclerkship performance in medical school. *Acad Med* 2004; 79(10): S40–S42.

---

**How to cite this article:** Yusoff MSB. The outcomes that an interview-based medical school admission process has on academic performance, psychological health, personality traits, and emotional intelligence. *J Taibah Univ Med Sc* 2018;13(6):503–511.